



Company Name:	TMS International LLC - Darlington	Permit Writer:	Michael Epting
Agency Air Number:	0820-0047	Date:	DRAFT
Permit Number:	TV-0820-0047 v2.0		

DATE APPLICATION RECEIVED: July 01, 2024

DATE OF LAST INSPECTION: June 08, 2023

The facility was found to be in violation of Condition C.4 of their current Title V Operating Permit. The facility failed to maintain daily opacity inspection logs for the periods of June-July 2021 and March-April 2023. This matter was referred to the BAQ Enforcement Section for resolution. A No Further Action letter was issued on July 11, 2023.

The inspection report noted that S-1 and C-4 are out of service; however, a facility contact confirmed that they are still on-site.

PROJECT DESCRIPTION

The facility is requesting renewal of their Title V Operating Permit.

During this renewal, Equipment ID C-13 has been added to the permit and PTE calculations. C-13 was installed pre-2004; however, it was never included in the operating permit. In addition, the maximum process weight rate for EU ID 01 has been raised from 175 ton/hr to 300 ton/hr, to match the design capacity of the Grizzly Hopper, Equipment ID H-1. The annual potential throughput of the facility will also be raised from 225,000 TPY of slag to 307,840 TPY of slag. The facility has always had the capacity to run at 300 ton/hr of slag. The facility is not increasing production levels, they are only calculating their PTE at the worst-case scenario. As such, a PSD applicability analysis was not required.

In addition, the term "opacity checks" in Condition B.4 [formerly Condition C.4] was changed to visual inspection checks for clarification. Other practice language was modified for clarity and consistency. Tests for slag pile moisture content prior to processing has been replaced with fully saturating slag piles (which will ensure it is >1.5% moisture) prior to processing.

FACILITY DESCRIPTION

SIC CODE: 7389, Business Services

NAICS CODE: 562920, Materials Recovery Facilities

TMS International, LLC (TMS) operates a steel slag/scrap separator plant on the property of Nucor Corporation in Darlington, South Carolina. The facility receives slag, a co-product of steel making, and separates the metallic portion (scrap) from the non-metallic portion (slag). The scrap is either returned to the Nucor Steel melt shop to be recycled as a raw material for steel making or sold to other customers. Different sized slag products are sold and removed from the site by customers' