United States
Environmental Protection Agency

November 2024
Office of Chemical Safety and
Pollution Prevention

Data Quality Evaluation and Data Extraction Information for Physical and Chemical Properties for Asbestos Part 2 – Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos

Systematic Review Support Document for the Risk Evaluation

CASRN: 1332-21-4

November 2024

This supplemental file contains information regarding the data extraction and evaluation results for data sources that were considered for the Supplement to the *Risk Evaluation for Asbestos Part 2: Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos* that underwent systematic review. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (also referred to as the '2021 Draft Systematic Review Protocol'). The systematic review steps are further described in the *Risk Evaluation for Asbestos Part 2: Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos – Systematic Review Protocol*. EPA conducted data extractions and data quality evaluations based on author-reported descriptions and results; additional analyses (*e.g.*, statistical analyses) potentially conducted by EPA are not contained in this supplemental file. Additionally, the overall quality determination (OQD) for each reference represents the data as a whole for each study, and not for individual metric domains within a study.

Table of Contents

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	colorless to light brown upon being heated; nonpleochroic
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	wavy fibers with kinks; splayed ends on larger bundles
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR Notes: riebeckite
Results Value	characteristic blue color; pleochroic
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR Notes: Reported as: Crocidolite (Riebeckite)
Results Value	straight fibers and fiber bundles; longer fibers show curvature; splayed ends on bundles
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	straight fibers and fiber bundles; cleavage fragments may be present.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	colorless to light brown; non-pleochroic to weakly pleochroic
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	straight and curved fibers; cleavage fragment common; large fiber bundles show splayed ends
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	colorless
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

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OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	13768-00-8; actinolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	straight and curved fibers; cleavage fragment common; large fiber bundles show splayed ends
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

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OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	13768-00-8; actinolite
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Results Value	green; weakly to moderately pleochroic
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; cummingtonite-grunerite (amosite)
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR Notes: amosite
Results Value	straight fibers and fiber bundles; bundle ends appear broom-like or splayed
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Physical Form or State
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; cummingtonite-grunerite (amosite)
Confidentiality, Type, and Guideline	None; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR Notes: amosite
Results Value	colorless to brown upon heating; may be weakly pleochroic
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Physical Form or State
HERO ID:	786664

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	gray, white, brown-gray, green

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Physical Form or State
HERO ID:	786664

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	lavender, blue, green

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Physical Form or State
HERO ID:	786664

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	brown, gray, greenish

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Physical Form or State
HERO ID:	786664

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	white, gray, green, yellowish

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Physical Form or State
HERO ID:	786664

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	white to pale green

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Bignon, J. (1989). Mineral fibres in the non-occupational environment. IARC Scientific Publication no. 90 :3-29.
OECD Harmonized Template:	Physical Form or State
HERO ID:	733675

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: cummingtonite-grunerite
Results Value	Brown asbestos
Results Details	Amphibole mineral group, Mg7(OH)2Si8O22 Fe7(OH)2Si8O22

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Bignon, J. (1989). Mineral fibres in the non-occupational environment. IARC Scientific Publication no. 90 :3-29.
OECD Harmonized Template:	Physical Form or State
HERO ID:	733675

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: riebeckite
Results Value	Blue asbestos
Results Details	Amphibole mineral group, Na2Fe2 3+ Fe2+(OH)2Si8O22

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Bignon, J. (1989). Mineral fibres in the non-occupational environment. IARC Scientific Publication no. 90 :3-29.
OECD Harmonized Template:	Physical Form or State
HERO ID:	733675

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	White asbestos
Results Details	Serpentine mineral group, (MgFe)6(OH)8Si4O10

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3084215

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; Experimental; not applicable
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NR
Results Value	Solid
Results Details	NR

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3981007

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Slender, strong, flexible fibers; white, gray, green, or brown
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos (blue).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3981008

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not applicable
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Not Reported; NR Notes: NR
Results Value	Slender, fine, flaxy fiber; blue
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: white asbestos; chemical formula 3MgO 2SiO2 2H2O
Results Value	Typical chemical analysis of solid
Results Details	40.3% Silica (SiO2), 0.7% Alumina (Al2O3), 1.0% Ferrous oxide (FeO), 1.5% Ferric oxide (Fe2O3), 0.2% Calcium oxide (CaO), 42.4% Magnesium oxide (MgO), 0.2% Carbon dioxide (CO2), 13.7% water of crystallization

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: blue asbestos; chemical formula Na2O 3FeO Fe2O3 8SiO2 H2O
Results Value	Typical chemical analysis of solid
Results Details	51.4% Silica (SiO2), 20.3% Ferrous oxide (FeO), 17.5% Ferric oxide (Fe2O3), 0.1% Manganous oxide (MnO), 0.8% Calcium oxide (CaO), 1.4% Magnesium oxide (MgO), 6.2% Sodium oxide (Na2O), 0.4% Carbon dioxide (CO2), 1.9% water of crystallization

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: chemical formula 1.5MgO 5.5FeO 8SiO2 H2O
Results Value	Typical chemical analysis of solid
Results Details	49.3% Silica (SiO2), 40.9% Ferrous oxide (FeO), 0.4% Ferric oxide (Fe2O3), 0.7% Manganous oxide (MnO), 0.4% Calcium oxide (CaO), 5.7% Magnesium oxide (MgO), 0.2% Sodium oxide (Na2O), 0.3% Potassium oxide (K2O), 0.2% Carbon dioxide (CO2), 1.9% water of crystallization

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: chemical formula 7MgO 8SiO2 H2O; CAS 17068-78-9
Results Value	Typical chemical analysis of solid
Results Details	57.2% Silica (SiO2), 10.1% Ferrous oxide (FeO), 0.1% Ferric oxide (Fe2O3), 1.0% Calcium oxide (CaO), 29.2% Magnesium oxide (MgO), 0.1% Sodium oxide (Na2O), 0.1% Potassium oxide (K2O), 2.2% water of crystallization

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Haz-Map, (2021). Haz-Map: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7607106

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported Notes: Chrysotile; Amosite; Crocidolite; Anthophylite; Tremolite; Actinolite; CAS Numbers: 1332-21-4; 12001-28-4; 12172-73-5; 77536-66-4; 77536-67-5; 77536-68-6; 132207-32-0
Results Value	solid
Results Details	Chrysotile is a curly fiber in intertwined bundles; Amphiboles are straight and needle-like in shape

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Medium	Data are reported for the subject chemical substance; however multiple CAS for various forms are reported.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cites: 'Sullivan p. 1215'

Study Citation:	Haz-Map, (2021). Haz-Map: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7607106

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported Notes: Chrysotile; Amosite; Crocidolite; Anthophylite; Tremolite; Actinolite; CAS Numbers: 1332-21-4; 12001-28-4; 12172-73-5; 77536-66-4; 77536-67-5; 77536-68-6; 132207-32-0
Results Value	solid
Results Details	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite) fibrous, odorless solids

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Medium	Data are reported for the subject chemical substance; however multiple CAS for various forms are reported.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: Cites: NIOSH

Study Citation:	Haz-Map, (2021). Haz-Map: Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7607107

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	Gray, white, brown-gray, or green solid

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Value reported under HERO ID for Primary source: IARC 2012 HERO ID 3970851

Study Citation:	Haz-Map, (2021). Haz-Map: Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7607107

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Results Value	solid
Results Details	White or gray fibrous solid

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown secondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Cites: SPI MSDS

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	lavender, blue green
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	Curled sheet silicate, hollow central core
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	white, grey, green, yellowish
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	brown, grey, greenish
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	double chain silicate; long, straight, coarse fibers
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	double chain silicate; short, very brittle fibers
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; actinolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	double chain silicate; brittle fibers
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	grey, white, brown-grey, green
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; actinolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	green
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; tremolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	white to pale green
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; tremolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	double chain silicate; brittle fibers
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	double chain silicate
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	White or greenish fibrous, odorless solid.
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: OSHA Occupational Chemical DB (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite) fibrous, odorless solids.
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: N/OSH-PocketGuide, OSHA Occupational Chemical DB (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Curled sheet silicate, spiraled as helix around central capillary; fibrous member of serpentine mineral group possessing rolled trioctahedral clay structure.
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization,International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at:http://monographs.iarc.fr/ENG/Classification/index.php , p. V14 12 (1977) (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	White, grey, green or yellowish fibrous solid.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: ILO-ICSC (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Crystal system: monoclinic (pseudoorthorhombic); usually white to grayish green; may have tan coloration.
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present., p. V3 (1992) 671 (not a primary source)

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860486

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NA
Results Value	solid
Results Details	lavender, blue or greenish, fibrous solid

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: Citing ILO-ICSC.

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860486

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NA
Results Value	solid
Results Details	blue fibrous, odorless solid

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Citing OSHA Occupational Chemical DB.

Study Citation:	(2016). Agent name: Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3860489

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NR
Results Value	Gray, white, brown-gray, or green solid; White or gray fibrous solid
Results Details	Fibrous mineral

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: IARC and SPI MSDS

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; actinolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; solid; NR Notes: common contaminant in amosite deposits
Results Value	brittle fibers
Results Details	pale to dark green

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1977, IPCS 1986

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; solid; NR Notes: common contaminant in chrysotile and talc deposits
Results Value	brittle fibers
Results Details	white to gray

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1977, IPCS 1986

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR
Results Value	solid fibers, long, straight, coarse, somewhat flexible
Results Details	ash gray, greenish, or brown

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1973, 1977, IPCS 1986

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; occurs naturally; solid; NR Notes: composition: $Mg_3Si_2O_5(OH)_4$
Results Value	solid; curled sheet silicate, which wraps around itself forming hollow tubular fibers
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1973, 1977, IPCS 1986

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; solid; NR Notes: occasionally occurs as a contaminant in talc deposits
Results Value	solid fibers, short, very brittle
Results Details	grayish white, brown-gray, or green

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1973, 1977, IPCS 1986

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3982328

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR
Results Value	shorter, thinner fibers compared to other amphiboles; not as thin as chrysotile
Results Details	lavender or blue; good flexibility and fair spinnability

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1973, 1977, IPCS 1986

Study Citation:	NIOSH, (2007). NIOSH pocket guide to chemical hazards.
OECD Harmonized Template:	Physical Form or State
HERO ID:	192177

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NR
Results Value	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite); fibrous, odorless solids
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2016). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3974865

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Fibrous, odorless solids. White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite).
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: None cited.

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3978149

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NR
Results Value	White, grey, green or yellowish fibrous solid
Results Details	None

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Crocidolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3978150

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: riebeckite
Results Value	Reported as Fibres
Results Details	Blue asbestos

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2019). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Physical Form or State
HERO ID:	9109830

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Hydrated mineral silicates
Results Value	solid
Results Details	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite) fibrous, odorless solids.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are for the subject chemical substance.
	Metric 2:	Appropriateness	High	Data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Primary reference not reported in this secondary source.

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-8; Libby amphibole
Confidentiality, Type, and Guideline	none; Experimental; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Surface area (m2/g): 1.1-7.4
Results Details	Elongated mineral particle surface area by transmission electron microscopy (m2/g): 1.1-2.6; Total surface area by gas adsorption (m2/g): 5.3-7.4

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with subject chemical structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained using accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The data are from a publicly available secondary source with reference to the original sources.
	Metric 6:	Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination High

* Related References: Duncan, KE; Cook, PM; Gavett, SH; Dailey, LA; Mahoney, RK; Ghio, AJ; Roggli, VL; Devlin, RB. (2014). In vitro determinants of asbestos fiber toxicity: effect on the relative toxicity of Libby amphibole in primary human airway epithelial cells. Part Fibre Toxicol 11. http://dx.doi.org/10.1186/1743-8977-11-2

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-8; Libby amphibole
Confidentiality, Type, and Guideline	none; Experimental; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Essential composition: Winchite (84%), richterite (11%), and tremolite (6%).
Results Details	Mineral composition of individual fiber structures was determined using EDS and electron probe microanalysis.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	The metric is not applicable to the study type.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained using accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The data are from a publicly available secondary source with reference to the original sources.
	Metric 6:	Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination High

* Related References: Meeker, GP; Bern, AM; Brownfield, IK; Lowers, HA; Sutley, SJ; Hoefen, TM; Vance, JS. (2003). The composition and morphology of amphiboles from the Rainy Creek Complex, near Libby, Montana. Am Mineral 88: 1955-1969.

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; actinolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Straight to curved fibers and bundles.
Results Details	Colorless to pale green.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Straight to curved fibers and bundles.
Results Details	Colorless to pale green.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-76-7; richterite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Straight to curved fibers and bundles.
Results Details	Colorless, pale yellow, brown, pale to dark green, or violet.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Deer and Zussman (1997) Rock Forming Minerals Volume 2B: Double Chain Silicates, 2nd Edition. The Geological Society, London. HERO ID 2079162

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12425-92-2; winchite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Straight to curved fibers and bundles.
Results Details	Colorless to pale blue.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Color: usually white to grayish green; may have tan coloration
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation given.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Color: Cobalt blue to lavender blue
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation given.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Color: Yellowish gray to dark brown
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation given.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Color: Gray-white, green, yellow, blue
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation given.

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	vitreous to pearly luster; coarse but somewhat pliable texture
Results Details	yellowish gray to dark brown

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	silky to dull luster; soft to harsh texture
Results Details	cobalt blue to lavender blue

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	silky luster; generally harsh texture
Results Details	gray-white, green, yellow, blue

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	silky luster; silky, soft to harsh texture
Results Details	white to grayish green; may have tan coloration

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Physical Form or State
HERO ID:	6860096

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; not specified; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Results Value	Fiber
Results Details	Edge color of fiber white, amaranth/orange/yellow, purple, blue/blue-green, white

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924810

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	5 values in Reaxys - crystal phase: Fibers (3), needles (1) Octahedrons (1)
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Thermochimica Acta 1984; Gmelin Handbuch der Anorganischen Chemie vol. Cr: MVol.A1, 3.5.3; Fortschritte der Mineralogie 1934; Ipatieff et al. Bulletin de la Societe Chimique de France 1927; Journal of Alloys and Compounds 2008

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924810

EXTRACTION

Parameter	Data
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	3 values reported in Reaxys - Crystal system: monoclinic, rhombic, and hexagonal
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Gmelin Handbuch der Anorganischen Chemie; vol. Mg: MVol.A1; 2.8, page 102 - 110; Wang, Xun; Zhuang, Jing; Chen, Jun; Zhou, Kebin; Li, Yadong; Angewandte Chemie - International Edition;vol. 43; nb. 15; (2004); p. 2017 - 2020

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924812

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	2 values reported in Reaxys - Crystal phase: needles, prisms
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Walitzi, E. M.; Walter, F.; Ettinger, K.; Zeitschrift fur Kristallographie; ; vol. 188; (1989); p. 237 - 244

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924812

EXTRACTION

Parameter	Data
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	1 value reported in Reaxys - Crystal system: rhombic
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Gmelin Handbuch der Anorganischen Chemie; vol. Al: MVol.A1; 23, page 65 - 67Warren, B. E.; Modell, D. I., Zeitschrift fur Kristallographie und Mineralogie, 1930, vol. 75, p. 161 - 161

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Tremolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924814

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	1 values reported in Reaxys - Crystal phase: fibers. Collected using the search term 'tremolite' in Reaxys.
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Bhattacherjee, S.; Paul, A.; Journal of Materials Science; ; vol. 27; (1992); p. 704 - 710

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Tremolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924814

EXTRACTION

Parameter	Data
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	1 values reported in Reaxys - Crystal system: Monoclinic. Collected using the search term 'tremolite' in Reaxys.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Bhattacherjee, S.; Paul, A.; Journal of Materials Science; ; vol. 27; (1992); p. 704 - 710

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Actinolite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924815

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	1 value reported in Reaxys - Crystal system: monoclinic
Results Details	Collected using the search term 'actinolite' in Reaxys.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: Gmelin Handbuch der Anorganischen Chemie; vol. Al: MVol.A1; 23, page 65 - 67

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	Chrystal system: monoclinic (pseudoorthorhombic)
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	Curled sheet silicate, helix spiralled around a capillary. Fibrous with trioctahedral clay structure.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V14: 12 (1977)

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: weak, undergoes fairly rapid attack; Resistance to bases: very good; wt. % loss after 2 hr reflux with 25% acid or base: 55.69% (HCl), 23.42% (CH3COOH), 55.18% (H3PO4), 55.75% (H2SO4), 0.99% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 56.00% (HCl), 24.02% (CH3COOH), 56.45% (H3PO4), 56.00% (H2SO4), 1.03% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: fair to good

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: good

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: fair; Resistance to bases: good; wt. % loss after 2 hr reflux with 25% acid or base: 4.38% (HCl), 0.91% (CH3COOH), 4.37% (H3PO4), 3.69% (H2SO4), 1.35% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 3.14% (HCl), 1.02% (CH3COOH), 3.91% (H3PO4), 3.48% (H2SO4), 1.20% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: fair, slowly attacked; Resistance to bases: good; wt. % loss after 2 hr reflux with 25% acid or base: 12.84% (HCl), 2.63% (CH3COOH), 11.67% (H3PO4), 11.35% (H2SO4), 6.97% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 12.00% (HCl), 3.08% (CH3COOH), 11.83% (H3PO4), 11.71% (H2SO4), 6.82% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: generally harsh, sometimes soft

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: Gray-white, greenish, yellowish, blueish

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: Grayish white, brown-gray or green

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: Greenish

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: harsh

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: harsh

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: generally poor, some are spinnable

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: poor

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: poor

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: generally brittle, sometimes flexible

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: very brittle, non-flexible

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: brittle and non-flexible

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: fair; Resistance to bases: good; wt. % loss after 2 hr reflux with 25% acid or base: 4.77% (HCl), 1.99% (CH3COOH), 4.99% (H3PO4), 4.58% (H2SO4), 1.80% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 4.22% (HCl), 1.41% (CH3COOH), 4.89% (H3PO4), 4.74% (H2SO4), 1.65% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: fair; Resistance to bases: very good; wt. % loss after 2 hr reflux with 25% acid or base: 2.66% (HCl), 0.60% (CH3COOH), 3.16% (H3PO4), 2.73% (H2SO4), 1.22% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 2.13% (HCl), 1.04% (CH3COOH), 3.29% (H3PO4), 2.90% (H2SO4), 1.77% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Resistance to acids: fair; Resistance to bases: fair; wt. % loss after 2 hr reflux with 25% acid or base: 20.31% (HCl), 12.28% (CH3COOH), 20.19% (H3PO4), 20.38% (H2SO4), 9.25% (NaOH); wt. % loss after 528 hr 26 deg C exposure to 25% acid or base: 22.55% (HCl), 12.14% (CH3COOH), 20.10% (H3PO4), 20.60% (H2SO4), 9.43% (NaOH)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: White, gray, green, yellowish

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: Ash gray, greenish, or brown

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: Lavender, blue, greenish

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: silky, soft to harsh

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: coarse, but somewhat pliable

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Texture: soft to harsh

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: fair

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: very good

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: fair

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Flexibility: high

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924810

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	6 values were reported in Reaxys - Color: Green (1), white (3), yellowish green (1), yellowish white (1).

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Devečerski et al.; Journal of Alloys and Compounds; vol. 464; nb. 1-2; (2008); p. 270 – 276; Zhu et al.; Inorganic Chemistry; vol. 51; nb. 11; (2012); p. 6020 – 6031; Hall, A. L.; South Africa geol. Surv. Mem. Nr. 12 {1930} 28

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Anthophyllite.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924812

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	3 values reported in Reaxys - Color: Light brown, pale green, and white.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Gmelin Handbuch der Anorganischen Chemie; vol. Al: MVol.A1; 23, page 65 – 67; Walitzi, E. M.; Walter, F.; Ettinger, K.; Zeitschrift fur Kristallographie; ; vol. 188; (1989); p. 237 - 244

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Color: White, gray, green, or brown.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: HEROID: 8001410

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Spinnability: Possible with longer fibers (serpentine asbestos); brittle and cannot be spun (amphibole asbestos)

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: HEROID: 8001410

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Composition: magnesium silicate (serpentine); magnesium, iron, calcium, and sodium silicates (amphibole)

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: HEROID: 8001410

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Composition: magnesium and iron silicates.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: HEROID: 8001216

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	Data
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Mohs hardness: 5 to 6

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: HEROID: 8001314

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Color: white to light-green

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: HEROID: 8001314

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Luster: vitreous to silky

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: HEROID: 8001314

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Physical Form or State
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Color: greenish

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: HEROID: 8001001

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Color: usually white to grayish green, may have tan coloring

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Unit fiber average diameter: 0.025 µm. Fiber aggregate diameters: 0.1 - 100 um. Length: fraction of a millimeter - several centimeters, but most < 1 cm

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Composition: Silica sheet (Si_2O_5), with a layer of brucite ($Mg(OH)_2$) with every 3 hydroxyls replaced by oxygens.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984., p. V3: 269 (1978)

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Individual fiber diameter: 0.02 - 0.03 µm

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984., p. V3: 269 (1978)

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Average fiber outer diameter: 200 A

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: National Research Council. Drinking Water & Health Volume 1. Washington, DC: National Academy Press, 1977., p. 150

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Luster: silky

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Hardness (Mohs): 2.5 - 4.0

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Optical properties: biaxial positive parallel extinction

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Flexibility: high

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Texture: silky, soft to harsh

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Physical Form or State
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details	Tensile strength: 1100 - 4400 Mpa

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	Sucik, G., Szaboova, A., Popovic, L., Hrsak, D. (2016). The relationship between thermal treatment of serpentine and its reactivity. Materiali in Tehnologije 50(1):55-58.
OECD Harmonized Template:	Physical Form or State
HERO ID:	3581598

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details	Surface area: 16.2 m^2/g at 600°C to 45.2 m^2/g at 700°C and back down to 2 m^2/g at 1100°C calcination temperature.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Data measured for a structural analogue of the subject chemical substance are consistent with what is expected for the subject chemical substance structural properties, features or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	Analytic method is non-standard but is expected to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Melting Point
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Melting Point	600 - 900 °C
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Melting Point
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Melting Point	800 - 850 °C
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Melting Point
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Melting Point	800 - °C
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Melting Point
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Melting Point	1040 - °C
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Melting Point
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Melting Point	950 - °C
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	California Office of Environmental Health Hazard Assessment (OEHHA) (2011). Appendix B: Chemical-specific summaries of the information used to derive unit risk and cancer potency values.
OECD Harmonized Template:	Melting Point
HERO ID:	5155632

EXTRACTION

Parameter	**Data**
Melting Point	600 °C
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	none; not specified; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: decomposes at 600ºC
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

⋆ Related References: Citing National Institute for Occupational Safety and Health (NIOSH) 1994, HERO ID 2328101.

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos.
OECD Harmonized Template:	Melting Point
HERO ID:	3981007

EXTRACTION

Parameter	**Data**
Melting Point	1112 F
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: NIOSH, 2016 cited but no other details available

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos (blue).
OECD Harmonized Template:	Melting Point
HERO ID:	3981008

EXTRACTION

Parameter	**Data**
Melting Point	1112 - F
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not reported
Standard Deviation Results	Not reported
Results Details	Decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: NIOSH, 2016 cited but no other details available

Study Citation:	Candela, P. A., Crummett, C. D., Earnest, D. J., Frank, M. R., Wylie, A. G. (2007). Low-pressure decomposition of chrysotile as a function of time and temperature. American Mineralogist 92(10):1704-1713.
OECD Harmonized Template:	Melting Point
HERO ID:	3582618

EXTRACTION

Parameter	Data
Melting Point	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Thetford, Quebec, Canada; Jeffrey Mine, Asbestos, Quebec, Canada; New Idria, California; Jeffrey Mine, Asbestos, Quebec, Canada; Solid; NR; 96%; 96%; NR Notes: 4 different samples used.
Results Details Methods	Performed in Lindberg box-type quench furnace.
Standard Deviation Results	Not Reported
Results Details	Destruction of chrysotile began at 400°C after 4 hours, with recrystallization observed between 450 and 550°C. Complete destruction was observed at 600°C after 4 hours or at 500°C for 30 days. Complete destruction was not observed after heating to 475°C for 30 days. Above 800°C, destruction occurs within minutes.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	EC, (2012). Practical guidelines for the information and training of workers involved with asbestos removal or maintenance work.
OECD Harmonized Template:	Melting Point
HERO ID:	3981018

EXTRACTION

Parameter	**Data**
Melting Point	> 1200 - °C
CASRN and Test Material	1332-21-4; asbestos
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	ECHA, (2021). ECHA scientific report for evaluation of limit values for asbestos at the workplace.
OECD Harmonized Template:	Melting Point
HERO ID:	9109807

EXTRACTION

Parameter	**Data**
Melting Point	800 - 850 °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; NR; NR Notes: white asbestos
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Adapted from IARC 2012 (HERO ID 3970851) and DECOS 2010. Asbestos: Risks of environmental and occupational exposure., The Hague: Health Council of the Netherlands; publication no. 2010/10E (Not in HERO at time of extraction).

Study Citation:	ECHA, (2021). ECHA scientific report for evaluation of limit values for asbestos at the workplace.
OECD Harmonized Template:	Melting Point
HERO ID:	9109807

EXTRACTION

Parameter	**Data**
Melting Point	600 - 900 °C
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; NR; NR Notes: brown asbestos
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Adapted from IARC 2012 (HERO ID 3970851) and DECOS 2010. Asbestos: Risks of environmental and occupational exposure., The Hague: Health Council of the Netherlands; publication no. 2010/10E (Not in HERO at time of extraction).

Study Citation:	ECHA, (2021). ECHA scientific report for evaluation of limit values for asbestos at the workplace.
OECD Harmonized Template:	Melting Point
HERO ID:	9109807

EXTRACTION

Parameter	**Data**
Melting Point	800 - °C
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Not Reported; NR; NR Notes: blue asbestos
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Adapted from IARC 2012 (HERO ID 3970851) and DECOS 2010. Asbestos: Risks of environmental and occupational exposure., The Hague: Health Council of the Netherlands; publication no. 2010/10E (Not in HERO at time of extraction).

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Anthophyllite.
OECD Harmonized Template:	Melting Point
HERO ID:	7924812

EXTRACTION

Parameter	**Data**
Melting Point	1150 - 1340 °C
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	1 range reported in Reaxys.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: Sources cited: Brun, A.; Archives des Sciences Physiques et Naturelles; vol. 13; (1902); p. 363, View in Reaxys; Doelter, C.;Tschermaks Mineralogische und Petrographische Mitteilungen; vol. 22; (1903); p. 311, View in Reaxys; Doelter, C.;Handbuch der Mineralchemie. Th. Steinkopf, Dresden-Leipzig. 1911 Bd.2, Tl.1, S.348,354, View in Reaxys; GmelinHandbuch der Anorganischen Chemie; vol. Fe: MVol.B5; 1.8.4, page 1066 - 1069 ; (from Gmelin), View in Reaxys

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Actinolite.
OECD Harmonized Template:	Melting Point
HERO ID:	7924815

EXTRACTION

Parameter	**Data**
Melting Point	1140 - 1296 °C
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	1 range reported in Reaxys. Collected using the search term 'actinolite' in Reaxys.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: Cusack, R.; ; vol. 4; (1897); p. 399

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Richterite.
OECD Harmonized Template:	Melting Point
HERO ID:	7924816

EXTRACTION

Parameter	**Data**
Melting Point	1065 °C
CASRN and Test Material	17068-76-7; Richterite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	With decomposition. 1 value reported in Reaxys.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

⋆ Related References: Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy; vol. 22; (1986); p. 1500 - 1505

Study Citation:	Fujishige, M., Sato, R., Kuribara, A., Karasawa, I., Kojima, A. (2006). CaCl2 addition effect and melt formation in low-temperature decomposition of chrysotile with CaCO3. Ceramic Society of Japan. Journal 114(1334):844-848.
OECD Harmonized Template:	Melting Point
HERO ID:	3581958

EXTRACTION

Parameter	Data
Melting Point	> 700 - 1000 °C
CASRN and Test Material	12001-29-5; Chyrsotile
Confidentiality, Type, and Guideline	None; experimental; None
Solvent, Reactivity, Storage, and Stability	NR; Yes; NR; decomposition to forsterite and amorphous SiO2 at 800°C
Radiolabel, Source, State, and Purity	NR; Kanto Chemical Co., Inc.; Solid; Reported as 1st grade Notes: 1:6 mixtures of chrysotile (Mg6Si4O10(OH)8) and CaCO3 burned at temperatures of 500 to 1000°C
Results Details Methods	At 700°C and 800°C for 2 hours decomposition to forsterite was observed; at 1000°C larnite was identified; decomposition, to sintered products without the formation of melts, observed at 700°C when trace CaCl2 was present; material heated at temperatures for 2 hours
Standard Deviation Results	not reported
Results Details	Decomposition temperature decreases when asbestos test substance was mixed with CaCO3; addition of CaCl2 further lowers decomposition temperature.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Goncharov, Y. I., Kholodova, N. A., Sergeev, N. E. (1990). Amphibole-based thermal-insulating ceramics. Glass and Ceramics 47(7-8):267-270.
OECD Harmonized Template:	Melting Point
HERO ID:	7473172

EXTRACTION

Parameter	**Data**
Melting Point	> 600 - °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; experimental; High temperature heating and analysis by an x-ray diffraction method
Solvent, Reactivity, Storage, and Stability	NA; yes; NR; decomposition
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: heated with other components as part of ceramic material investigation
Results Details Methods	formation of Na-richterite at 800 deg C
Standard Deviation Results	NR
Results Details	Na-richterite formed by firing process at 500-1150 deg C range with magnesium oxide, quartz sand, sodium fluoride

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Medium	Data are measured or estimated for the subject chemical substance as part of a mixture.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Melting Point
HERO ID:	3970851

EXTRACTION

Parameter	Data
Melting Point	600 - 900 °C
CASRN and Test Material	12127-73-5; amosite
Confidentiality, Type, and Guideline	None; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Details Methods	decomposition temperature
Standard Deviation Results	Not Reported
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Melting Point
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
Melting Point	600 - 850 °C
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Details Methods	decomposition temperature
Standard Deviation Results	Not Reported
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Melting Point
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
Melting Point	400 - 900 °C
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; none
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Details Methods	decomposition temperature
Standard Deviation Results	Not Reported
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Melting Point
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
Melting Point	950 - 1040 °C
CASRN and Test Material	77536-68-6; tremolite
Confidentiality, Type, and Guideline	None; not specified; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Details Methods	decomposition temperature
Standard Deviation Results	Not Reported
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	Jenkins, D. M., Holland, B., T.J., Clare, A. K. (1991). Experimental-determination of the pressure-temperature stability field and thermochemical properties of synthetic tremolite. American Mineralogist 76(3-4):458-469.
OECD Harmonized Template:	Melting Point
HERO ID:	3581993

EXTRACTION

Parameter	Data
Melting Point	= 448 - C (decomposition temperature)
CASRN and Test Material	14567-73-8; synthetic tremolite (calcic amphibole)
Confidentiality, Type, and Guideline	none; experimental/calculation; non-guideline study
Solvent, Reactivity, Storage, and Stability	NA; decomposition; NA; NA
Radiolabel, Source, State, and Purity	NA; prepared by authors in the laboratory; solid; NR
Results Details Methods	Experimental data (piston cylinder presses at 20-30 kbar, uncertainty:±200 bar; chromel-alumel thermocouples, ±5°C) and calculated univariant curves were used to determine decomposition. Analysis of products was conducted using a Norelco X-ray diffractometer with Ni-filtered Cu radiation.
Standard Deviation Results	±50 bars (accuracy in pressure measurements); ±2°C (accuracy of thermocouples)
Results Details	Decomposition temperature at 1 bar = 448°C; decomposition to diopsidic clinopyroxene, enstatic orthopyroxene, beta-quartz, and water at pressures of 1.5-7 bar, and decomposition to diopside and talc at temperatures of 650-760°C were reported. Upper-thermal stability at 7.5 kbar = 918°C; upper-pressure stability at 798°C = 26.8 kbar.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Kusiorowski, R., Zaremba, T., Gerle, A., Piotrowski, J., Simka, W., Adamek, J. (2015). Study on the thermal decomposition of crocidolite asbestos. Journal of Thermal Analysis and Calorimetry 120(3):1585-1595.
OECD Harmonized Template:	Melting Point
HERO ID:	6879492

EXTRACTION

Parameter	Data
Melting Point	>= 400 - <= 920 °C
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; Non-guideline; Decomposition and determination of the temperature range of the crocidolite dehydroxylation process evaluated from 0-1000°C
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; two samples examined: Republic of South Africa and crocidolite asbestos that was separated from a corrugated asbestos–cement (a–c) slate produced from crocidolite asbestos from USSR; solid; characterized as received without any preliminary preparation Notes: Asbestos samples were studied by differential thermal analysis (DTA) and thermogravimetry (TG/DTG). The mineralogical composition of both the natural and heated samples (after DTA study) was evaluated by X-ray diffraction (XRD).
Results Details Methods	thermogravimetric analysis with evolved gas analysis (TG-EGA)
Standard Deviation Results	Not Reported
Results Details	At 400°C weak endothermic effects indicate dehydroxylation, at 650-700°C weak endothermic effects indicate decomposition of impurities likely carbonates, at 800°C strong endothermic effect for cement sample due to calcite decomposition, and at 900-920°C strong endothermic effects for both may indicate physical melting.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Melting Point
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
Melting Point	1112 - F
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposes

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: NIOSH-Pocket Guide (not a primary source); OSHA Occupational Chemical DB (not a primary source); CAMEO Chemicals (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Melting Point
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
Melting Point	800 - 850 °C
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	800-850 deg C. No melting point; decomposes.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: ATSDR; Toxicological Profile for Asbestos. Sept 2001. US Dep of Health and Human Services Agency of Toxic Substances and Disease Registry. Available from, as of Feb 18, 2004: http://www.atsdr.cdc.gov/toxprofiles/tp61.html (not a primary source)

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Melting Point
HERO ID:	3860486

EXTRACTION

Parameter	**Data**
Melting Point	1112 F
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NA
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Citing OSHA Occupational Chemical DB and CAMEO Chemicals.

Study Citation:	NIOSH, (2007). NIOSH pocket guide to chemical hazards.
OECD Harmonized Template:	Melting Point
HERO ID:	192177

EXTRACTION

Parameter	**Data**
Melting Point	1112 - F
CASRN and Test Material	1332-21-4; chrysotile, crocidolite, or amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	decomposes at 1112°F

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a recognized, peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	NIOSH, (2016). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Melting Point
HERO ID:	3974865

EXTRACTION

Parameter	**Data**
Melting Point	1112 F
CASRN and Test Material	1332-21-4; asbestos
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; Solid; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Chrysotile.
OECD Harmonized Template:	Melting Point
HERO ID:	3978149

EXTRACTION

Parameter	**Data**
Melting Point	1000 °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	NR
Results Details	Heat resistant up to 500°C; completely decomposed at 1000°C

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Crocidolite.
OECD Harmonized Template:	Melting Point
HERO ID:	3978150

EXTRACTION

Parameter	**Data**
Melting Point	1200 °C
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: riebeckite
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposes below 1200 deg C

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2019). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Melting Point
HERO ID:	9109830

EXTRACTION

Parameter	**Data**
Melting Point	= 1112 F
CASRN and Test Material	1332-21-4; Actinolite, Actinolite asbestos, Amosite (cummingtonite-grunerite), Anthophyllite, Anthophyllite asbestos, Chrysotile,Crocidolite (Riebeckite), Tremolite, Tremolite asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Hydrated mineral silicates
Results Details Methods	not specified
Standard Deviation Results	not specified
Results Details	decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Primary reference not reported in this secondary source.

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Melting Point
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
Melting Point	800 - 850 °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	Medium	The analytic method is unknown but is expected to be appropriate based on the study's inclusion in a peer-reviewed database.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	OSHA, (2019). Asbestos, all forms.
OECD Harmonized Template:	Melting Point
HERO ID:	7607109

EXTRACTION

Parameter	Data
Melting Point	550 (1022) - 750 (1382) C (F)
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	not reported
Standard Deviation Results	not reported
Results Details	dehydroxylates at 550-750°C (1022-1382°F)

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Low	Data are measured or estimated for the subject chemical substance; specific form not specified and data is a range corresponding to several CASRN.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Primary source not specified

Study Citation:	Poniatowska, A., Andrzejewska-Górecka, D., Macherzyński, B., Kisiel, M. (2019). Thermal decomposition of asbestos fiber from asbestos cement wastes. Rocznik Ochrona Środowiska 21(2):855-867.
OECD Harmonized Template:	Melting Point
HERO ID:	6878583

EXTRACTION

Parameter	Data
Melting Point	Not Reported
CASRN and Test Material	12001-29-5; asbestos cement waste
Confidentiality, Type, and Guideline	None; Experimental; None; thermal analysis using a balance, furnace and scanning electron microscope with Energy Dispersive Spectrometry probe and x-ray diffractometer
Solvent, Reactivity, Storage, and Stability	NA; NA; NA; NA
Radiolabel, Source, State, and Purity	NA; waste from unknown location; solid; NA Notes: NA
Results Details Methods	Thermal decomposition of cement asbestos slates occurs at 1400-1500 deg C for 120 minutes
Standard Deviation Results	NR
Results Details	At 480-520°C dehydroxylation processes of chrysotile, hydrated silicates and aluminosilicates of calcium is observed during thermal analysis; at approximately 820°C final dehydroxylation phases of the components of cement slurry and chrysotile samples is observed; at 1250°C for 120 minutes trace amounts of chrysotile remain; at 1400°C there were no traces of chrysotile based on X-ray diffraction patterns.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Melting Point
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Melting Point	550 - 750 °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition by dehydroxylation of the brucite layer begins at 550 deg C and is completed by 750 deg C with 13% total weight loss. At 800-850 deg C the resulting magnesium silicate recrystallizes to forsterite and silica.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cites C. Jolicoeur and D. Duchesne, Can. J. Chem. 59(10), 1521 (1981). HEROID 6868399

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Melting Point
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Melting Point	950 - 1040 °C
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Residual products: Ca, Mg, and Fe pyroxenes, silica

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Melting Point
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Melting Point	400 - 900 °C
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Residual products: Na and Fe pyroxenes, hematite, silica

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Melting Point
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Melting Point	600 - 900 °C
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Residual products: Fe and Mg pyroxenes, magnetite, hematite, silica

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citation reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Melting Point
HERO ID:	3975020

EXTRACTION

Parameter	Data
Melting Point	400 - 600 °C
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition by dehydroxylation resulting to weight loss of approximately 2%. Decomposition products are pyroxenes, magnetite, hematite, and silica.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: No citation reported.

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Melting Point
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
Melting Point	400 - 900 °C
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Melting Point
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
Melting Point	600 - 850 °C
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Melting Point
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
Melting Point	950 - 1040 °C
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: CAS reported in paper 14567-73-8; based on details reported in document this appear to be for the asbestiform variety
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Melting Point
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
Melting Point	600 - 900 °C
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: CAS reported in paper: Amosite [19172-73-5]
Results Details Methods	Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposition

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Melting Point
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Melting Point	400 - 900 °C
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposition temperature = 400-900°C

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Melting Point
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Melting Point	600 - 850 °C
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposition temperature = 600-850°C

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Melting Point
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Melting Point	600 - 900 °C
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposition temperature = 600-900°C

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Melting Point
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Melting Point	950 - 1040 °C
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Details Methods	NR
Standard Deviation Results	NR
Results Details	Decomposition temperature = 900-1040°C

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Yoshikawa, N., Kashimura, K., Hashiguchi, M., Sato, M., Horikoshi, S., Mitani, T., Shinohara, N. (2015). Detoxification mechanism of asbestos materials by microwave treatment. Journal of Hazardous Materials 284(Elsevier):201-206.
OECD Harmonized Template:	Melting Point
HERO ID:	3531606

EXTRACTION

Parameter	Data
Melting Point	Not Reported
CASRN and Test Material	not reported; Mg3Si4O12 (talc) as a quasi-asbestos material was used to obtain an adequate sample for testing
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NR; Solid; NR
Results Details Methods	100 W microwave treatment
Standard Deviation Results	Not Reported
Results Details	Initial asbestos fibers present (49-55 present) decreased to 0 at > 900 deg C. Micro-hot spots in the CaO phase of asbestos reached > 1200 deg C which decomposed the fibers. At > 1000 deg C, tangled fibers unraveled and expanded slightly into the interface between chrysotile fibers and tangled fibers and CaO melted away. Thermal runaway was observed at 720 seconds.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Medium	Data are measured for a structurally similar chemical substance.
	Metric 2:	Appropriateness	Medium	Data measured for a structural analogue of the subject chemical substance are consistent with what is expected for the subject chemical substance structural properties, features or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Boiling Point
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
Boiling Point	Not Reported
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Standard Deviation Results	Not Reported
Results Details	Decomposes

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: NIOSH-Pocket Guide (not a primary source); OSHA Occupational Chemical DB (not a primary source); CAMEO Chemicals (not a primary source)

Study Citation:	NIOSH, (2016). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Boiling Point
HERO ID:	3974865

EXTRACTION

Parameter	**Data**
Boiling Point	not reported
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Standard Deviation Results	Not Reported
Results Details	Decomposes.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: None cited.

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Density
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Density	3.43 unitless
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not specified
Temperature	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Density
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Density	2.9 - 3.2 unitless
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not specified
Temperature	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Density
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Density	2.55 unitless
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not specified
Temperature	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Density
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Density	2.85 - 3.1 unitless
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not specified
Temperature	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Density
HERO ID:	786664

EXTRACTION

Parameter	**Data**
Density	3.37 unitless
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not specified
Temperature	not specified
Standard Deviation Results	not specified
Results Details	not specified

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Density
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
Density	= 3.37 - unit basis not specified
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: blue asbestos; chemical formula Na2O 3FeO Fe2O3 8SiO2 H2O
Density Type	Specific gravity
System	not specified
Temperature	Not reported
Standard Deviation Results	Not reported
Results Details	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Density
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
Density	= 3.45 - unit basis not specified
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: chemical formula 1.5MgO 5.5FeO 8SiO2 H2O
Density Type	Specific gravity
System	not specified
Temperature	Not reported
Standard Deviation Results	Not reported
Results Details	Not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Density
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
Density	= 2.55 - unit basis not specified
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: white asbestos; chemical formula 3MgO 2SiO2 2H2O
Density Type	Specific gravity
System	not specified
Temperature	Not reported
Standard Deviation Results	Not reported
Results Details	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Larranaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Ascorbic acid. :117.
OECD Harmonized Template:	Density
HERO ID:	3982121

EXTRACTION

Parameter	**Data**
Density	2.5 - Not reported
CASRN and Test Material	1332-21-4; asbestos
Confidentiality, Type, and Guideline	None; experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	density
System	NR
Temperature	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Density
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
Density	2.2 - 2.6 g/cm3
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Density Type	density
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	2.2-2.6 g/cm3

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: Source: ILO-ICSC (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Density
HERO ID:	3860485

EXTRACTION

Parameter	Data
Density	2.19 - 2.56 g/cm3
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Density Type	density
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Chrysotile from Arizona, derived from serpentized dolimites reported to be between 2.19 & 2.25 g/mL; chrysotile from Canada approx. 2.56 g/mL. These reported ranges in density have been attributed to mineral impurities and to the presence of magnesium silicate material that ”stuffs” the central capillaries and fibril interstices in the fiber bundle.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization,International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at:http://monographs.iarc.fr/ENG/Classification/index.php , p. V14 21 (1977) (not a primary source)

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Density
HERO ID:	3860486

EXTRACTION

Parameter	**Data**
Density	3.3 - 3.4 not reported
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Density Type	density
System	not reported
Temperature	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Citing ILO-ICSC.

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Chrysotile.
OECD Harmonized Template:	Density
HERO ID:	3978149

EXTRACTION

Parameter	Data
Density	2.2 - 2.6 g/cm3
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	density
System	Not reported
Temperature	NR
Standard Deviation Results	NR
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytic method is unknown but is expected to be appropriate based on the study's inclusion in a peer-reviewed database.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2014). International chemical safety cards (ICDC): Crocidolite.
OECD Harmonized Template:	Density
HERO ID:	3978150

EXTRACTION

Parameter	**Data**
Density	3.3 - 3.4 (water =1)
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: riebeckite
Density Type	Relative density
System	Not reported
Temperature	Not Reported
Standard Deviation Results	NR
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Density
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Density	2.9 - 3.2
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	Not Reported; Not Reported; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Density Type	specific gravity
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	specific gravity

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Density
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Density	3.1 - 3.25
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	Not Reported; Not Reported; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Density Type	specific gravity
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	specific gravity

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Density
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Density	3.2 - 3.3
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	Not Reported; Not Reported; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Density Type	specific gravity
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	specific gravity

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Density
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Density	2.4 - 2.6
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	Not Reported; Not Reported; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Density Type	specific gravity
System	Not Reported
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	specific gravity

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Density
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Density	2.9 - 3.2
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not reported
Temperature	not reported
Standard Deviation Results	not reported
Results Details	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Density
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Density	3.2 - 3.3
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not reported
Temperature	not reported
Standard Deviation Results	not reported
Results Details	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Density
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Density	2.4 - 2.6
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not reported
Temperature	not reported
Standard Deviation Results	not reported
Results Details	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Density
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Density	3.1 - 3.25
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Density Type	specific gravity
System	not reported
Temperature	not reported
Standard Deviation Results	not reported
Results Details	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Density
HERO ID:	7924810

EXTRACTION

Parameter	Data
Density	2.219 - 2.68 g/cm3
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Crystallographic density; 3 values were reported in Reaxys, in the range of 2.219 - 2.68.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Graham, R. P. D.; Economic Geology; vol. 12; (1917); p. 188; Dana, E. S.; A System of Mineralogy, 6.Ed., New York-London p. 671.

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Anthophyllite.
OECD Harmonized Template:	Density
HERO ID:	7924812

EXTRACTION

Parameter	Data
Density	3.09 g/cm3
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Crystallographic density. 1 value reported in Reaxys.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Walitzi, E. M.; Walter, F.; Ettinger, K., Zeitschrift fur Kristallographie, 1989, vol. 188, p. 237 - 244.

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Actinolite.
OECD Harmonized Template:	Density
HERO ID:	7924815

EXTRACTION

Parameter	**Data**
Density	2.9 - 3.1 g/cm3
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Crystallographic. 1 range reported in Reaxys. Collected using the search term 'actinolite' in Reaxys.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Handbuch der Mineralchemie. Th. Steinkopff, Dresden-Leipzig, Vol. 2, part 1, p. 510

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Density
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
Density	3.0 - 3.3 units not given, assumed to be g/cm3
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not reported
Results Details	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: HEROID: 8001314

Study Citation:	Larrañaga, M. D., Lewis, R. J., Lewis, R. A. (2016). Hawley's condensed chemical dictionary. :57, 58, 1232.
OECD Harmonized Template:	Density
HERO ID:	5333260

EXTRACTION

Parameter	**Data**
Density	2.5 units not given, assumed to be g/cm3
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
Standard Deviation Results	Not reported
Results Details	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: HEROID: 8001410

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Density
HERO ID:	7924733

EXTRACTION

Parameter	**Data**
Density	2.4 - 2.6 units not given, assumed to be g/cm3
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Specific gravity

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Density
HERO ID:	7924733

EXTRACTION

Parameter	Data
Density	2.19 - 2.56 g/mL
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not Reported
Results Details	Arizona chystolies (derived from serpentized dolimites): 2.19 - 2.25 g/mLCanada chrystolite: 2.56 g/mLDensity ranges attibuted to mineral impurities or presence of magnesium silicate.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	Medium	The analytic method is unknown but is expected to be appropriate based on the study's inclusion in a peer-reviewed database.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

* Related References: IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency forResearch on Cancer, 1972-PRESENT. (Multivolume work). p. V14: 12 (1977)

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Density
HERO ID:	6880237

EXTRACTION

Parameter	**Data**
Density	3.015 - 3.149 units not given, assumed to be g/cm3
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Other
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not reported
Results Details	Specific gravity 3.015-3.149; measured using hydrostatically; 8 samples containing 65 to >98% actinolite

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a recognized, peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Density
HERO ID:	6880237

EXTRACTION

Parameter	**Data**
Density	3.161 - 3.405 units not given, assumed to be g/cm3
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Other
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not Reported
Standard Deviation Results	Not reported
Results Details	Specific gravity 3.161-3.405; measured hydrostatically; 4 samples containing 60-99% ferro-actinolite

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Low	Units not reported but expected to be g/cm3.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a recognized, peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally >10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR Notes: riebeckite
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally >10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; cummingtonite-grunerite
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR Notes: amosite
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally >10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally <10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally <10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Particle Size
HERO ID:	1009583

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	13768-00-8; actinolite
Confidentiality, Type, and Guideline	None; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; Not Reported; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	aspect ratio generally <10:1
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Particle Size
HERO ID:	785518

EXTRACTION

Parameter	**Data**
Aerodynamic Value	NR - NR
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; Experimental; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; other; other; Not Reported
Geometric Standard Deviation	NR - NR NR
Mean	NR - NR
Standard Deviation Mean	NR
Remarks	6.7% of fibers exceeded a 0.61 μm width. Fifty-three percent of all fibers were$<$ 1.0 μmin length while 6% exceeded 5 μm in length
Page Number	Not Reported
Passage	NR - NR
Mean Size Passage	Not Reported
Distribution	NR - NR
Additional Passage Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are reported for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Particle Size
HERO ID:	785518

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**Medium**	

* Related References: Primary source not available at time of extraction: Langer, A. M., and Nolan, R. P:. Letter to the R. T. Vanderbilt Company, Inc., (March 12, 1990).

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Particle Size
HERO ID:	785518

EXTRACTION

Parameter	Data
Aerodynamic Value	NR - NR
CASRN and Test Material	77536-68-6; winchite
Confidentiality, Type, and Guideline	none; Experimental; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; other; other; Not Reported
Geometric Standard Deviation	NR - NR NR
Mean	NR - NR
Standard Deviation Mean	NR
Remarks	Range of diameters: 0.1-0.2 µm, length: 1-70 µm (62%>5µm), aspect ratio: 3:1-100:1; fibers >0.45 μm in width and >5 μm in length, collected on air filters, 96% had aspect ratios >10:1, 67% had 20:1 or greater aspect ratios and 10% were 50:1 or greater
Page Number	Not Reported
Passage	NR - NR
Mean Size Passage	Not Reported
Distribution	NR - NR
Additional Passage Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are reported for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Primary HERO ID 29964 - McDonald, J.C., McDonald, A. D., Armstrong, B., and Sebastien, P.: Cohort Study of Mortality ofVermiculite Miners Exposed to Tremolite. British Journal of Industrial Medicine, 43: 436-444, (1986).

Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Particle Size
HERO ID:	3084215

EXTRACTION

Parameter	**Data**
Aerodynamic Value	<1.2 μm
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	None; Experimental; Scanning electron microscope (SEM)
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	diameter range = <0.10 to 1.2 μm (reported in citation HERO ID 3615279)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Particle Size
HERO ID:	3084215

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

* Related References: HERO ID 3615279 "Physical and chemical characteristics of UICC reference samples"

Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Particle Size
HERO ID:	3084215

EXTRACTION

Parameter	**Data**
Aerodynamic Value	<1.0 μm
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Scanning electron microscope (SEM)
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	diameter range = <0.10 to 1.00 μm (reported in citation HERO ID 3615279)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: HERO ID 3615279 "Physical and chemical characteristics of UICC reference samples"

Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Particle Size
HERO ID:	3084215

EXTRACTION

Parameter	**Data**
Aerodynamic Value	$<0.8\ \mu$m
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Scanning electron microscope (SEM)
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Chrysotiles A and B
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	diameter range = <0.10 to 0.80 μm (reported in citation HERO ID 3615279)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: HERO ID 3615279 "Physical and chemical characteristics of UICC reference samples"

Study Citation:	Bouffant, Le, L. (1980). Physics and chemistry of asbestos dust. IARC Scientific Publication No. 30 (30):15-33.
OECD Harmonized Template:	Particle Size
HERO ID:	3084215

EXTRACTION

Parameter	**Data**
Aerodynamic Value	$<1.4\ \mu$m
CASRN and Test Material	77536-87-5; anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Scanning electron microscope (SEM)
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	diameter range = $<$0.10 to 1.4 μm (reported in citation HERO ID 3615279)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: HERO ID 3615279 "Physical and chemical characteristics of UICC reference samples"

Study Citation:	Burdett, G. J., Rood, A. P. (1983). Membrane-filter, direct-transfer technique for the analysis of asbestos fibers or other inorganic particles by transmission electron microscopy. Environmental Science & Technology 17(11):643-648.
OECD Harmonized Template:	Particle Size
HERO ID:	55

EXTRACTION

Parameter	Data
Aerodynamic Value	0.04 um - 0.06 um
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Membrane filter with TEM quantification
Solvent, Reactivity, Storage, and Stability	airborne samples collected on a membrane filter were prepared using DMF, glacial acetic acid and water; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; airborne samples; solid; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	NR - NR
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean fiber size = 0.04 and 0.06 um width and 1.07 and 1.17 um length from filtered suspensions of ultrasonically treated UICC chrysotile and airborne samples from factories, respectively
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Burdett, G. J., Rood, A. P. (1983). Membrane-filter, direct-transfer technique for the analysis of asbestos fibers or other inorganic particles by transmission electron microscopy. Environmental Science & Technology 17(11):643-648.
OECD Harmonized Template:	Particle Size
HERO ID:	55

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Burdett, G. J., Rood, A. P. (1983). Membrane-filter, direct-transfer technique for the analysis of asbestos fibers or other inorganic particles by transmission electron microscopy. Environmental Science & Technology 17(11):643-648.
OECD Harmonized Template:	Particle Size
HERO ID:	55

EXTRACTION

Parameter	Data
Aerodynamic Value	0.24 um -
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Membrane filter with TEM quantification
Solvent, Reactivity, Storage, and Stability	airborne samples collected on a membrane filter were prepared using DMF, glacial acetic acid and water; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; airborne samples; solid; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	NR - NR
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean fiber size = 0.24 um width and 3.00 um length from filtered suspensions of ultrasonically treated UICC amosite
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Candela, P. A., Crummett, C. D., Earnest, D. J., Frank, M. R., Wylie, A. G. (2007). Low-pressure decomposition of chrysotile as a function of time and temperature. American Mineralogist 92(10):1704-1713.
OECD Harmonized Template:	Particle Size
HERO ID:	3582618

EXTRACTION

Parameter	Data
Aerodynamic Value	Average width: 0.17 µm -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Jeffrey Mine, Asbestos, Quebec, Canada; Solid; fibers and fiber bundles; 96% Chrysotile Notes: Jeffrey Plastibest 20 (CP85), referred to as Jeffrey CP
Method Type, Particle, Distribution, and Particle Size	microscopic examination; aggregate; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean length: 21 µm
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Candela, P. A., Crummett, C. D., Earnest, D. J., Frank, M. R., Wylie, A. G. (2007). Low-pressure decomposition of chrysotile as a function of time and temperature. American Mineralogist 92(10):1704-1713.
OECD Harmonized Template:	Particle Size
HERO ID:	3582618

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

* Related References: Source cited (not available at time of extraction; HERO ID 3658760 pdf missing pages): Campbell, W.J., Huggins, C.W., and Wylie, A.G. (1980) Chemical and physical characterization of amosite, chrysotile, crocidolite, and nonfibrous tremolite for oral ingestion studies by the National Institute of Environmental HealthSciences, U.S. Bureau of Mines Report of Investigations, RI8452, 63 p.

Study Citation:	Candela, P. A., Crummett, C. D., Earnest, D. J., Frank, M. R., Wylie, A. G. (2007). Low-pressure decomposition of chrysotile as a function of time and temperature. American Mineralogist 92(10):1704-1713.
OECD Harmonized Template:	Particle Size
HERO ID:	3582618

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Average width: 0.07 um -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; New Idria, California; Solid; fibers and fiber bundles; 96% Chrysotile
Method Type, Particle, Distribution, and Particle Size	microscopic examination; aggregate; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean length: 2.1 µm
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source cited (not available at time of extraction; HERO ID 3658760 pdf missing pages): Campbell, W.J., Huggins, C.W., and Wylie, A.G. (1980) Chemical and physical characterization of amosite, chrysotile, crocidolite, and nonfibrous tremolite for oral ingestion studies by the National Institute of Environmental Health Sciences, U.S. Bureau of Mines Report of Investigations, RI8452, 63 p.

Study Citation:	Chatfield, E. J. (1999). Correlated measurements of airborne asbestos-containing particles and surface dust. American society for testing and materials special technical publication 1342:378-402.
OECD Harmonized Template:	Particle Size
HERO ID:	6892000

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Transmission electron microscope analysis of airborne dust samples from an elutriator. ISO 10312 Ambient air — Determination of asbestos fibres — Direct transfer transmission electron microscopy method and ASTM D5755-95 Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Ceiling tile, floor tile, acoustic surfacing material, fireproofing, Pipe elbow cement; Solid; NR Notes: particles from chrysotile-containing materials
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	0.5 - 34.06 µm
Standard Deviation Mean	NR
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard; however, there is some uncertainty if the data reported is for asbestos or the dust particle.
Domain 3: Other				

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Study Citation:	Chatfield, E. J. (1999). Correlated measurements of airborne asbestos-containing particles and surface dust. American society for testing and materials special technical publication 1342:378-402.
OECD Harmonized Template:	Particle Size
HERO ID:	6892000

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Cluff, D. L., Patitsas, A. J. (1992). Size characterization of asbestos fibers by means of electrostatic alignment and light-scattering techniques. Aerosol Science and Technology 17(3):186-198.
OECD Harmonized Template:	Particle Size
HERO ID:	3096394

EXTRACTION

Parameter	Data
Aerodynamic Value	0.16 (0 min centrifugation), 0.15 (5 min centrifugation), 0.12 (15 min centrifugation), and 0.11 um (20 min centrifugation) -
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Light mineral oil; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Union Internationale Contre le Cancer; Solid; NR Notes: Solutions sonicated for ~60s and centrifuged for 0, 5, 15, or 20 min, respectively
Method Type, Particle, Distribution, and Particle Size	Laser scattering/diffraction; aggregate; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Cluff, D. L., Patitsas, A. J. (1992). Size characterization of asbestos fibers by means of electrostatic alignment and light-scattering techniques. Aerosol Science and Technology 17(3):186-198.
OECD Harmonized Template:	Particle Size
HERO ID:	3096394

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Duncan, K. E., Cook, P. M., Gavett, S. H., Dailey, L. A., Mahoney, R. K., Ghio, A. J., Roggli, V. L., Devlin, R. B. (2014). In vitro determinants of asbestos fiber toxicity: effect on the relative toxicity of Libby amphibole in primary human airway epithelial cells. Particle and Fibre Toxicology 11(2):2.
OECD Harmonized Template:	Particle Size
HERO ID:	2342642

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Total particle mean width = 0.44 ± 0.01 0.43 ± 0.01 for RTI and UICC amosite, respectively -
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; SEM and TEM analysis
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Research Triangle Institute (RTI) amosite and Union for International Cancer Control amosite; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; counted distribution; other
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Total particle mean length = 6.4 ± 0.6 2.1 ± 0.3 and mean aspect ratio = 16.9 ± 1.6, 5.6 ± 0.6 for RTI and UICC amosite, respectively
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Duncan, K. E., Cook, P. M., Gavett, S. H., Dailey, L. A., Mahoney, R. K., Ghio, A. J., Roggli, V. L., Devlin, R. B. (2014). In vitro determinants of asbestos fiber toxicity: effect on the relative toxicity of Libby amphibole in primary human airway epithelial cells. Particle and Fibre Toxicology 11(2):2.
OECD Harmonized Template:	Particle Size
HERO ID:	2342642

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Duncan, K. E., Cook, P. M., Gavett, S. H., Dailey, L. A., Mahoney, R. K., Ghio, A. J., Roggli, V. L., Devlin, R. B. (2014). In vitro determinants of asbestos fiber toxicity: effect on the relative toxicity of Libby amphibole in primary human airway epithelial cells. Particle and Fibre Toxicology 11(2):2.
OECD Harmonized Template:	Particle Size
HERO ID:	2342642

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Total particle mean width = 0.36 ± 0.02um for LA (2000) and 0.36 ± 0.01 um for LA (2007) -
CASRN and Test Material	1318-09-8; Libby amosite
Confidentiality, Type, and Guideline	None; Experimental; SEM and TEM analysis
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Libby Montana; NR; NR Notes: sampled 2000 and 2007
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; counted distribution; other
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Total particle mean length = 3.7 and 2.3 um ± 0.2 um and mean aspect ratio = 12.8 ± 0.6, 8.4 ± 0.7for LA (2000) and LA (2007)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Particle Size
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; Not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: white asbestos; chemical formula 3MgO 2SiO2 2H2O
Method Type, Particle, Distribution, and Particle Size	other; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Approximate diameter of smallest fibers: 0.01 micron
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Particle Size
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; Crocidolite
Confidentiality, Type, and Guideline	none; Not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: blue asbestos; chemical formula Na2O 3FeO Fe2O3 8SiO2 H2O
Method Type, Particle, Distribution, and Particle Size	other; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Approximate diameter of smallest fibers: 0.08 micron
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination NEED TO FIX

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Particle Size
HERO ID:	3646977

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; amosite
Confidentiality, Type, and Guideline	none; Not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: chemical formula 1.5MgO 5.5FeO 8SiO2 H2O
Method Type, Particle, Distribution, and Particle Size	other; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Approximate diameter of smallest fibers: 0.1 micron
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination NEED TO FIX

Study Citation:	Gentry, J. W. (1987). Survey of recent measurements with asbestos fibers. Journal of Aerosol Science 18(5):479-486.
OECD Harmonized Template:	Particle Size
HERO ID:	3580641

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Non-guideline; filtration followed by TEM analysis
Solvent, Reactivity, Storage, and Stability	aqueous suspensions; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NA
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Mean diameter 0.02-0.05 μm; aspect ratio of 10-30.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Low	Data are measured or estimated for the subject chemical substance; however, many details about the test substance are not reported.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Gentry, J. W. (1987). Survey of recent measurements with asbestos fibers. Journal of Aerosol Science 18(5):479-486.
OECD Harmonized Template:	Particle Size
HERO ID:	3580641

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**Medium**	

Study Citation:	Gentry, J. W. (1987). Survey of recent measurements with asbestos fibers. Journal of Aerosol Science 18(5):479-486.
OECD Harmonized Template:	Particle Size
HERO ID:	3580641

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Non-guideline; Spumy Vibrating Bed Generator followed by counting using Royco 203 or Climet 208) or with a condensation nuclei counter TSI 3020; X-ray diffraction and elemental analysis.
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: NA
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Mean diameter 0.2-0.4 µm, aspect ratio of 5-15 (particles from vibrating beds have 1000 times the mass of samples from nebulized suspensions)

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	Low	Data are measured or estimated for the subject chemical substance; however, many details about the test substance are not reported.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Huntington, J. C., Ptasienski, J. J., Bunker, K. L., Strohmeier, B. R., Orden, Van, D. R., Lee, R. J. (2008). A new method for fracturing mineral particles for cross-sectional FESEM analysis. Periodico di Mineralogia 77(2):43-50.
OECD Harmonized Template:	Particle Size
HERO ID:	3583340

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile 1866 Standard Reference Material
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	Buehler Epoxicure Resin; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; National Institute of Standards and Technology; Solid; NR Notes: Samples prepared by vacuum impregnation in epoxy
Method Type, Particle, Distribution, and Particle Size	other; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean diameter = 0.06 um (major chord) and 0.05 um (minor chord) measured by SE FESEM
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Huntington, J. C., Ptasienski, J. J., Bunker, K. L., Strohmeier, B. R., Orden, Van, D. R., Lee, R. J. (2008). A new method for fracturing mineral particles for cross-sectional FESEM analysis. Periodico di Mineralogia 77(2):43-50.
OECD Harmonized Template:	Particle Size
HERO ID:	3583340

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Huntington, J. C., Ptasienski, J. J., Bunker, K. L., Strohmeier, B. R., Orden, Van, D. R., Lee, R. J. (2008). A new method for fracturing mineral particles for cross-sectional FESEM analysis. Periodico di Mineralogia 77(2):43-50.
OECD Harmonized Template:	Particle Size
HERO ID:	3583340

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-28-4; Chrysotile 1866 Standard Reference Material
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	Buehler Epoxicure Resin; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; National Institute of Standards and Technology; Solid; NR Notes: Samples prepared by vacuum impregnation in epoxy
Method Type, Particle, Distribution, and Particle Size	other; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean diameter = 0.09 um (major chord) and 0.07 um (minor chord) measured by SE FESEM
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Huntington, J. C., Ptasienski, J. J., Bunker, K. L., Strohmeier, B. R., Orden, Van, D. R., Lee, R. J. (2008). A new method for fracturing mineral particles for cross-sectional FESEM analysis. Periodico di Mineralogia 77(2):43-50.
OECD Harmonized Template:	Particle Size
HERO ID:	3583340

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; Chrysotile 1866 Standard Reference Material
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	Buehler Epoxicure Resin; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; National Institute of Standards and Technology; Solid; NR Notes: Samples prepared by vacuum impregnation in epoxy
Method Type, Particle, Distribution, and Particle Size	other; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean diameter = 0.23 um (major chord) and 0.15 um (minor chord) measured by SE FESEM
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Keane, M. J., Stephens, J. W., Zhong, B. Z., Miller, W. E., Ong, T. M., Wallace, W. E. (1999). A study of the effect of chrysotile fiber surface composition on genotoxicity in vitro. Journal of Toxicology and Environmental Health, Part A: Current Issues 57(8):529-541.
OECD Harmonized Template:	Particle Size
HERO ID:	3080916

EXTRACTION

Parameter	Data
Aerodynamic Value	not reported - not reported
CASRN and Test Material	12001-29-5; chrysotile asbestos
Confidentiality, Type, and Guideline	none; Not Reported; non-guideline: fiber length measurements via SEM
Solvent, Reactivity, Storage, and Stability	deionized H2O (Millipore); suspension filtered through 0.4 µm pore size polycarbonate filter; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; National Institute of Environmental Health Sciences; solid; NR Notes: Intermediate-length chrysotile
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; counted distribution; Not Reported
Geometric Standard Deviation	not reported - not reported not reported
Mean	ca_lower Untreated fibers: size range <3 µm count frequency: ca. 275; size range 3-10 µm count frequency: ca. 205; size range >10 µm count frequency: ca. 25; treated fibers: size range <3 µm count frequency: ca. 340; size range 3-10 µm count frequency: ca. 175; size range >10 µm count frequency: ca. 15 - not reported
Standard Deviation Mean	not reported
Remarks	500 fibers measured for each sample (unmodified and acid treated); on average untreated fibers were 25% longer than treated fibers
Page Number	Not Reported
Passage	not reported - not reported
Mean Size Passage	Not Reported
Distribution	not reported - not reported
Additional Passage Details	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.

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Study Citation:	Keane, M. J., Stephens, J. W., Zhong, B. Z., Miller, W. E., Ong, T. M., Wallace, W. E. (1999). A study of the effect of chrysotile fiber surface composition on genotoxicity in vitro. Journal of Toxicology and Environmental Health, Part A: Current Issues 57(8):529-541.
OECD Harmonized Template:	Particle Size
HERO ID:	3080916

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	LeBaron, E. I., Boettner, E. A. (1980). Fiber motion analysis by two-pulse holography. Applied Optics 19(6):891-894.
OECD Harmonized Template:	Particle Size
HERO ID:	3615886

EXTRACTION

Parameter	Data
Aerodynamic Value	ca_lower 34.0 +/-2.8 um -
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Double-pulse in-line Fraunhofer holography aerosol spectrometer
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fiber solid; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	Laser scattering/diffraction; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	ca_lower 12.3 +/-5.4 um -
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	X = -0.05+/-0.34 cm, Y = 0.02+/-0.46 cm, Z = 1.09+/-0.48 cm, L = 145+/- 100 um
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lowers, H. A., Bern, A. M. (2009). Particle size characterization of water-elutriated Libby amphibole 2000 and RTI international amosite. :3.
OECD Harmonized Template:	Particle Size
HERO ID:	759182

EXTRACTION

Parameter	Data
Aerodynamic Value	NR - NR
CASRN and Test Material	1318-09-8; Libby amphibole
Confidentiality, Type, and Guideline	None; Experimental; Non-guideline: total particle characterization; scanning electron microscopy (SEM)
Solvent, Reactivity, Storage, and Stability	Water; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; collected by the U.S. Geological Survey in 2000; NR; NR Notes: 1083 'LA' structure indexed samples; particles with aspect ratio (length divided by width) greater than 3 were labeled fiber, and those with aspect ratio less than three were labeled nonfiber regardless of phase identification
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; other; Not Reported
Geometric Standard Deviation	NR - NR NR
Mean	NR - NR
Standard Deviation Mean	NR
Remarks	Length (µm): range 0.21973 to 23.5979, mean 1.95; width (µm): range 0.024358 to 2.59266, mean 0.316; aspect ratio ranged from 1.0 to 128.9, average: 7.1. Morphologies included: stepped, single fiber, blocky, tapered, amorphous, splayed/stepped, platy, splayed, split end.
Page Number	Not Reported
Passage	NR - NR
Mean Size Passage	Not Reported
Distribution	NR - NR
Additional Passage Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Lowers, H. A., Bern, A. M. (2009). Particle size characterization of water-elutriated Libby amphibole 2000 and RTI international amosite. :3.
OECD Harmonized Template:	Particle Size
HERO ID:	759182

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Lowers, H. A., Bern, A. M. (2009). Particle size characterization of water-elutriated Libby amphibole 2000 and RTI international amosite. :3.
OECD Harmonized Template:	Particle Size
HERO ID:	759182

EXTRACTION

Parameter	**Data**
Aerodynamic Value	NR - NR
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Non-guideline: total particle characterization; SEM
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; collected by RTI International; NR; NR Notes: 878 samples analyzed; particles with aspect ratio (length divided by width) greater than 3 were labeled fiber, and those with aspect ratio less than three were labeled nonfiber regardless of phase identification
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; other; Not Reported
Geometric Standard Deviation	NR - NR NR
Mean	NR - NR
Standard Deviation Mean	NR
Remarks	Length (μm): range 0.20633 to 103.582, mean 6.94; width (μm): range 0.018519 to 1.76127, mean 0.301; aspect ratio ranged from 1.0 to 360.3, average: 24.5. Morphologies included: stepped, single fiber, blocky, tapered, matrix, curved, splayed/stepped, platy, splayed, bladed.
Page Number	Not Reported
Passage	NR - NR
Mean Size Passage	Not Reported
Distribution	NR - NR
Additional Passage Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information

Overall Quality Determination High

Study Citation:	Myasoedov, A. V., Kalmykov, A. E., Kirilenko, D. A., Sorokin, L. M. (2017). TEM investigation of nanostructures with a high aspect ratio. Springer Proceedings in Physics, vol. 186 :143-148.
OECD Harmonized Template:	Particle Size
HERO ID:	6876819

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	Not Reported; chrysotile
Confidentiality, Type, and Guideline	none; Experimental; high-resolution TEM
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fibers; NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	nm
Standard Deviation Mean	Not Reported
Remarks	average diameter ~20 nm; from figure range 6-42 nm
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Myasoedov, A. V., Kalmykov, A. E., Kirilenko, D. A., Sorokin, L. M. (2017). TEM investigation of nanostructures with a high aspect ratio. Springer Proceedings in Physics, vol. 186 :143-148.
OECD Harmonized Template:	Particle Size
HERO ID:	6876819

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Particle Size
HERO ID:	3982328

EXTRACTION

Parameter	Data
Aerodynamic Value	NR - NR
CASRN and Test Material	1332-21-4; chrysotile
Confidentiality, Type, and Guideline	none; Not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; occurs naturally; solid; NR
Method Type, Particle, Distribution, and Particle Size	other; other; Not Reported; Not Reported
Geometric Standard Deviation	NR - NR NR
Mean	NR - NR
Standard Deviation Mean	NR
Remarks	fiber bundles with lengths ranging from several millimeters to >10 cm
Page Number	Not Reported
Passage	NR - NR
Mean Size Passage	Not Reported
Distribution	NR - NR
Additional Passage Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Particle Size
HERO ID:	3982328

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

* Related References: Primary source (not available in HERO at time of extraction) - Virta RL. 2002. Asbestos: Geology, Mineralogy, Mining and Uses. Open File Report 02-149. U.S. Geological Survey. http://pubs.usgs.gov/of/2002/of02-149/of02-149.pdf.

Study Citation:	Orden, Van, D. R., Lee, R. J., Badger, S. (2006). Characterizing asbestos fiber comminution resulting from preparation of environmental samples. Powder Technology 162(3):183-189.
OECD Harmonized Template:	Particle Size
HERO ID:	3584949

EXTRACTION

Parameter	Data
Aerodynamic Value	greater than or equal to 0.02 μm - less than or equal to 0.05 μm
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline; measurement of asbestos particle size in air samples collected in 2002-2003 inside and outside of the World Trade Center (over 2 yrs following World Trade Center towers collapse); analysis via transmission electron microscope
Solvent, Reactivity, Storage, and Stability	NR; NR; Samples were collected on mixed cellulose ester filters and prepared in general accordance with standard direct preparation methodologies.; NR
Radiolabel, Source, State, and Purity	NR; WTC air samples; single fibers; with a few bundles; NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; mass based distribution; D99
Geometric Standard Deviation	Not Reported
Mean	greater than or equal to Length: 2 μm (directly prepared samples) 0.43 μm (indirectly prepared samples) - less than or equal to Length: 24.3 μm (directly prepared samples) 10 μm (indirectly prepared samples) µm
Standard Deviation Mean	not reported
Remarks	Asbestos fibers characterized as particles with an aspect ratio of 5:1 or greater (length/width). The minimum fiber length was restricted to 0.5 μm in accordance with the method used.
Page Number	Not Reported
Passage	not reported - not reported
Mean Size Passage	Not Reported
Distribution	not reported - not reported
Additional Passage Details	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Orden, Van, D. R., Lee, R. J., Badger, S. (2006). Characterizing asbestos fiber comminution resulting from preparation of environmental samples. Powder Technology 162(3):183-189.
OECD Harmonized Template:	Particle Size
HERO ID:	3584949

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Parsons, R. C., Bryant, D. G., Edstrom, H. W. (1986). Variation in fibre and dust counts in an asbestos mine and mill. Annals of Occupational Hygiene 30(1):63-75.
OECD Harmonized Template:	Particle Size
HERO ID:	3083397

EXTRACTION

Parameter	Data
Aerodynamic Value	not reported - not reported
CASRN and Test Material	12001-29-5; chrystotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline monitoring study: atmospheric fiber density from midget impinger and membrane filter samplers in an asbestos mill during screening, refining, and bagging
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; asbestos mill air samples; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; counted distribution; Not Reported
Geometric Standard Deviation	not reported - not reported not reported
Mean	not reported - not reported
Standard Deviation Mean	not reported
Remarks	Highest and second highest distribution classes were the 3.0-4.2 µm and 4.3-6.0 µm fibre length classes for both methods used (midget impinger MI and membrane filter MF) in all three mill zones; fiber density (f/mL) >1.5 µm: screening = 6.5 (MI) and 5.9 (MF), refining = 2.0 (MI) and 1.6 (MF), and bagging = 1.4 (MI) and 0.8 (MF); fiber density (f/mL) >5 µm: screening = 3.5 (MI) and 2.8 (MF), refining = 1.1 (MI) and 0.8 (MF), and bagging = 0.7 (MI) and 0.4 (MF); fiber density (f/mL) >7 µm: screening = 1.2 (MI) and 1.0 (MF), refining = 0.4 (MI) and 0.3 (MF), and bagging = 0.2 (MI) and 0.2 (MF).
Page Number	Not Reported
Passage	not reported - not reported
Mean Size Passage	Not Reported
Distribution	1.5 µm - 24.2 other
Additional Passage Details	Frequency distribution of atmospheric fiber from MF reported at fiber levels during screening, refining, and bagging, respectively: <0.5 f/mL = 6, 25, 32; 0.5-0.6 f/mL = 0, 14, 12; 0.7-0.9 f/mL = 1, 14, 13; 1.0-1.5 f/mL = 1, 6, 3; 1.6-2.0 f/mL = 3, 3, 1; 2.1-5.0 f/mL = 19, 1, 2; 5.1-10.0 f/mL = 16, 0, 0; 10.1-20.0 f/mL = 14, 0, 0; 20.1-30.0 f/mL = 3, 0, 0.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate.

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Study Citation:	Parsons, R. C., Bryant, D. G., Edstrom, H. W. (1986). Variation in fibre and dust counts in an asbestos mine and mill. Annals of Occupational Hygiene 30(1):63-75.
OECD Harmonized Template:	Particle Size
HERO ID:	3083397

EVALUATION

Domain	Metric		Rating	Comments
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Patitsas, A. J. (1988). Size characterization of asbestos fibers using the Rayleigh-Debye-Gans theory. Journal of Colloid and Interface Science 122(1):15-23.
OECD Harmonized Template:	Particle Size
HERO ID:	6872531

EXTRACTION

Parameter	Data
Aerodynamic Value	less than 3 um (from HERO ID 3101448)
CASRN and Test Material	77536-67-5; anthophyllite
Confidentiality, Type, and Guideline	None; Calculation; Rayleigh-Debye-Gans approximate theory used to calculate fiber diameter and length distribution functions by fitting light scattering data from liquid suspensions
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; UICC sample; fiber (solid); NR Notes: UICC anthophyllite fibers
Method Type, Particle, Distribution, and Particle Size	other; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	For samples with no centrifugation, 2.5 and 25.0 min centrifugation the best fit geometric mean standard deviation were 0.5, 0.4 and 0.4 um and modal diameter = 0.238, 0.359 and 0.323 um, respectively.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information (calculation).
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Patitsas, A. J. (1988). Size characterization of asbestos fibers using the Rayleigh-Debye-Gans theory. Journal of Colloid and Interface Science 122(1):15-23.
OECD Harmonized Template:	Particle Size
HERO ID:	6872531

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

* Related References: Citing Timbrell V. (1972) Microscope 20, 365. HERO ID 3101448.

Study Citation:	Spurny, K. R. (1989). On the release of asbestos fibers from weathered and corroded asbestos cement products. Environmental Research 48(1):100-116.
OECD Harmonized Template:	Particle Size
HERO ID:	380

EXTRACTION

Parameter	**Data**
Aerodynamic Value	0.1 um - 0.5 um
CASRN and Test Material	Not Reported; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Nuclepore filters samples and SEM analysis and Individual fibers were identified by energy dispersive X-ray analysis
Solvent, Reactivity, Storage, and Stability	None; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Air samples; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	0.09 -
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean diameter = 0.22 um; mean length = 4.0 um (S.d. 2.0, range 1.7-9.5um); MEAN SIZE VALUES OF EMITTED FIBERS (GMF); total mineral fibers (GMF)
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Spurny, K. R. (1989). On the release of asbestos fibers from weathered and corroded asbestos cement products. Environmental Research 48(1):100-116.
OECD Harmonized Template:	Particle Size
HERO ID:	380

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Spurny, K. R., Stöber, W., Opiela, H., Weiss, G. (1979). On the evaluation of fibrous particles in remote ambient air. Science of the Total Environment 11(1):1-40.
OECD Harmonized Template:	Particle Size
HERO ID:	2073705

EXTRACTION

Parameter	Data
Aerodynamic Value	0.01 um - 0.5 um
CASRN and Test Material	1332-21-4; amosite
Confidentiality, Type, and Guideline	None; Experimental; None, sampling fibrous particles in ambient air and asbestos fibers was made by electron microprobe analysis
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; asbestos clouds and urban and non-urban ambient air; solid fiber; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Substance			
Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability			
Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other			
Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Spurny, K. R., Stöber, W., Opiela, H., Weiss, G. (1979). Size-selective preparation of inorganic fibers for biological experiments. American Industrial Hygiene Association Journal 40(1):20-38.
OECD Harmonized Template:	Particle Size
HERO ID:	6867217

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline study
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; UICC Standard Reference; Solid fibers; NR Notes: samples were size-separated into very fine and fine fibers
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Very fine fiber fraction: representative mean length 1.17 µm (±0.47), mean fiber diameter 0.23 µm (±0.07), aspect ratio = 5.40. Lengths ≤ 1µm = 48.3%, lengths ≤ 3µm = 99%, diameters ≤ 0.1 µm = 2.1%, diameters ≤ 0.5 µm = 99%. Aspect ratios ≤ 3 = 6.2%, aspect ratios ≤ 30 = 100%. Fine fiber fraction: representative mean length 2.52 µm (±1.44), mean fiber diameter 0.47 µm (±0.17), aspect ratio = 5.29. Lengths ≤ 3 µm = 72.1%, lengths ≤ 10 µm = 100%, diameters ≤ 0.5 µm = 66.4%, diameters ≤ 1.0 µm = 98.1%. Aspect ratios ≤ 5 = 57.2%, aspect ratios ≤ 50 = 100%.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Spurny, K. R., Stöber, W., Opiela, H., Weiss, G. (1979). Size-selective preparation of inorganic fibers for biological experiments. American Industrial Hygiene Association Journal 40(1):20-38.
OECD Harmonized Template:	Particle Size
HERO ID:	6867217

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Spurny, K. R., Stöber, W., Opiela, H., Weiss, G. (1979). Size-selective preparation of inorganic fibers for biological experiments. American Industrial Hygiene Association Journal 40(1):20-38.
OECD Harmonized Template:	Particle Size
HERO ID:	6867217

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline study
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; UICC Standard Reference; Solid fibers; NR Notes: samples were size-separated into very fine and fine fibers
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Very fine fiber fraction: representative mean length 1.11 µm (±0.58), mean fiber diameter 0.13 µm (±0.04), aspect ratio = 8.90. Lengths ≤ 1µm = 58.1%, lengths ≤ 3µm = 99%, diameters ≤ 0.1 µm = 33.2%, diameters ≤ 0.5 µm = 100%. Aspect ratios ≤ 3 = 0.5%, aspect ratios ≤ 30 = 100%. Fine fiber fraction: representative mean length 1.42 µm (±0.83), mean fiber diameter 0.16 µm (±0.04), aspect ratio = 9.18. Lengths ≤ 3 µm = 95.1%, lengths ≤ 10 µm = 100%, diameters ≤ 0.5 µm = 100%, diameters ≤ 1.0 µm = NA. Aspect ratios ≤ 5 = 17.3%, aspect ratios ≤ 50 = 99%.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Spurny, K. R., Stöber, W., Opiela, H., Weiss, G. (1979). Size-selective preparation of inorganic fibers for biological experiments. American Industrial Hygiene Association Journal 40(1):20-38.
OECD Harmonized Template:	Particle Size
HERO ID:	6867217

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline study
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; UICC Standard Reference; Solid fibers; NR Notes: samples were size-separated into very fine and fine fibers
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Very fine fiber fraction: representative mean length 1.35 µm (±0.83), mean fiber diameter 0.21 µm (±0.12), aspect ratio = 6.75. Lengths ≤ 1µm = 46.1%, lengths ≤ 3µm = 97.3%, diameters ≤ 0.1 µm = 2.1%, diameters ≤ 0.5 µm = 100%. Aspect ratios ≤ 3 = 0.8%, aspect ratios ≤ 30 = 100%. Fine fiber fraction: representative mean length 1.39 µm (±0.89), mean fiber diameter 0.23 µm (±0.06), aspect ratio = 6.98. Lengths ≤ 3 µm = 93.4%, lengths ≤ 10 µm = 100%, diameters ≤ 0.5 µm = 99%, diameters ≤ 1.0 µm = 100%. Aspect ratios ≤ 5 = 46.8%, aspect ratios ≤ 50 = 100%.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Timbrell, V. (1982). Deposition and retention of fibres in the human lung. The annals of occupational hygiene, Vol. 26, no. 1-4 26(1-4):347-369.
OECD Harmonized Template:	Particle Size
HERO ID:	29927

EXTRACTION

Parameter	**Data**
Aerodynamic Value	0.44 and 3.8 µm (mine), 0.52 and 4.8 µm (mill), 0.70 and 10 µm (bagging) -
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Mine, mill, and bagging area dust samples in Paakkilla mine; Solid; NR
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; aggregate; counted distribution; Not Reported
Geometric Standard Deviation	2.16 and 2.74 (mine), 1.93 and 2.42 (mill), 2.26 and 2.94 (bagging) -
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Timbrell, V., Grittiths, D. M., Pooley, F. D. (1971). Possible Biological Importance of Fibre Diameters of South African Amphiboles. Nature 232(5305):55-56.
OECD Harmonized Template:	Particle Size
HERO ID:	3097547

EXTRACTION

Parameter	Data
Aerodynamic Value	North-western Cape mines: Mean fiber diameter: 0.073 µm; Mean aerodynamic diameter: 0.09 - 0.8 µm. Transvaal mines: Mean fiber diameter: 0.212 µm; Mean aerodynamic diameter: 0.2 – 2.5 µm. -
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Mines in north-western Cape and Transvaal, South Africa; Solid; NR
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; other; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical details are missing.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Timbrell, V., Grittiths, D. M., Pooley, F. D. (1971). Possible Biological Importance of Fibre Diameters of South African Amphiboles. Nature 232(5305):55-56.
OECD Harmonized Template:	Particle Size
HERO ID:	3097547

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**Medium**	

Study Citation:	Timbrell, V., Grittiths, D. M., Pooley, F. D. (1971). Possible Biological Importance of Fibre Diameters of South African Amphiboles. Nature 232(5305):55-56.
OECD Harmonized Template:	Particle Size
HERO ID:	3097547

EXTRACTION

Parameter	Data
Aerodynamic Value	Mean fiber diameter: 0.243 µm -
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Mines in Transvaal, South Africa; Solid; NR
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; other; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical details are missing.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Particle Size
HERO ID:	3827272

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	1318-09-8; Libby amphibole
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	other; primary particle; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	=0.1 (width); <1 (length) - =1.0 (width); >/=100 (length) µm
Standard Deviation Mean	not reported
Remarks	cumulative particle-size-distribution frequencies of LA fibers (aspect ratio $\geq$3:1) in in Libby ore Grade 3, expanded Libby ore Grade 3, and ambient air samples collected in Libby
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.

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Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Particle Size
HERO ID:	3827272

EVALUATION

Domain	Metric		Rating	Comments
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: U.S. EPA (U.S. Environmental Protection Agency). (2010b). Particle size distribution data for Libby Amphiboles structures observed in air at the Libby Asbestos Superfund Site [EPA Report]. Denver, CO. HERO ID 759201

Study Citation:	USGS, (2009). Particle size characterization of water-elutriated libby amphibole 2000 and RTI international amosite.
OECD Harmonized Template:	Particle Size
HERO ID:	3975014

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	1318-09-8; Libby amphibole
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline: particle characterization by SEM
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Field samples collected by the U.S.G.S in 2000; solid; both fiber and non-fiber; NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	1081 samples analyzed via scanning electron microscopy. Fiber (particles with aspect ratio >3) sample sizes ranged from 0.347783 to 23.5979 µm (length) and 0.24358 to 1.32475 (width) Non-Fiber (particles with aspect ratio <3) sample sizes ranged from 0.21973 to 3.09938 µm (length) and 0.0998251 to 2.59266 µm (width) Morphology of the samples included: stepped, blocky, single fiber, platy, and tapered.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical method.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	USGS, (2009). Particle size characterization of water-elutriated libby amphibole 2000 and RTI international amosite.
OECD Harmonized Template:	Particle Size
HERO ID:	3975014

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	USGS, (2009). Particle size characterization of water-elutriated libby amphibole 2000 and RTI international amosite.
OECD Harmonized Template:	Particle Size
HERO ID:	3975014

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline: particle characterization by SEM
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Field samples collected by RTI International; solid; both fiber and non-fiber; NR
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	878 samples analyzed via scanning electron microscopy. Fiber (particles with aspect ratio >3) sample sizes ranged from 0.473036 to 103.582 µm (length) and 0.018519 to 1.33806 (width) Non-Fiber (particles with aspect ratio <3) sample sizes ranged from 0.20633 to 2.39866 µm (length) and 0.121707 to 1.7627 µm (width) Morphology of the samples included: single fiber, tapered, stepped, blocky, matrix, curved, platy, splayed/stepped, bladed, splayed.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical method.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Particle Size
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid, fibers; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	other; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Surface area = 15 - 30 m^2/g, measured by BET nitrogen adsorption.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Particle Size
HERO ID:	3975020

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

* Related References: No citations reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Particle Size
HERO ID:	3975020

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid, fibers; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	other; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Surface area = 1.8 - 9 m^2/g
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: Cites A. A. Hodgson and C. A. White, Papers 2-10, The Physics and Chemistry of Asbestos Minerals, Oxford Conference on Asbestos Minerals, Oxford, UK, 1967, No HEROID.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Particle Size
HERO ID:	3975020

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid, fibers; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	other; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Surface area = 1.3 - 5.5 m^2/g
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cites A. A. Hodgson and C. A. White, Papers 2-10, The Physics and Chemistry of Asbestos Minerals, Oxford Conference on Asbestos Minerals, Oxford, UK, 1967, No HEROID.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Particle Size
HERO ID:	3975020

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid, fibers; NR Notes: NR
Method Type, Particle, Distribution, and Particle Size	Not Reported; primary particle; Not Reported; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Unit fiber diameter = 25 nm (average); Industrial fiber aggregate diameter = 0.1 to 100 um
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citations reported.

Study Citation:	Virta, R. L., Segreti, J. M. (1987). A model for predicting crocidolite fiber size distributions. Environmental Research 44(1):148-160.
OECD Harmonized Template:	Particle Size
HERO ID:	3584086

EXTRACTION

Parameter	**Data**
Aerodynamic Value	0.02 um (width) - 0.29 um (width)
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	Filtered distilled water; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NR; Solid, blocky to fibrous; NR Notes: 7 samples
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; other; counted distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L., Shedd, K. B., Wylie, A. G., Snyder, J. G. (1983). Size and shape characteristics of amphibole asbestos (amosite) and amphibole cleavage fragments (actinolite, cummingtonite) collected on occupational air monitoring filters. Ann Arbor Science Publications, no. 2 :633-643.
OECD Harmonized Template:	Particle Size
HERO ID:	3101498

EXTRACTION

Parameter	Data
Aerodynamic Value	Not Reported
CASRN and Test Material	77536-66-4; actinolite
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Mining samples containing actinolite were obtained from air monitoring filters from Mine Safety and Health Administration (from stone quarry and iron mining operations in amphibole-bearing rocks).; Not Reported; Not Reported Notes: Ca2(Mg, Fe)5Si8O22(OH)2
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Airborne Mining Sample Particle Sizes: Homestake Gold Mine: # of particle = 266; mean length (µm) = 4.6 (range 0.9 - 17.5), mean width (µm) = 1.1 (range 0.3 - 4.8). Peter Mitchell Iron Mine: # of particle = 464; mean length (µm) = 5.5 (range 1.0 - 32.4), mean width (µm) = 1.2 (range 0.2 - 5.0). Charlottesville Crushed Stone: # of particle = 605; mean length (µm) = 5.3 (range 0.8 - 36.0), mean width (µm) = 1.4 (range 0.2 - 12.0).
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS) analysis; Most non-amphibole particles were eliminated based on the criteria set: minimum of 250 particles with aspect ratio ~2:1 for the mining site samples and ~3:1 for the industrial site samples, straight sides, and suitable amphibole composition were measured.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Virta, R. L., Shedd, K. B., Wylie, A. G., Snyder, J. G. (1983). Size and shape characteristics of amphibole asbestos (amosite) and amphibole cleavage fragments (actinolite, cummingtonite) collected on occupational air monitoring filters. Ann Arbor Science Publications, no. 2 :633-643.
OECD Harmonized Template:	Particle Size
HERO ID:	3101498

EVALUATION

Domain	Metric		Rating	Comments
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L., Shedd, K. B., Wylie, A. G., Snyder, J. G. (1983). Size and shape characteristics of amphibole asbestos (amosite) and amphibole cleavage fragments (actinolite, cummingtonite) collected on occupational air monitoring filters. Ann Arbor Science Publications, no. 2 :633-643.
OECD Harmonized Template:	Particle Size
HERO ID:	3101498

EXTRACTION

Parameter	**Data**
Aerodynamic Value	Not Reported
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Industrial samples containing amosite were obtained from Occupational Safety and Health Administration (from shipyard and electric company industrial sites employing asbestos).; Not Reported; Not Reported Notes: (Mg,Fe)7Si8O22(OH)2
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Airborne Industrial Sample Particle Sizes: Shipyard: # of particle = 698; mean length (μm) = 8.2 (range 0.9 - 93.5), mean width (μm) = 0.4 (range 0.1 - 2.6). Electric Company: # of particle = 285; mean length (μm) = 15.6 (range 1.3 - 181.0), mean width (μm) = 0.5 (range 0.1 - 1.7).
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS) analysis; Most non-amphibole particles were eliminated based on the criteria set: minimum of 250 particles with aspect ratio ~2:1 for the mining site samples and ~3:1 for the industrial site samples, straight sides, and suitable amphibole composition were measured.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Virta, R. L., Shedd, K. B., Wylie, A. G., Snyder, J. G. (1983). Size and shape characteristics of amphibole asbestos (amosite) and amphibole cleavage fragments (actinolite, cummingtonite) collected on occupational air monitoring filters. Ann Arbor Science Publications, no. 2 :633-643.
OECD Harmonized Template:	Particle Size
HERO ID:	3101498

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Wagner, J. (2015). Analysis of serpentine polymorphs in investigations of natural occurrences of asbestos. Environmental Science: Processes & Impacts 17(5):985-996.
OECD Harmonized Template:	Particle Size
HERO ID:	3531545

EXTRACTION

Parameter	Data
Aerodynamic Value	Mean Fiber width: 42±16 nm -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Alcohol; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; California, USA; Solid; NR Notes: Samples ground with mortar and pestle in alcohol
Method Type, Particle, Distribution, and Particle Size	microscopic examination; other; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Morphology - Central canal: Sharp, uniform; fiber termination: rounded/uniform; fiber side edges: parallel
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard. Some study details are missing.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Wagner, J. (2015). Analysis of serpentine polymorphs in investigations of natural occurrences of asbestos. Environmental Science: Processes & Impacts 17(5):985-996.
OECD Harmonized Template:	Particle Size
HERO ID:	3531545

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**Medium**	

Study Citation:	Webber, J. S., Blake, D. J., Ward, T. J., Pfau, J. C. (2008). Separation and characterization of respirable amphibole fibers from Libby, Montana. Inhalation Toxicology 20(8):733-740.
OECD Harmonized Template:	Particle Size
HERO ID:	711568

EXTRACTION

Parameter	Data
Aerodynamic Value	less than or equal to 2.5 µm
CASRN and Test Material	1318-09-8; Libby amphibole
Confidentiality, Type, and Guideline	None; Experimental; transmission electron microscope and scanning transmission electron microscope with x-ray detector
Solvent, Reactivity, Storage, and Stability	sterile water; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Libby 6-mix from USGS; "Libby 6-mix," includes a complex mixture of fiber sizes and nonfibrous material in addition to the respirable size fraction; solid; NR Notes: Libby 6-mix containing six amphibole fiber types, including winchite, richterite, and tremolite; separation of Libby 6-mix into respirable and nonrespirable size fractions by means of aqueous elutriation
Method Type, Particle, Distribution, and Particle Size	determination of fibre length and diameter distributions; primary particle; mass based distribution; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Mean fiber dimensions of elutriated fibers were 2.7 µm (length), 0.19 µm (width), aspect ratio = 16. Surface area of elutriated fibers was 5.3 m-2 g-1, compared to 0.53 m-2 g-1 for the raw fibers and 8.1 m-2 g-1 measured for crocidolite; no detectable differences in chemical composition between larger and smaller fibers.
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Respirable fraction (smaller than 2.5 µm) accounted for 13% of the raw Libby 6-mix mass); less than 2% has aerodynamic diameters greater than 2.5 µm; 98% of elutriated fibers were at or below respirable diameters. The Libby 6-mix is a mixture of fiber sizes and nonfibrous material and may not reflect historical samples from Libby MT.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				

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Study Citation:	Webber, J. S., Blake, D. J., Ward, T. J., Pfau, J. C. (2008). Separation and characterization of respirable amphibole fibers from Libby, Montana. Inhalation Toxicology 20(8):733-740.
OECD Harmonized Template:	Particle Size
HERO ID:	711568

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Wu, L., Ortiz, C. P., Jerolmack, D. J. (2017). Aggregation of Elongated Colloids in Water. Langmuir 33(2):622-629.
OECD Harmonized Template:	Particle Size
HERO ID:	3531568

EXTRACTION

Parameter	**Data**
Aerodynamic Value	1.9 $\pm$ 0.5 μm -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None
Solvent, Reactivity, Storage, and Stability	NA; NA; NA; NA
Radiolabel, Source, State, and Purity	NA; El Dorado Mine, Salt River, Arizona; Solid block; > 90%
Method Type, Particle, Distribution, and Particle Size	microscopic examination; primary particle; other; Not Reported
Geometric Standard Deviation	Not Reported
Mean	Not Reported
Standard Deviation Mean	Not Reported
Remarks	Not Reported
Page Number	Not Reported
Passage	Not Reported
Mean Size Passage	Not Reported
Distribution	Not Reported
Additional Passage Details	Length = 10 $\pm$ 0.8 μm (up to 20 μm)

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Wu, L., Ortiz, C. P., Jerolmack, D. J. (2017). Aggregation of Elongated Colloids in Water. Langmuir 33(2):622-629.
OECD Harmonized Template:	Particle Size
HERO ID:	3531568

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	ACToR, (2021). ACToR: Asbestos.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	7607028

EXTRACTION

Parameter	Data
Vapor Pressure	ca. 0.00E+00 - mm Hg
CASRN and Test Material	1332-21-4; asbestos
Confidentiality, Type, and Guideline	none; approximation; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	approximate value

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Reported data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source cited: HERO ID 594566 and HERO ID 9109830 (secondary source which does not cite primary source). NIOSH Pocket Guide to Chemical Hazards (NPG), NIOSH Publication No. 97-140, February2004.

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	3981007

EXTRACTION

Parameter	**Data**
Vapor Pressure	ca. 0 mm Hg
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not reported
Results Details	Reported as approximate value

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: NIOSH, 2016 cited but no other details available

Study Citation:	Cameo Chemicals, (2016). Chemical datasheet: asbestos (blue).
OECD Harmonized Template:	Vapor Pressure
HERO ID:	3981008

EXTRACTION

Parameter	**Data**
Vapor Pressure	ca. 0 - mm Hg
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	None; experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fiber; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	Reported as approximate value

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features physical/chemical properties or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: NIOSH, 2016 cited but no other details available

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	3860486

EXTRACTION

Parameter	**Data**
Vapor Pressure	ca. 0 mm Hg
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	NR
System	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Citing OSHA Occupational Chemical DB and CAMEO Chemicals.

Study Citation:	NIOSH, (2007). NIOSH pocket guide to chemical hazards.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	192177

EXTRACTION

Parameter	**Data**
Vapor Pressure	0 - mm Hg
CASRN and Test Material	1332-21-4; chrysotile, crocidolite, or amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	NR
System	NR
Standard Deviation Results	NR
Results Details	approximate value

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIOSH, (2016). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	3974865

EXTRACTION

Parameter	**Data**
Vapor Pressure	ca. 0 - mm Hg
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Not specified; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	NR
System	NR
Standard Deviation Results	NR
Results Details	Approximate value.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Not applicable. Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: None cited.

Study Citation:	NIOSH, (2019). NIOSH pocket guide to chemical hazards: Asbestos.
OECD Harmonized Template:	Vapor Pressure
HERO ID:	9109830

EXTRACTION

Parameter	Data
Vapor Pressure	ca 0 mm Hg
CASRN and Test Material	1332-21-4; Actinolite, Actinolite asbestos, Amosite (cummingtonite-grunerite), Anthophyllite, Anthophyllite asbestos, Chrysotile,Crocidolite (Riebeckite), Tremolite, Tremolite asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Hydrated mineral silicates
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	approximate

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Primary reference not reported in this secondary source.

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Water Solubility
HERO ID:	786664

EXTRACTION

Parameter	Data
Water Solubility	insoluble -
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not specified
System	not specified
pH	not specified
Results Details Method	not specified
Standard Deviation Results	not specified
Results Details	Insoluble in water; insoluble in organic solvents; solubility in acids: 56.00% loss in weight due to loss of counter-ions, silicate structure remains intact; solubility in bases: 1.03% loss in weight due to loss of counter-ions, silicate structure remains intact.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Water Solubility
HERO ID:	786664

EXTRACTION

Parameter	Data
Water Solubility	insoluble -
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not specified
System	not specified
pH	not specified
Results Details Method	not specified
Standard Deviation Results	not specified
Results Details	Insoluble in water; insoluble in organic solvents; solubility in acids: 3.14% loss in weight due to loss of counter-ions, silicate structure remains intact; solubility in bases: 1.20% loss in weight due to loss of counter-ions, silicate structure remains intact.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Water Solubility
HERO ID:	786664

EXTRACTION

Parameter	Data
Water Solubility	insoluble -
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not specified
System	not specified
pH	not specified
Results Details Method	not specified
Standard Deviation Results	not specified
Results Details	Insoluble in water; insoluble in organic solvents; solubility in acids: 12.00% loss in weight due to loss of counter-ions, silicate structure remains intact; solubility in bases: 6.82% loss in weight due to loss of counter-ions, silicate structure remains intact.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Water Solubility
HERO ID:	786664

EXTRACTION

Parameter	Data
Water Solubility	insoluble -
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not specified
System	not specified
pH	not specified
Results Details Method	not specified
Standard Deviation Results	not specified
Results Details	Insoluble in water; insoluble in organic solvents.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	ATSDR, (2001). Toxicological profile for asbestos (Update, September 2001).
OECD Harmonized Template:	Water Solubility
HERO ID:	786664

EXTRACTION

Parameter	Data
Water Solubility	insoluble -
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not specified
System	not specified
pH	not specified
Results Details Method	not specified
Standard Deviation Results	not specified
Results Details	Insoluble in water; insoluble in organic solvents; solubility in acids: 2.13% loss in weight due to loss of counter-ions, silicate structure remains intact; solubility in bases: 1.77% loss in weight due to loss of counter-ions, silicate structure remains intact.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Water Solubility
HERO ID:	3860485

EXTRACTION

Parameter	Data
Water Solubility	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	25C
System	dissolution of chrysotile in water
pH	not reported
Results Details Method	continuous extraction
Standard Deviation Results	Not Reported
Results Details	activity product of chrysotile in water = 1E-51.0

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Measured data are consistent with the subject chemical substance structural features; however standard water solubility was not assessed.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Callahan, M.A., M. W. Slimak, N. W. Gabel, et al. Water-Related Environmental Fate of 129 Priority Pollutants. Volume I. EPA-440/4 79-029a. Washington, DC: U.S. Environmental Protection Agency, December 1979., p. 7-8

Study Citation:	(2017). PubChem: Crocidolite.
OECD Harmonized Template:	Water Solubility
HERO ID:	3860486

EXTRACTION

Parameter	Data
Water Solubility	insoluble in water
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; solid; NR Notes: NR
Temperature	NR
System	NR
pH	NR
Results Details Method	NR
Standard Deviation Results	NR
Results Details	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Citing CAMEO Chemicals and ILO-ICSC.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Water Solubility
HERO ID:	3975020

EXTRACTION

Parameter	**Data**
Water Solubility	Not Reported
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	NR
System	NR
pH	NR
Results Details Method	NR
Standard Deviation Results	Not Reported
Results Details	After prolonged exposure to water, especially at high temperatures, slow progressive leaching of metal and silicate components occurs. The brucite later of chrysotile fibers will dissolve and increase the pH of the solution. The equilibrium pH for the aqueous chrysotile slurry is 10.0 - 10.5.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) and/or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cites S. Speil and J. P. Leinerveber, Environ. Res. 2(3), 166 (1969). HEROID 5353620

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.54 - 1.55
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.70 - 1.71
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR Notes: riebeckite
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.67 - 1.70
CASRN and Test Material	12172-73-5; cummingtonite-grunerite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR Notes: amosite
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.61 - 1.63
CASRN and Test Material	17068-78-9; anthophyllite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.60 - 1.64
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Anonymous (1989). NIOSH Manual of Analytical Methods, (3rd Edition 3rd Supplement). NIOSH(NIOSH):89-127.
OECD Harmonized Template:	Refractive Index
HERO ID:	1009583

EXTRACTION

Parameter	**Data**
Refractive Index	1.62 - 1.68
CASRN and Test Material	13768-00-8; actinolite
Confidentiality, Type, and Guideline	none; experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; fiber; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field and are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.61
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.63
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Weakly pleochroic
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.50 - 1.55
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.64
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.7
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Pleochroic
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Refractive Index
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
Refractive Index	1.61
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Refractive Index
HERO ID:	785518

EXTRACTION

Parameter	Data
Refractive Index	ca. 1.70 (parallel to elongation) - ca. 1.71 (perpendicular to elongation)
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fibers; NR Notes: NR
Temperature	NR
System	NR
Standard Deviation Results	NR
Results Details	NR
Results Details Methods	NR
Parameter	NR

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Data also reported in HERO ID 3647242.

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Refractive Index
HERO ID:	785518

EXTRACTION

Parameter	**Data**
Refractive Index	ca. 1.54 (parallel to elongation) - ca. 1.55 (perpendicular to elongation)
CASRN and Test Material	12001-29-5; Chrysotile-asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fibers; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Data also reported in HERO ID 3647242.

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Refractive Index
HERO ID:	785518

EXTRACTION

Parameter	**Data**
Refractive Index	ca. 1.64-1.68 (parallel to elongation) - ca. 1.62-1.67 (perpendicular to elongation)
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fibers; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Data also reported in HERO ID 3647242.

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Refractive Index
HERO ID:	785518

EXTRACTION

Parameter	**Data**
Refractive Index	ca. 1.61 - ca. 1.63
CASRN and Test Material	77536-67-5; Anthophyllite-Asbestos
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fibers; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Data also reported in HERO ID 3647242.

Study Citation:	Bailey, K. F., Kelse, J., Wylie, A. G., Lee, R. J. (2006). The asbestiform and prismatic mineral growth habit and their relationship to cancer studies: A pictorial presentation.
OECD Harmonized Template:	Refractive Index
HERO ID:	785518

EXTRACTION

Parameter	**Data**
Refractive Index	ca. 1.60-1.62 (perpendicular to elongation) - ca. 1.62-1.64 (parallel to elongation)
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; fibers; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Data also reported in HERO ID 3647242.

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924810

EXTRACTION

Parameter	**Data**
Refractive Index	1.545 - 1.553
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	1 range for n(gamma) was reported in Reaxys.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Selfrige, G. C.; American Mineralogist; vol. 21; (1936); p. 477

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924810

EXTRACTION

Parameter	Data
Refractive Index	1.547 -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	2 values for Ng were reported in Reaxys; one value was measured at 422.7 nm.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Korytkova; Pivovarova; Drosdova; Gusarov; Russian Journal of General Chemistry; vol. 77; nb. 10; (2007); p. 1669 - 1676; Korytkova; Maslov; Pivovarova; Polegotchenkova; Povinich;Gusarov; Inorganic Materials; vol. 41; nb. 7; (2005); p. 743 - 749

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924810

EXTRACTION

Parameter	Data
Refractive Index	1.542 -
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	2 values for N(p) were reported in Reaxys.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Korytkova; Pivovarova; Drosdova; Gusarov; Russian Journal of General Chemistry; vol. 77; nb. 10; (2007); p. 1669 - 1676; Korytkova; Maslov; Pivovarova; Polegotchenkova; Povinich;Gusarov; Inorganic Materials; vol. 41; nb. 7; (2005); p. 743 - 749

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924810

EXTRACTION

Parameter	Data
Refractive Index	1.532 - 1.544
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	1 range for n(alpha) was reported in Reaxys.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Selfrige, G. C.; American Mineralogist; vol. 21; (1936); p. 477

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Richterite.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924816

EXTRACTION

Parameter	Data
Refractive Index	1.594
CASRN and Test Material	17068-76-7; Richterite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	n(p). 1 value reported in Reaxys.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Korytkova, E. N.; Romanov, D. P.; Makarova, T. A.; Grebenshchikov, R. G.; InorganicMaterials; vol. 22; (1986); p. 1315 - 1320; Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy; vol. 22; (1986); p. 1500 - 1505

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Richterite.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924816

EXTRACTION

Parameter	**Data**
Refractive Index	1.606
CASRN and Test Material	17068-76-7; Richterite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	n(g). 1 value reported in Reaxys.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Korytkova, E. N.; Romanov, D. P.; Makarova, T. A.; Grebenshchikov, R. G.; InorganicMaterials; vol. 22; (1986); p. 1315 - 1320; Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy; vol. 22; (1986); p. 1500 - 1505

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	Data
Refractive Index	1.493 - 1.562
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.493 - 1.560; gamma = 1.517 - 1.562
Results Details Methods	Not Reported
Parameter	Extinction: parallel; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	Data
Refractive Index	1.654 - 1.717
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.654 - 1.701; gamma = 1.668 - 1.717
Results Details Methods	Not Reported
Parameter	Extinction: inclined; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	Data
Refractive Index	1.599 - 1.688
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.599 - 1.668; gamma = 1.622 - 1.688
Results Details Methods	Not Reported
Parameter	Extinction: inclined; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	Data
Refractive Index	1.596 - 1.676
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.596 - 1.652; gamma = 1.615 - 1.688
Results Details Methods	Not Reported
Parameter	Extinction: parallel; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	Data
Refractive Index	1.635 - 1.729
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.635 - 1.696; gamma = 1.655 - 1.729
Results Details Methods	Not Reported
Parameter	Extinction: parallel; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. E. (2002). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers - an update. Microchemical Journal 72(3):251-254.
OECD Harmonized Template:	Refractive Index
HERO ID:	6874055

EXTRACTION

Parameter	**Data**
Refractive Index	1.599 - 1.688
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Calculation; NA; dispersion staining method. Analytical method used cited as Ref. 1: Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive index for asbestos fibers. Microchemical journal, 39(2), 145-148.
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; NIST reference material; Solid; NR Notes: NR
Temperature	NR
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	alpha = 1.599 - 1.668; gamma = 1.622 - 1.688
Results Details Methods	Not Reported
Parameter	Extinction: inclined; refractive index = refractive index oil + correction factor; correction factor determined from annular stop and central stop colors and the wavelength the colors were observed at.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method was reported elsewhere.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.493 - 1.560
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	refractive index range measured parallel to fiber length was 1.517-1.562
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.635 - 1.696
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	refractive index range measured parallel to fiber length was 1.655-1.729
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.654 - 1.701
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	refractive index range measured perpendicular to fiber length was 1.668-1.717
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.596 - 1.652
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	refractive index range measured parallel to fiber length was 1.615-1.676
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.599 - 1.668
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	Tremolite-actinolite reported together; refractive index range measured parallel to fiber length was 1.622-1.688
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lott, P. F. (1989). Correlating dispersion staining colors to the numerical value of the refractive-index for asbestos fibers. Microchemical Journal 39(2):145-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	6866754

EXTRACTION

Parameter	Data
Refractive Index	1.599 - 1.668
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Temperature	Not reported
System	slopes of the dispersion curves at wavelengths of 400-700 nm were studied to obtain a set of correction values to assist in the determination of the true refractive index
Standard Deviation Results	Not reported
Results Details	Tremolite-actinolite reported together; refractive index range measured parallel to fiber length was 1.622-1.688
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Refractive Index
HERO ID:	3860485

EXTRACTION

Parameter	Data
Refractive Index	Not Reported
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Temperature	Not Reported
System	Not Reported
Standard Deviation Results	Not Reported
Results Details	Index of refraction: 1.53-1.56
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: Source: Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present., p. V3 (1992) 671 (not a primary source)

Study Citation:	NLM, (2021). PubChem: Hazardous Substance Data Bank: Chrysotile, 12001-29-5.
OECD Harmonized Template:	Refractive Index
HERO ID:	7924733

EXTRACTION

Parameter	Data
Refractive Index	1.53 - 1.56
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	Not reported
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	The methodology is unknown, but method bias appears unlikely.
	Metric 4:	Reliability/Analytical Method	Medium	The analytic method is unknown but is expected to be appropriate based on the study's inclusion in a peer-reviewed database.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Virta R; Asbestos. Kirk-Othmer Encyclopedia of Chemical Technology. (1999-2018). New York, NY: John Wiley & Sons. Online Posting Date: 15 Jul 2011

Study Citation:	Seshan, K. (1983). How are the physical and chemical properties of chrysotile asbestos altered by a 10-year residence in water and up to 5 days in simulated stomach acid?. Environmental Health Perspectives 53(NOV):143-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	3582855

EXTRACTION

Parameter	Data
Refractive Index	1.5 - 1.54
CASRN and Test Material	12001-29-5; Chrysotile asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	No; International Union Against Cancer (UICC); National Institute of Environmental Health Sciences (NIEHS); Globe, AZ.; NR; NR
Temperature	Not reported
System	globe chrysotile fibers exposed approx. 600 h (from figure) to simulated gastric juice (NaCl, pepsin (hog extract), and HCl added to distilled water). pH of 1.2.
Standard Deviation Results	Not reported
Results Details	Refractive index along and perpendicular to the fiber axis decreased from approx. 1.54 to 1.5 over 600 hours exposure (from figure) measured by X-ray and electron diffraction.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Seshan, K. (1983). How are the physical and chemical properties of chrysotile asbestos altered by a 10-year residence in water and up to 5 days in simulated stomach acid?. Environmental Health Perspectives 53(NOV):143-148.
OECD Harmonized Template:	Refractive Index
HERO ID:	3582855

EXTRACTION

Parameter	**Data**
Refractive Index	1.44 - 1.485
CASRN and Test Material	12001-29-5; Chrysotile asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	No; International Union Against Cancer (UICC); National Institute of Environmental Health Sciences (NIEHS); Globe, AZ.; NR; NR
Temperature	Not reported
System	globe chrysotile fibers exposed approx. 600 h (from figure) to 1N HCl.
Standard Deviation Results	Not reported
Results Details	Refractive index decreased from approx. 1.485 to 1.44 over 600 hours exposure (from figure) measured by X-ray and electron diffraction.
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Refractive Index
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
Refractive Index	= 1.600 (alpha) - = 1.688 (gamma)
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Optical and crystallographic properties of fibrous amphiboles associated with Libby Amphibole asbestos
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	Refractive indices: alpha = 1.600−1.628, 1.612−1.668, 1.613−1.628, 1.6126; gamma 1.625−1.655, 1.635−1.688, 1.638−1.655, 1.6393
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Refractive Index
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
Refractive Index	= 1.605 (alpha) - = 1.641 (gamma)
CASRN and Test Material	17068-76-7; Richerite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Optical and crystallographic properties of fibrous amphiboles associated with Libby Amphibole asbestos
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	Refractive indices: alpha = 1.622−1.623, 1.605−1.624, 1.615; gamma = 1.638−1.639, 1.627−1.641, 1.636
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: www.minsocam.oeg/msa/Handbook/Richterite.PDF.; ww.webmineral.com/data/Richterite.shtml.

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Refractive Index
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
Refractive Index	= 1.599 (alpha) - = 1.655 (gamma)
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Optical and crystallographic properties of fibrous amphiboles associated with Libby Amphibole asbestos
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	Refractive indices: alpha = 1.600−1.628, 1.604−1.612, 1.599−1.612, 1.6063; gamma 1.625−1.655, 1.627−1.635, 1.625−1.637, 1.6343
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Refractive Index
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
Refractive Index	= 1.618 (alpha) - = 1.658 (gamma)
CASRN and Test Material	12425-92-2; Winchite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: Optical and crystallographic properties of fibrous amphiboles associated with Libby Amphibole asbestos
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	Refractive indices: alpha = 1.618−1.626, 1.618−1.621, 1.629, 1.636; gamma = 1.634−1.642, 1.634−1.637, 1.650, 1.658
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Bandli et al. (2003) Optical, compositional, morphological, and x-ray data on eleven particles of amphibole from Libby, MT, U.S.A. Canadian Mineralogist 41: 1241−1253. (HERO ID 713658); Wylie and Verkouteren (2000) Amphibole asbestos from Libby, MT: Aspects of nomenclature. American Mineralogist, 85: 1540−1542.(HERO ID 713648); www.minsocam.oeg/msa/Handbook/Winchite.PDF.; www.mindat.org/min-4296.html.

Study Citation:	Verkouteren, J. R., Wylie, A. G., Steel, E. B., Lim, M. S. (1995). Analysis of the tremolite/actinolite series using high precision refractive index measurements. Microbeam Analysis :27-28.
OECD Harmonized Template:	Refractive Index
HERO ID:	6887461

EXTRACTION

Parameter	Data
Refractive Index	1.626 - 1.684
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; other
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: tremolite-actinolite
Temperature	Not reported
System	Used the spindle stage to measure principal refractive indices of individual fibers or particles with an accuracy of $\pm$0.0005
Standard Deviation Results	Not reported
Results Details	results taken from figure; plot of gamma-refractive index vs Mg/Mg+Fe
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Refractive Index
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
Refractive Index	1.60 - 1.64
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Refractive Index
HERO ID:	3859385

EXTRACTION

Parameter	Data
Refractive Index	1.53 - 1.56
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Refractive Index
HERO ID:	3859385

EXTRACTION

Parameter	Data
Refractive Index	1.65 - 1.72
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Refractive Index
HERO ID:	3859385

EXTRACTION

Parameter	Data
Refractive Index	1.63 - 1.73
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Temperature	not reported
System	not reported
Standard Deviation Results	not reported
Results Details	not reported
Results Details Methods	not reported
Parameter	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.641 - 1.677
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.683 - 1.700
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.537 - 1.554
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.545 - 1.557
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.670 - 1.675
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.683 - 1.694
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.680 - 1.692
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.596 - 1.654
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.599 - 1.620
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.622 - 1.641
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Xu, X. M., Li, Y. Q., Belfiore, L. A., Tang, J. G. (2018). Polarized light microscope method for the determination of asbestos fiber of textile. Integrated Ferroelectrics 188(1):136-147.
OECD Harmonized Template:	Refractive Index
HERO ID:	6860096

EXTRACTION

Parameter	Data
Refractive Index	1.619 - 1.658
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Health and Safety Laboratory, UK and KTR laboratory, South Korea; Solid; NR Notes: Asbestos-standard sample
Temperature	NR
System	LV100 polarizing microscope and refractive index oil
Standard Deviation Results	Not Reported
Results Details	Not Reported
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Refractive Index
HERO ID:	6880237

EXTRACTION

Parameter	**Data**
Refractive Index	1.625 - 1.645
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Gemological properties and mineral compositions of black nephrite from Guangxi
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	plate samples measured using a refractometer
Standard Deviation Results	Not reported
Results Details	8 samples containing 65->98% actinolite
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Refractive Index
HERO ID:	6880237

EXTRACTION

Parameter	Data
Refractive Index	1.647 - 1.650
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Gemological properties and mineral compositions of black nephrite from Guangxi
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Temperature	Not reported
System	plate samples measured using a refractometer
Standard Deviation Results	Not reported
Results Details	4 samples containing 60-99% ferro-actinolite
Results Details Methods	Not Reported
Parameter	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Keane, M. J., Stephens, J. W., Zhong, B. Z., Miller, W. E., Ong, T. M., Wallace, W. E. (1999). A study of the effect of chrysotile fiber surface composition on genotoxicity in vitro. Journal of Toxicology and Environmental Health, Part A: Current Issues 57(8):529-541.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3080916

EXTRACTION

Parameter	Data
Zeta	ca_lower -0.02 V (acid treated fibers; treated with 1 N HCl for 2h) - ca_upper +0.02 V (untreated fibers) Other
CASRN and Test Material	12001-29-5; chrysotile asbestos
Confidentiality, Type, and Guideline	none; Experimental; not specified
Solvent, Reactivity, Storage, and Stability	deionized H2O (Millipore); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; National Institute of Environmental Health Sciences; solid; NR Notes: Intermediate-length chrysotile
Isoelectric Value	not reported - not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	not reported; not reported; not reported
Method Type, Sampling, and Additional Details	other; not reported; not reported
Instruments and Measurements Reproduced	Zeta-Meter ZM-80; not reported
Standard Deviation	not reported
pH and Medium	5.0; deionized water
Results Details	untreated fibers had a tendency to adhere to the side of the polystyrene containers, while the treated fibers formed large clumps in the middle of the vial.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Lavkulich, L. M., Schreier, H. E., Wilson, J. E. (2014). Effects of natural acids on surface properties of asbestos minerals and kaolinite. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 49(6):617-624.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3078027

EXTRACTION

Parameter	Data
Zeta	+21.5 mV/cm - Other
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; VWR Int., Randor, PA, USA; Solid; NR Notes: Sample passed through a < 63 um stainless steel sieve and fine fraction retained for analysis
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; Not Reported; Not Reported
Instruments and Measurements Reproduced	Zeta Meter Model 3.0+; Mean of 5 samples
Standard Deviation	Not Reported
pH and Medium	NR; NR
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and hemolytic activity of asbestos. Environmental Research 13(1):135-145.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3084540

EXTRACTION

Parameter	Data
Zeta	+40.5 - +52.5 mV
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Triple-distilled water; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; MRC Pneumoconiosis Unit, Pernarth, South Wales, and Johns-Manville Research and Development Center, Denver; Solid; NR Notes: DPPC added to aqueous suspensions, pH adjusted with HCl or NaOH, samples incubated for 1 day between 41 and 43 deg C in shaker bath and cooled to room temperature prior to use.
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; Not Reported; Not Reported
Instruments and Measurements Reproduced	microelectrophoresis (Zeta Meter) and stereoscopic microscope.; Movement of fibers at least 0.1 um in size observed; the time required for 15 to 25 fibers to traverse 1 ocular-microscope was recorded; electrophoretic mobility was determined, and the Zeta potential was calculated from this using the Helmholtz-Smoluchowski equation.
Standard Deviation	Not Reported
pH and Medium	7.4; 100 mL distilled water with DPPC added, pH adjusted with HCl or NaOH.
Results Details	+40.5 and +52.5 mV for samples A and B

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

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Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and hemolytic activity of asbestos. Environmental Research 13(1):135-145.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3084540

EVALUATION

Domain	Metric	Rating	Comments

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and hemolytic activity of asbestos. Environmental Research 13(1):135-145.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3084540

EXTRACTION

Parameter	Data
Zeta	-54.0 - mV
CASRN and Test Material	17068-78-9; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Triple-distilled water; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; MRC Pneumoconiosis Unit, Pernarth, South Wales, and Johns-Manville Research and Development Center, Denver; Solid; NR Notes: DPPC added to aqueous suspensions, pH adjusted with HCl or NaOH, samples incubated for 1 day between 41 and 43 deg C in shaker bath and cooled to room temperature prior to use.
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; Not Reported; Not Reported
Instruments and Measurements Reproduced	microelectrophoresis (Zeta Meter) and stereoscopic microscope.; Movement of fibers at least 0.1 um in size observed; the time required for 15 to 25 fibers to traverse 1 ocular-microscope was recorded; electrophoretic mobility was determined, and the Zeta potential was calculated from this using the Helmholtz-Smoluchowski equation.
Standard Deviation	Not Reported
pH and Medium	7.4; 100 mL distilled water with DPPC added, pH adjusted with HCl or NaOH.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and hemolytic activity of asbestos. Environmental Research 13(1):135-145.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3084540

EXTRACTION

Parameter	Data
Zeta	-50.5 - mV
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Triple-distilled water; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; MRC Pneumoconiosis Unit, Pernarth, South Wales, and Johns-Manville Research and Development Center, Denver; Solid; NR Notes: DPPC added to aqueous suspensions, pH adjusted with HCl or NaOH, samples incubated for 1 day between 41 and 43 deg C in shaker bath and cooled to room temperature prior to use.
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; Not Reported; Not Reported
Instruments and Measurements Reproduced	microelectrophoresis (Zeta Meter) and stereoscopic microscope.; Movement of fibers at least 0.1 um in size observed; the time required for 15 to 25 fibers to traverse 1 ocular-microscope was recorded; electrophoretic mobility was determined, and the Zeta potential was calculated from this using the Helmholtz-Smoluchowski equation.
Standard Deviation	Not Reported
pH and Medium	7.4; 100 mL distilled water with DPPC added, pH adjusted with HCl or NaOH.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and hemolytic activity of asbestos. Environmental Research 13(1):135-145.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3084540

EXTRACTION

Parameter	Data
Zeta	-58.5 - mV
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	Triple-distilled water; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; MRC Pneumoconiosis Unit, Pernarth, South Wales, and Johns-Manville Research and Development Center, Denver; Solid; NR Notes: DPPC added to aqueous suspensions, pH adjusted with HCl or NaOH, samples incubated for 1 day between 41 and 43 deg C in shaker bath and cooled to room temperature prior to use.
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; Not Reported; Not Reported
Instruments and Measurements Reproduced	microelectrophoresis (Zeta Meter) and stereoscopic microscope.; Movement of fibers at least 0.1 um in size observed; the time required for 15 to 25 fibers to traverse 1 ocular-microscope was recorded; electrophoretic mobility was determined, and the Zeta potential was calculated from this using the Helmholtz-Smoluchowski equation.
Standard Deviation	Not Reported
pH and Medium	7.4; 100 mL distilled water with DPPC added, pH adjusted with HCl or NaOH.
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and asbestos toxicity. Nature 265(5594):537-539.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3616568

EXTRACTION

Parameter	Data
Zeta	+34.0 mV (leached with Tyrode's solution for 21d) - +44.5 mV (unleached)
CASRN and Test Material	12001-29-5; chrysotile A
Confidentiality, Type, and Guideline	none; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; reference sample from the International Union against Cancer; fibers; NR Notes: NR
Isoelectric Value	not reported - not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	not reported; not reported; not reported
Method Type, Sampling, and Additional Details	electrophoresis; not reported; Electrophoretic mobility measured using a microelectrophoresis instrument (Zeta-Meter) and zeta potential was approximated using the Helmholtz-Smoluchowski equation.
Instruments and Measurements Reproduced	Zeta-meter; Electrophoretic mobility of fibres incubated for 2 hours as a 0.01% (w/v) distilled-water suspension was measured using a microelectrophoresis instrument (Zeta-Meter) and zeta potential was approximated using the Helmholtz-Smoluchowski equation.
Standard Deviation	not reported
pH and Medium	7.4; 0.01% (w/v) distilled water solution (2 hour incubation prior to analysis)
Results Details	Leaching time 1 day using mixtures 0.5% (w/v) suspensions in Tyrode's (physiological buffer) solution, 0.01M HCl or 0.1M HCl.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Light, W. G., Wei, E. T. (1977). Surface charge and asbestos toxicity. Nature 265(5594):537-539.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3616568

EXTRACTION

Parameter	Data
Zeta	-43.5 mV (unleached) - +58.5 mV (leached with Tyrode's solution for 21d)
CASRN and Test Material	12001-28-4; amphibole crocidolite
Confidentiality, Type, and Guideline	none; Experimental; not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; reference sample from the International Union against Cancer; fibers; NR Notes: NR
Isoelectric Value	not reported - not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	not reported; not reported; not reported
Method Type, Sampling, and Additional Details	electrophoresis; not reported; Electrophoretic mobility measured using a microelectrophoresis instrument (Zeta-Meter) and zeta potential was approximated using the Helmholtz-Smoluchowski equation.
Instruments and Measurements Reproduced	Zeta-meter; Electrophoretic mobility of fibres incubated for 2 hours as a 0.01% (w/v) distilled-water suspension was measured using a microelectrophoresis instrument (Zeta-Meter) and zeta potential was approximated using the Helmholtz-Smoluchowski equation.
Standard Deviation	not reported
pH and Medium	7.4; 0.01% (w/v) distilled water solution (2 hour incubation prior to analysis)
Results Details	Leaching time 1 day using mixtures 0.5% (w/v) suspensions in Tyrode's (physiological buffer) solution, 0.01M HCl or 0.1M HCl.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	NIH, (2016). Report on carcinogens: Asbestos.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3982328

EXTRACTION

Parameter	Data
Zeta	Not specified - Not specified
CASRN and Test Material	1332-21-4; chrysotile
Confidentiality, Type, and Guideline	none; Not specified; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; occurs naturally; solid; NR Notes: NR
Isoelectric Value	Not specified - Not specified
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not specified; Not specified; Not specified
Method Type, Sampling, and Additional Details	Not Reported; Not specified; Not specified
Instruments and Measurements Reproduced	Not specified; Not specified
Standard Deviation	Not specified
pH and Medium	Not specified; Not specified
Results Details	fibers have a net positive surface charge

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review, use and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Cited sources (multiple sources cited) - IARC 1973, 1977, IPCS 1986

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of short fibers in Gambles solution at 37°C: −17(±4), −19(±5), and −20(±5) at pH 4.5, 5.5, and 7.0, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: −15(±5), −17(±4), and −17(±5), at pH 4.5, 5.5, and 7.0, respectively.
CASRN and Test Material	77536-88-6; Tremolite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Val d'Ala, Turin (Italy); samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Ca1.91Na0.06K0.01)1.98(Mg4.71Fe2+ 0.22Fe3+ 0.08Mn0.02)5.03(Si8.01Al0.02)8.03O22.14(OH)1.86 Notes: Short fiber samples: surface area = 9.2±3 m2/g, fiber length = 11±1 µm; long fiber samples: surface area = 0.66±2 m2/g, fiber length = 78±1 µm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined both in organic Gamble's modified solution at 25°C and 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; Gamble's solution
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of long fibers in water at 37°C: +26(±2), +19(±2), +10(±3), +12(±2), +8(±3), +4(±2), and −7(±4), at pH 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, and 10.0, respectively. Zeta potential (mV) of long fibers in water at 25°C: +29(±3), +28(±3), +17(±3), +10(±3), +7(±4), +8(±5), and −10(±4), at pH 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, and 10.0, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: +4(±2), -4(±3), -8(±3), -8(±3), -8(±3), -13(±2), -18(±5)and −21(±5), at pH 3.0, 4.0, 4.5, 6.0, 7.0, 8.0, 10.0, and 11.0, respectively. Zeta potential (mV) of short fibers in Gambles solution at 37°C: −9(±6), −12(±3), −16(±3), −14(±5), −20(±2), −19(±4), −18(±2), −16(±5), −22(±4), −20(±5), −20(±3), −20(±4), at pH 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.5, 7.0, 7.5, 8.0, 9.5, and 10.0, respectively.
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	double distilled water or Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Quebec (Canada): UICC standard Chrysotile "B" Canadian NB #4173-111-1; samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Mg5.93Fe2+ 0.11Al0.02Fe3+ 0.01)6.07Si4.03O10(OH)7.66 Notes: Short fiber samples: surface area = 42±1 m2/g, fiber length = 5±2 µm; long fiber samples: surface area = 29±1 m2/g, fiber length = 99±5 µm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined both in distilled water and in organic Gamble's modified solution at 25°C and 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; double distilled water or Gamble's solution
Results Details	Zeta potential (mV) in Gambles solution at 25°C and pH 4.0 of long fibers = −8(±4).

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of short fibers in water at 37°C: −16(±3), −31(±5), −34(±5), −38(±6), −34(±4), −36(±5), −37(±4), −39(±7), −37(±4), −37(±5), −39(±5), and −42(±5), at pH 3.0, 4.0, 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10.0, and 10.5, respectively. Zeta potential (mV) of short fibers in water at 25°C: −16(±4), −26(±4), −32(±4), −36(±4), −38(±5), −40(±5), −43(±7), −43(±6), −45(±6), and −48(±6), at pH 3.0, 4.0, 4.5, 5.0, 6.5, 7.0, 8.0, 9.0, 10.0 and 10.5, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: −20(±4), −23(±5), −22(±4), and −20(±6), at pH 3.5, 4.5, 6.0, and 7.0, respectively. Zeta potential (mV) of short fibers in Gambles solution at 37°C: −21(4), −23(±4), −28(±4), −21(±4), −29(±5), −28(±4), −24(±4), −31(±4), −21(±4), −30(±3), −17(±5), and −19(±4) at pH 3.0. 3.5, 4.0, 4.5, 5.0, 5.5, 7.0, 7.5, 8.0, 8.5, 9.0, and 10.0, respectively.
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	double distilled water or Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Koegas Mine, Northern Cape (South Africa): UICC standard Crocidolite South African NB #4173-111-3; samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Na1.96Ca0.03K0.01)2(Fe2+ 2.34Fe3+ 2.05Mg0.52)4.91(Si7.84Al0.02)7.86O21.36(OH)2.64 Notes: Short fiber samples: surface area = 16.1±6 m2/g, fiber length = 6±1 μm; long fiber samples: surface area = 11.5±4 m2/g, fiber length = 30±3 μm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined both in distilled water and in organic Gamble's modified solution at 25°C and 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; double distilled water or Gamble's solution
Results Details	Zeta potential (mV) in Gambles solution at 25°C and pH 4.5 of short fibers = −26(±5).

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of long fibers in Gambles solution at 37°C: $-6(\pm 8)$, $-5(\pm 3)$, and $-15(\pm 3)$, at pH 4.0, 4.5, and 7.0, respectively. Zeta potential (mV) of short fibers in Gambles solution at 37°C: $-15(\pm 6)$, and $-17(\pm 4)$ at pH 4.5, and 7.0, respectively. - Zeta potential (mV) in Gambles solution at 25°C and pH 4.5 of long fibers = $-15(\pm 5)$. Zeta potential (mV) in Gambles solution at 25°C and pH 4.5 of short fibers = $-20(\pm 4)$.
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Paakkila mine, Paakkila (Finland): UICC standard Anthophylite Finnish NB #4173-111-5; samples were preliminary disaggregated in distilled water, using a common mechanical shredder; Ca0.04(Mg5.81Fe2+ 0.92Fe3+ 0.21Mn0.04)6.98(Si7.83Al0.02)7.85O21.63(OH)2.37 Notes: Short fiber samples: surface area = 14.4±5 m2/g, fiber length = 17±2 μm; long fiber samples: surface area = 4.4±2 m2/g, fiber length = 95±9 μm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined in organic Gamble's modified solution at 25°C and 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; Gamble's solution
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of short fibers in Gambles solution at 37°C: $-27(\pm2)$, $-27(\pm3)$,and $-23(\pm2)$, at pH 4.5, 5.5, and 7.0, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: -26($\pm$4), -21($\pm$6), and -27($\pm$7), at pH 4.5, 5.5, and 7.0, respectively.
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Val Malenco, Sondrio (Italy); samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Mg5.85Fe2+ 0.11Al0.02Ni0.01)5.99Si4.01O10(OH)7.86 Notes: Short fiber samples: surface area = 68$\pm$9 m2/g, fiber length = 10$\pm$5 µm; long fiber samples: surface area = 45$\pm$2 m2/g, fiber length = 160$\pm$9 µm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined in organic Gamble's modified solution at 37°C, and pH 3-10.5 ($\pm$0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; Gamble's solution
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of short fibers in Gambles solution at 37°C: −27(±3), −13(±9),and −27(±3), at pH 4.5, 5.5, and 7.0, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: +1(±5), -12(±5), -18(±5), -23(±4), -19(±5), -25(±4), -16(±2), -19(±2), -17(±4), -17(±2), -15(±2), -16(±3), and −22(±3), at pH 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, and 10.5, respectively.
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Chrysotile Balangero (Italy); samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Mg5.81Fe2+ 0.21Al0.27Fe3+ 0.03Cr0.01)6.33Si3.97O10(OH)7.11 Notes: Short fiber samples: surface area = 43±2 m2/g, fiber length = 6±1 μm; long fiber samples: surface area = 24.8±9 m2/g, fiber length = 65±3 μm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined in organic Gamble's modified solution at 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; Gamble's solution
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Pollastri, S., Gualtieri, A. F., Gualtieri, M. L., Hanuskova, M., Cavallo, A., Gaudino, G. (2014). The zeta potential of mineral fibres. Journal of Hazardous Materials 276:469-479.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3086336

EXTRACTION

Parameter	Data
Zeta	Zeta potential (mV) of short fibers in Gambles solution at 37°C: −16(4), −19(±4), −21(±4), −20(±5), −21(±4), −21(±4), −25(±3), −21(±7), −14(±7), −15(±6), and −18(±5) at pH 3.0, 4.0, 4.5, 5.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, and 10.0, respectively. - Zeta potential (mV) of long fibers in Gambles solution at 37°C: −13(±3), −23(±8), and −24(±5), at pH 4.5, 5.5, and 7.0, respectively.
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	none; Experimental; Non-guideline
Solvent, Reactivity, Storage, and Stability	Gamble's solution (concentration 0.1 wt%); NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Penge mine, Northern Province (South Africa); samples were preliminary disaggregated in distilled water, using a common mechanical shredder; (Ca0.02Na0.01)(Fe2+ 5.36Mg1.48Fe3+ 0.11Mn0.06)7.01(Si7.93Al0.01)7.94O21.94(OH)2.06 Notes: Short fiber samples: surface area = 9.5±3 m2/g, fiber length = 7±2 µm; long fiber samples: surface area = 3.9±1 m2/g, fiber length = 125±9 µm (determined using SEM)
Isoelectric Value	Not reported - Not reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not reported; Not reported; Not reported
Method Type, Sampling, and Additional Details	electrophoresis; Not specified; zeta potential of long and short fiber size classes determined in organic Gamble's modified solution at 25°C and 37°C, and pH 3-10.5 (±0.2, pH adjusted using HCL and NaOH); triplicate measurements performed for several samples
Instruments and Measurements Reproduced	Zeta potential measured using a Zetasizer Nano Series instrument (Malvern); Not specified
Standard Deviation	reported with values in parenthesis
pH and Medium	pH range 3.0-11.0; Gamble's solution
Results Details	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Schiller, J. E., Payne, S. L. (1980). Surface charge measurements of amphibole cleavage fragments and fibers.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	7475373

EXTRACTION

Parameter	Data
Zeta	ca_lower -59 - ca_upper -38 mV
CASRN and Test Material	77536-67-5; anthophyllite asbestos
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	distilled water; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; UICC International Union Against Canter; Origin: Finland; Not Reported; ACS reagent grade
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; zeta potential was calculated using the Helmholtz-Smoluchowski equation; microelectrophoresis
Instruments and Measurements Reproduced	Zeta Meter cell; Only particles aligned axially to the electric field were timed, and the average electrophoretic mobility was calculated from the average velocity.
Standard Deviation	Not Reported
pH and Medium	5-9; distilled water
Results Details	zeta potentials of fibrous asbestiform minerals from graph: ca. -40, -51, -58, -58, and -59 at pH values of 5, 6, 7, 8, and 9, respectively; zeta potential (mV) of blocky particles = 39±2 and elongated particles = 49±2 at pH 7

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Schiller, J. E., Payne, S. L. (1980). Surface charge measurements of amphibole cleavage fragments and fibers.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	7475373

EXTRACTION

Parameter	Data
Zeta	ca_lower -41 - ca_upper -20 mV
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	distilled water; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; UICC International Union Against Cancer; Not Reported; ACS reagent grade
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; zeta potential was calculated using the Helmholtz-Smoluchowski equation; microelectrophoresis
Instruments and Measurements Reproduced	Zeta Meter cell; Only particles aligned axially to the electric field were timed, and the average electrophoretic mobility was calculated from the average velocity.
Standard Deviation	Not Reported
pH and Medium	5-9; distilled water
Results Details	zeta potentials of fibrous asbestiform minerals from graph: ca. -20, -32, -41, -40, and -41 at pH values of 5, 6, 7, 8, and 9, respectively; zeta potential (mV) of blocky particles = 28±1 and elongated particles = 39±1 at pH 7

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Schiller, J. E., Payne, S. L. (1980). Surface charge measurements of amphibole cleavage fragments and fibers.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	7475373

EXTRACTION

Parameter	Data
Zeta	ca_lower -55 - ca_upper -25 mV
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	distilled water; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; UICC International Union Against Canter; Origin: Africa; Not Reported; ACS reagent grade
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; zeta potential was calculated using the Helmholtz-Smoluchowski equation; microelectrophoresis
Instruments and Measurements Reproduced	Zeta Meter cell; Only particles aligned axially to the electric field were timed, and the average electrophoretic mobility was calculated from the average velocity.
Standard Deviation	Not Reported
pH and Medium	5-9; distilled water
Results Details	zeta potentials of fibrous asbestiform minerals from graph: ca. -25, -35, -36, -50, and -55 at pH values of 5, 6, 7, 8, and 9, respectively; zeta potential (mV) of blocky particles = 24±3 and elongated particles = 37±2 at pH 7

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Schiller, J. E., Payne, S. L. (1980). Surface charge measurements of amphibole cleavage fragments and fibers.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	7475373

EXTRACTION

Parameter	Data
Zeta	ca_lower -46 (India); -50 (Switzerland) - ca_upper -32(India); -36 (Switzerland) mV
CASRN and Test Material	77536-68-6; tremolite asbestos
Confidentiality, Type, and Guideline	none; Experimental; none
Solvent, Reactivity, Storage, and Stability	distilled water; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; BuMines - Origin: India; University of Minnesota, Minneapolis, Minn - Origin: Switzerland; Not Reported; ACS reagent grade
Isoelectric Value	Not Reported
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; zeta potential was calculated using the Helmholtz-Smoluchowski equation; microelectrophoresis
Instruments and Measurements Reproduced	Zeta Meter cell; Only particles aligned axially to the electric field were timed, and the average electrophoretic mobility was calculated from the average velocity.
Standard Deviation	Not Reported
pH and Medium	5-9; distilled water
Results Details	zeta potentials of fibrous asbestiform minerals from graph (India): ca. -32, -36, -42, -44, and -46 at pH values of 5, 6, 7, 8, and 9, respectively; zeta potentials of fibrous asbestiform minerals from graph (Switzerland): ca. -36, -42, -46, -45, and -50 at pH values of 5, 6, 7, 8, and 9, respectively; zeta potential (mV) of blocky particles = 24±1 and elongated particles = 35±3 at pH 7 (Switzerland)

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3975020

EXTRACTION

Parameter	Data
Zeta	+13.6 - +54
CASRN and Test Material	1332-21-4; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Isoelectric Value	NR - 11.8
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	Not Reported; NR; NR
Instruments and Measurements Reproduced	NR; NR
Standard Deviation	Not Reported
pH and Medium	NR; NR
Results Details	Values become negative after weathering and/or leaching.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citations reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3975020

EXTRACTION

Parameter	Data
Zeta	-20 - -40
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Isoelectric Value	NR -
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	Not Reported; NR; NR
Instruments and Measurements Reproduced	NR; NR
Standard Deviation	Not Reported
pH and Medium	NR; NR
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: No citations reported.

Study Citation:	USGS, (2002). Asbestos: Geology, mineralogy, mining, and uses.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3975020

EXTRACTION

Parameter	Data
Zeta	-32 -
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; NR
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Isoelectric Value	NR -
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; Not Reported; Not Reported
Method Type, Sampling, and Additional Details	Not Reported; NR; NR
Instruments and Measurements Reproduced	NR; NR
Standard Deviation	Not Reported
pH and Medium	NR; NR
Results Details	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: No citations reported.

Study Citation:	Vidovic, K., Lovrecek, B., Hraste, M. (1996). Influence of surface charge on sedimentation and filtration behaviour of fibrous material. Chemical and Biochemical Engineering Quarterly 10(1):33-38.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3584063

EXTRACTION

Parameter	Data
Zeta	-1 mV (approx) - 7.5 mV (approx)
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	None; Experimental; 'a standard experimental arrangement and test procedure' citing several sources
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; P-5-50; Ural Mines, Russia; fibrous solid; Grade 5Z (Asbestos Textile Institute (USA) and Quebec Asbestos Mining Association (Canada)) Notes: NA
Isoelectric Value	9 - ca_upper
Standard Deviation, Medium, and Remarks for Isoelectric Point	Not Reported; water; Not Reported
Method Type, Sampling, and Additional Details	electrophoresis; NR; thermostated at 298K
Instruments and Measurements Reproduced	Lab instrument contained an electroosmotic cell, membrane, Pt electrode, measuring capillary, ampmeter, voltmeter, conductometer and thermostat; NA
Standard Deviation	+/-1 mV (approximate from figure)
pH and Medium	2 to 12; Water
Results Details	Approx 7.5 mV at pH 2 and -1 mV at pH 12

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Data are obtained by accepted standard analytical methods, but some details are not reported and only cite secondary sources.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Wu, L., Ortiz, C. P., Jerolmack, D. J. (2017). Aggregation of Elongated Colloids in Water. Langmuir 33(2):622-629.
OECD Harmonized Template:	Nanomaterial Zeta
HERO ID:	3531568

EXTRACTION

Parameter	Data
Zeta	ca_lower -14 - ca_upper 5.0
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; El Dorado Mine, Salt River, Arizona; Solid block; > 90%
Isoelectric Value	4 - 5
Standard Deviation, Medium, and Remarks for Isoelectric Point	NR; 150 ppm (nominal) test substance in water, dispersed by sonication, pH adjusted with HCl; Dilute acid treated values in this study lower than values reported elsewhere.
Method Type, Sampling, and Additional Details	electrophoresis; NR; Zeta potential determined from electrophoretic mobility using the Smoluchowski approximation.
Instruments and Measurements Reproduced	Delsa Nano C; NR
Standard Deviation	Not Reported
pH and Medium	3.6, ~4.4, ~5.1, ~5.6, ~6.1, ~6.9, ~7.5, 8.0; 150 ppm (nominal) test substance in water, dispersed by sonication, pH adjusted with HCl
Results Details	Values estimated from figure. ~5.0 at pH 3.6, ~2.2 at pH ~4.4, ~-1.8 at pH ~5.1, ~-5.7 at pH ~5.6, ~-7.9 at pH ~6.1, ~-12 at pH ~6.9, ~-13 at pH ~7.5, and ~-14 at pH 8.0

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology was appropriate.
	Metric 4:	Reliability/Analytical Method	High	The analytical method was appropriate.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Data are measured for the subject chemical substance.

Overall Quality Determination High

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Chrysotile.
OECD Harmonized Template:	Dielectric Constant
HERO ID:	7924810

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Dielectric Constant	800 -
Temperature	Not Reported
System	Not Reported
Results Value	Not Reported
Results Details	at 25°C. 1 value reported in Reaxys.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Datta; Bhattacherjee; Journal of Materials Science; vol. 21; nb. 3; (1986); p. 1041 - 1045

Study Citation:	Elsevier, (2021). Reaxys: physical-chemical property data for Tremolite.
OECD Harmonized Template:	Dielectric Constant
HERO ID:	7924814

EXTRACTION

Parameter	Data
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Dielectric Constant	7.03
Temperature	20 deg C
System	Not Reported
Results Value	Not Reported
Results Details	powdered tremolite at 20°C; 1 value reported in Reaxys.; monohydrated. Collected using the search term 'tremolite' in Reaxys.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Rosenholtz, J. L.; Smith, D. T.; American Mineralogist; vol. 21; (1936); p. 115 - 120; Gmelin Handbuch der Anorganischen Chemie; vol. Ca: MVol.B3; 316, page 1376 - 1378

Study Citation:	Addison, W. E., Neal, G. H., Sharp, J. H., White, A. D. (1966). Amphiboles. Part IV. Surface properties of amosite and crocidolite. Journal of the Chemical Society. Section A: Inorganic, Physical, and Theoretical Chemistry 1966:79-81.
OECD Harmonized Template:	Other Properties
HERO ID:	3827309

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Johns Manville Research Centre from Jeffery Mine, Quebec, CAN.; NR; NR
Results Value	Surface area: 13.5 - 22.4 m^2/g @ 25°C
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Addison, W. E., Neal, G. H., Sharp, J. H., White, A. D. (1966). Amphiboles. Part IV. Surface properties of amosite and crocidolite. Journal of the Chemical Society. Section A: Inorganic, Physical, and Theoretical Chemistry 1966:79-81.
OECD Harmonized Template:	Other Properties
HERO ID:	3827309

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Cape Asbestos Co. Ltd.; NR; NR
Results Value	Surface area: 2.25 - 7.10 m^2/g @ 25°C
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Addison, W. E., Neal, G. H., Sharp, J. H., White, A. D. (1966). Amphiboles. Part IV. Surface properties of amosite and crocidolite. Journal of the Chemical Society. Section A: Inorganic, Physical, and Theoretical Chemistry 1966:79-81.
OECD Harmonized Template:	Other Properties
HERO ID:	3827309

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; Cape Asbestos Co. Ltd.; NR; NR
Results Value	Surface area: 4.62 - 14.80 m^2/g @ 25°C
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: 110 - 620 Mpa (16,000 - 90,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial positive parallel extinction
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial positive parallel extinction
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial ± extinction inclined
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: 550 - 690 Mpa (80,000 - 100,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: 690 - 2100 Mpa (100,000 - 300,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Substance			
Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability			
Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other			
Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Mg silicate with iron
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Ca, Mg, Fe silicate with water up to 5%
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: vitreous to pearly
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: silky
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 5.5 - 6.0
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 6.0+/-
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 2.85 - 3.1
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 3.0 - 3.2
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial positive extinction parallel
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial negative extinction inclined
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; Anthophyllite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: $\leq$ 30 Mpa ($\leq$ 4,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: $\leq$ 7 Mpa ($\leq$ 1,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Mg silicate with some water
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Fe, Mg silicate
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Na, Fe silicate with some water
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: silky
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: vitreous to somewhat pearly
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: silky to dull
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 2.5 - 4.0
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 5.5 - 6.0
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 4.0
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 2.4 - 2.6
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 3.1 - 3.25
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 3.2 - 3.3
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Essential composition: Ca, Mg silicate with some water
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Luster: silky
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Mohs hardness: 5.5
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Specific gravity: 2.9 - 3.2
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Optical properties: Biaxial negative extinction inclined
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Badollet, M. S. (1951). Asbestos, a mineral of unparalleled properties. Transactions, Canadian Institute of Mining and Metallurgy 54:151-160.
OECD Harmonized Template:	Other Properties
HERO ID:	3827307

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Tensile strength: 7 - 60 Mpa (1,000 - 8,000 lb./in.^2)
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

Study Citation:	Bartosiewicz, L. (1973). Improved Techniques of Identification and Determination of Airborne Asbestos. American Industrial Hygiene Association Journal 34(6):252-259.
OECD Harmonized Template:	Other Properties
HERO ID:	3099513

EXTRACTION

Parameter	**Data**
CASRN and Test Material	1332-21-4; Asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	2-15 um size, 12.7% particles ≥5 μm, average particle size 2.9 μm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true diameter: 0.06 μm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true diameter: 0.26 μm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true diameter: 0.09 μm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true length: 0.55 µm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true length: 2.53 µm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Hwang, C. Y. (1983). Size and shape of airborne asbestos fibres in mines and mills. British Journal of Industrial Medicine 40(3):273-279.
OECD Harmonized Template:	Other Properties
HERO ID:	3083760

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Fiber size, median true length: 1.16 µm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-68-6; tremolite
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	acid resistant
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-66-4; actinolite
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	resistance to acids: none
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Substance			
Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability			
Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other			
Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	77536-67-5; anthophyllite
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	resistance to acids: very
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	resistance to acids: somewhat
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	resistance to acids: good
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	IARC, (2012). ARC Monographs on the evaluation of carcinogenic risks to humans: Asbestos (Chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite).
OECD Harmonized Template:	Other Properties
HERO ID:	3970851

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; None
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	None; NR; solid; NR
Results Value	Fibers degrade in dilute acids
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: From ATSDR (2001), USGS (2001), HSE (2005), NTP (2005)

Study Citation:	Lahondère, D., Cagnard, F., Wille, G., Duron, J., Misseri, M. (2018). TEM and FESEM characterization of asbestiform and non-asbestiform actinolite fibers in hydrothermally altered dolerites (France). Environmental Earth Sciences 77(10):385.
OECD Harmonized Template:	Other Properties
HERO ID:	6865913

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Diameter and aspect ratio; NA
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Saint-Salvi de Carcaves Unit and Frehel Unit in France; Solid; NR
Results Value	Aspect ratio: 20:1 - 100:1, width < 0.5 μm
Results Details	Analytical method: SEM-EDS-TEM-EDS
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Other Properties
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Results Value	Almost completely destroyed within 1 hour in 1N HCl
Results Details	at 95C
Results Remarks	Asbestos minerals, despite a relatively high fusion temperature, are completely decomposed at temperatures of 1,000 deg C.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: USEPA; Ambient Water Quality Criteria Doc: Asbestos p.A-3 (1980) EPA 440/5-80-022 (not a primary source; Primary source found in document: Lindell. 1972 Biological effects of asbestos.)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Other Properties
HERO ID:	3860485

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Results Value	Thermal decomposition is accomplished through dehydroxylation and dehydration mechanisms. Under dynamic heating conditions, dehydroxylation occurs at 650 deg C and formation of fastering and silica is apparent at 81 deg C.
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: USEPA, Office of Drinking Water; Criteria Document (Draft): Asbestos p./1-8 (1980) (not a primary source)

Study Citation:	(2017). PubChem: Chrysotile.
OECD Harmonized Template:	Other Properties
HERO ID:	3860485

EXTRACTION

Parameter	Data
CASRN and Test Material	12001-29-5; Not Reported
Confidentiality, Type, and Guideline	Not Reported; Not Reported; Not Reported
Solvent, Reactivity, Storage, and Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, and Purity	Not Reported; Not Reported; Not Reported; Not Reported
Results Value	Completely decomposed in concentrated Potassium hydroxide.
Results Details	at 200C
Results Remarks	The resistance of the asbestos fibers to attack by reagents other than acid as excellent up to temperatures of approximately 100 deg C with rapid deterioration observed at higher temperatures.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25°C and a boiling point above 25°C) or behaviors.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: Source: USEPA; Ambient Water Quality Criteria Doc: Asbestos p.A-5 (1980) EPA 440/5-80-022 (not a primary source; Primary source found in document)

Study Citation:	Seshan, K. (1983). How are the physical and chemical properties of chrysotile asbestos altered by a 10-year residence in water and up to 5 days in simulated stomach acid?. Environmental Health Perspectives 53(NOV):143-148.
OECD Harmonized Template:	Other Properties
HERO ID:	3582855

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile asbestos
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	No; International Union Against Cancer (UICC); National Institute of Environmental Health Sciences (NIEHS); Globe, AZ.; NR; NR
Results Value	Zeta potential changed from positive to negative in <1 hr after exposure to simulated gastric juice. Zero point charge moved from pH 6.5 for untreated fibers to pH 4 in 0.1N HCl treated for 5 days.
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Siegrist, H. G., Wylie, A. G. (1980). CHARACTERIZING AND DISCRIMINATING THE SHAPE OF ASBESTOS PARTICLES. Environmental Research 23(2):348-361.
OECD Harmonized Template:	Other Properties
HERO ID:	3581901

EXTRACTION

Parameter	Data
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; NA; mean diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; South Africa; Solid; NR Notes: Air jet milled
Results Value	Mean log width= -0.339 $\pm$ 0.229 um (width = 0.458 $\pm$ 1.69 um), log length = 1.197 $\pm$ 0.592 (length = 15.7 $\pm$ 3.91 um), mean log aspect ratio = 1.536 $\pm$ 0.523
Results Details	Measured by SEM
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical methods are appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Siegrist, H. G., Wylie, A. G. (1980). CHARACTERIZING AND DISCRIMINATING THE SHAPE OF ASBESTOS PARTICLES. Environmental Research 23(2):348-361.
OECD Harmonized Template:	Other Properties
HERO ID:	3581901

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; None; mean diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; South Africa; Solid; NR Notes: Air jet milled
Results Value	Mean log width= -0.606 $\pm$ 0.203 um (width = 0.248 $\pm$ 1.60 um), mean log length = 0.727 $\pm$ 0.442 (length = 5.33 $\pm$ 2.77 um), mean log aspect ratio = 1.332 $\pm$ 0.426
Results Details	Measured by SEM
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical methods are appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Siegrist, H. G., Wylie, A. G. (1980). CHARACTERIZING AND DISCRIMINATING THE SHAPE OF ASBESTOS PARTICLES. Environmental Research 23(2):348-361.
OECD Harmonized Template:	Other Properties
HERO ID:	3581901

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None; mean diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Idria, California; Solid; NR Notes: Short-fiber. Air classified.
Results Value	Mean log width= -0.780 $\pm$ 0.255 um (width = 0.166 $\pm$ 1.80 um) by SEM, -1.234 $\pm$ 0.251 um (width = 0.058 $\pm$ 1.78 um) by TEM, log length = 0.002 $\pm$ 0.561 (length = 1.00 $\pm$ 3.64 um) by SEM, mean log length = 0.710 $\pm$ 0.338 (length = 5.13 $\pm$ 2.18 um) by TEM; mean log aspect ratio 1.590 $\pm$ 0.383 um by SEM and 1.236 $\pm$ 0.450 um by TEM
Results Details	Measured by SEM and TEM
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical methods are appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Siegrist, H. G., Wylie, A. G. (1980). CHARACTERIZING AND DISCRIMINATING THE SHAPE OF ASBESTOS PARTICLES. Environmental Research 23(2):348-361.
OECD Harmonized Template:	Other Properties
HERO ID:	3581901

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; NA; mean diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Thetford, Quebec; Solid; NR Notes: Long-fiber. Air classified.
Results Value	Mean log width= -0.870 $\pm$ 0.255 um (width = 0.135 $\pm$ 1.80 um), mean log length = 0.651 $\pm$ 0.619 (length = 4.48 $\pm$ 4.16 um), mean log aspect ratio = 1.580 $\pm$ 0.383
Results Details	Measured by SEM
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical methods are appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Siegrist, H. G., Wylie, A. G. (1980). CHARACTERIZING AND DISCRIMINATING THE SHAPE OF ASBESTOS PARTICLES. Environmental Research 23(2):348-361.
OECD Harmonized Template:	Other Properties
HERO ID:	3581901

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; Tremolite
Confidentiality, Type, and Guideline	None; Experimental; NA; mean diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; St. Lawrence County, NY; Solid; NR
Results Value	Mean log width= 0.117 $\pm$ 0.292 um (width = 1.31 $\pm$ 1.95 um), mean log length = 0.464 $\pm$ 0.344 (length = 2.91 $\pm$ 2.20), mean log aspect ratio = 0.347 $\pm$ 0.214
Results Details	Measured by SEM and TEM
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical methods are appropriate.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in construction, fiber packing, cutting sheet asbestos, and crushed stone operation, operation mill, and open pit mine; Solid; 100% chrysotile Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.031 – 0.597 μm; Mean log width = -0.630 - -1.120 μm; Mean log aspect ratio = 0.942 – 1.273; Mean length = 1.07 – 3.95 μm; Mean width = 0.234 – 0.076 μm; Mean aspect ratio = 8.75 – 18.7
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	Ranges of averages of 8 samples from different occupational or mining settings. Log values were converted by reviewer.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in mixing fiber for cement; Solid; 92% chrysotile, 8% tremolite Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.380 μm; Mean log width = -0.619 μm; Mean log aspect ratio = 0.999; Mean length = 2.40 μm; Mean width = 0.240 μm; Mean aspect ratio = 9.98
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	Sample from occupational setting. Log values were converted by reviewer.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in vacuuming after asbestos removal; Solid; 40% amosite, 35% chrysotile, 5% gypsum, 20% other Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.610 and 0.715 μm; Mean log width = -0.654 and -0.638 μm; Mean log aspect ratio = 1.264 and 1.353; Mean length = 4.07 and 5.19 um; Mean width = 0.222 and 0.230 um; Mean aspect ratio = 18.4 and 22.5
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	2 samples from occupational settings. Log values were converted by reviewer.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in insulation removal from ducting; Solid; 35% amosite, 50% chrysotile, 15% other Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.666 μm; Mean log width = -0.588 μm; Mean log aspect ratio = 1.255; Mean length = 4.63 μm; Mean width = 0.258 μm; Mean aspect ratio = 17.99
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	Sample from occupational setting. Log values were converted by reviewer.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in insulation removal from ducting; Solid; 60% amosite, 20% chrysotile, 4% gypsum, 16% other Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.647 μm; Mean log width = -0.595 μm; Mean log aspect ratio = 1.242; Mean length = 4.44 μm; Mean width = 0.254 μm; Mean aspect ratio = 17.46
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	Sample from occupational setting. Log values were converted by reviewer.

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Snyder, J. G., Virta, R. L., Segreti, J. M. (1987). Evaluation of the phase contrast microscopy method for the detection of fibrous and other elongated mineral particulates by comparison with a STEM technique. American Industrial Hygiene Association Journal 48(5):471-477.
OECD Harmonized Template:	Other Properties
HERO ID:	3615922

EXTRACTION

Parameter	**Data**
CASRN and Test Material	13768-00-8; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; None; mean length and diameter
Solvent, Reactivity, Storage, and Stability	NA; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Personal air-monitor filters from workers involved in crushed stone operation; Solid; 100% actinolite Notes: Samples prepared according to the USPHS/NIOSH filter membrane method for evaluating airborne asbestos fibers
Results Value	Mean log length = 0.339 and 0.214 μm; Mean log width = -0.355 and -0.476 μm; Mean log aspect ratio = 0.695 and 0.690; Mean length = 2.18 and 1.64 μm; Mean width = 0.442 and 0.334 μm; Mean aspect ratio = 4.95 and 4.90
Results Details	Measured by STEM with EDXA on a particle-by-particle basis
Results Remarks	2 samples from manufacturing settings. Log values were converted by reviewer.

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Thorne, P. S., Lightfoot, E. N., Albrecht, R. M. (1985). Physicochemical characterization of cryogenically ground, size separated, fibrogenic particles. Environmental Research 36(1):89-110.
OECD Harmonized Template:	Other Properties
HERO ID:	3615789

EXTRACTION

Parameter	Data
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	No; Union Carbide Corp, CA; Monoclinic crystal; NR
Results Value	Chemical composition (ppm): 2467 Al; 678 Mn; 13.7 V; 1.1 Br; 88.4 Co; 1400 Cr; 9.69 Cs; 15380 Fe; 404 Na; 1914 Ni; 6.4 Sc; 1.20 W; 0.539 As; 3.4 Hg; 0.0176 Sm; 110 Zn
Results Details	Average particle size (n=50) measured by SEM: 1.00 +/- 0.44 um for Largest dimension, and 0.07 +/- 0.02 um for Smallest dimension.
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Other Properties
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12425-92-2; winchite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Optical property: pleochroism
Results Details	weak to moderate: X = colorless, Y = light blue−violet, Z = light blue
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: www.minsocam.oeg/msa/Handbook/Winchite.PDF.

Study Citation:	U.S. EPA, (2014). Toxicological review of libby amphibole asbestos: In support of summary information on the Integrated Risk Information System (IRIS).
OECD Harmonized Template:	Other Properties
HERO ID:	3827272

EXTRACTION

Parameter	**Data**
CASRN and Test Material	17068-76-7; richterite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	Optical property: pleochroism
Results Details	weak to strong in pale yellow, orange, and red
Results Remarks	Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

* Related References: www.minsocam.oeg/msa/Handbook/Winchite.PDF.

Study Citation:	Vaillancourt, A., Denes, G., Mao, L.V., R. (1997). Reactivity of chrysotile asbestos in acids: Mechanism of transformation to silicon dioxide hemihydrate upon leaching of magnesium. Materials Research Society Symposium Proceedings, vol. 453 :71-76.
OECD Harmonized Template:	Other Properties
HERO ID:	6873950

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; None; Average fiber diameter
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Mined in Asbestos, Quebec; Solid; Commercial grade Notes: batch 7TF12
Results Value	Average fiber diameter: 156 angstroms
Results Details	NA
Results Remarks	NA

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Vaillancourt, A., Denes, G., Mao, L.V., R. (1997). Reactivity of chrysotile asbestos in acids: Mechanism of transformation to silicon dioxide hemihydrate upon leaching of magnesium. Materials Research Society Symposium Proceedings, vol. 453 :71-76.
OECD Harmonized Template:	Other Properties
HERO ID:	6873950

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not reported; resistance to acids
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NA; Mined in Asbestos, Quebec; Solid; Commercial grade Notes: batch 7TF12
Results Value	Up to 1 N HCl or H2SO4, degree of crystallinity (DC) increases to 115% due to the dissolution of brucite and pyroaurite impurities (lower sample mass and therefore higher apparent DC). Above 1 N, leaching becomes significant, and DC decreases to zero at ~7N
Results Details	Minor smooth changes from acetic acid (ACA) and oxalic acid (OXA) with secondary leaching
Results Remarks	Acid leaching of chrysotile first rapidly dissolves the basic impurities, brucite and pyroaurite; then the outer layers have "Brucite-type magnesium" removed preferentially (no major structural reorganization); then "skeletal magnesium" is removed (structural collapse and amorphous silicon dioxide hemihydrate is formed).

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Other Properties
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; Crocidolite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Zeta potential: -32 mV
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Other Properties
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; Chrysotile
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR
Results Value	Zeta potential: +13.6 to +54 mV
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Virta, R. L. (2011). Asbestos. :1-40.
OECD Harmonized Template:	Other Properties
HERO ID:	3827175

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; Amosite
Confidentiality, Type, and Guideline	None; Experimental; Not Reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: CAS in paper: Amosite [19172-73-5]
Results Value	Zeta potential: -20 to -40 mV
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	optical properties: biaxial negative oblique extinction
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	zeta potential: -32 (surface charge, mV); resistance to acids: good; resistance to alkalies: good
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	tensile strength: <500 MPa (to convert MPa to psi, multiply by 145)
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	hardness = 4.0 Mohs
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	resistance to acids: good; resistance to alkalies: good
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	tensile strength: 1500-2600 MPa (to convert MPa to psi, multiply by 145)
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-28-4; crocidolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	tensile strength: 1400-4600 MPa (to convert MPa to psi, multiply by 145)
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	optical properties: biaxial negative oblique extinction
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	14567-73-8; tremolite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	hardness = 5.5 Mohs
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	tensile strength: 1100-4400 MPa (to convert MPa to psi, multiply by 145)
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	hardness = 5.5-6.0 Mohs
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	optical properties: biaxial positive-parallel extinction
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	hardness = 2.5-4.0 Mohs
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	optical properties: biaxial positive-parallel extinction
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination **High**

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-73-5; amosite
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	zeta potential: -20 to -40 (surface charge, mV); resistance to acids: fair, slowly attacked; resistance to alkalies: good
Results Details	not reported
Results Remarks	not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Virta, R. L. (2004). Asbestos. 3:288-319.
OECD Harmonized Template:	Other Properties
HERO ID:	3859385

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12001-29-5; chrysotile
Confidentiality, Type, and Guideline	none; not specified; not specified
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; NR; NR Notes: NR
Results Value	zeta potential: +13.6 to +54 (surface charge, mV); resistance to acids: weak, undergoes fairly rapid attack; resistance to alkalies: very good
Results Details	chrysotile fibers tend to become negative after weathering and/or leaching
Results Remarks	not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Other Properties
HERO ID:	6880237

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Gemological properties and mineral compositions of black nephrite from Guangxi
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	Luster: Greasy to vitreous
Results Details	Not Reported
Results Remarks	4 samples containing 60-99% ferro-actinolite

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Zhong, Q., Liao, Z. T., Qi, L. J., Zhou, Z. Y. (2019). Black Nephrite Jade from Guangxi, Southern China. Gems & Gemology 55(2):198-215.
OECD Harmonized Template:	Other Properties
HERO ID:	6880237

EXTRACTION

Parameter	**Data**
CASRN and Test Material	12172-67-7; Actinolite
Confidentiality, Type, and Guideline	None; Experimental; Gemological properties and mineral compositions of black nephrite from Guangxi
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR
Results Value	Actinolite fibers were 20×0.5 μm
Results Details	Not Reported
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination High

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN	12001-29-5
Confidentiality, Type, and Guideline	none; not specified; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: white asbestos; chemical formula 3MgO 2SiO2 2H2O
Value	ca. 350000 lb./inch2 -
Temperature	Not reported
System	Not reported
pH	Not reported
Standard Deviation Results	Not reported
Results Details	Average tensile strength: 350000 lb./inch2

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN	12172-73-5
Confidentiality, Type, and Guideline	none; not specified; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: chemical formula 1.5MgO 5.5FeO 8SiO2 H2O
Value	ca. 175000 lb./inch2 -
Temperature	Not reported
System	Not reported
pH	Not reported
Standard Deviation Results	Not reported
Results Details	Average tensile strength: 175000 lb./inch2

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

Study Citation:	Gaze, R. (1965). The physical and molecular structure of asbestos. Annals of the New York Academy of Sciences 132(1):23-30.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3646977

EXTRACTION

Parameter	**Data**
CASRN	12001-28-4
Confidentiality, Type, and Guideline	none; not specified; Not reported
Solvent, Reactivity, Storage, and Stability	NR; NR; NR; NR
Radiolabel, Source, State, and Purity	NR; NR; Solid; NR Notes: blue asbestos; chemical formula Na2O 3FeO Fe2O3 8SiO2 H2O
Value	ca. 500000 lb./inch2 -
Temperature	Not reported
System	Not reported
pH	Not reported
Standard Deviation Results	Not reported
Results Details	Average tensile strength: 500000 lb./inch2

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Details have been omitted.
Domain 2: Test Reliability				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables

Term	Definition
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
atm	Atmospheres
atm · m^3/mol	Atmospheres - cubic meters per mole
C	Celsius
CASRN	Chemical Abstract Service registry number
cP	Centipoise
CRC	CRC Handbook of Chemistry and Physics
DOE	U.S. Department of Energy
ECB	European Chemicals Bureau
EPA	Environmental Protection Agency
F	Fahrenheit
GC	Gas Chromatography
g/cm^3	Grams per cubic centimeter
GLP	Good Laboratory Practice
HLC	Henry's Law Constant
HPV	High Production Volume
HSDB	Hazard Substance Data Bank
ILO	International Labour Organization
IPCS	International Programme on Chemical Safety
IUCLID	International Uniform Chemical Information Database
K	Kelvin
Koa	Octanol-Air partition coefficient
Kow	Octanol-Water partition coefficient
mg/L	Milligrams per Liter
mol	Mole
mmHg	Millimeters of Mercury
MS	Mass Spectrometry
N/A	Not Applicable
NICNAS	National Industrial Chemicals Notification and Assessment Scheme
NLM	National Library of Medicine
NR	Not Reported
OECD	Organisation for Economic Co-operation and Development
Pa (hPa)	Pascals (hectopascals; 1 hPa = 100 Pa)
pH	Negative base 10 Log of Hydrogen Ion (H+) Concentration in Aqueous Solution
pKa	Negative base 10 Log of Acid Dissociation Constant (Ka)
RIVM	National Institute for Public Health and the Environment (Dutch: Rijksinstituut voor Volksgezondheid en Milieu)

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Term	Definition
RSC	Royal Society of Chemistry
RT	Retention Time
SIDs	Screening Information Dataset
VP	Vapor Pressure
US or USA	United States of America
UV (UV-Vis)	Ultra Violet (UV-Visible)
WHO	World Health Organization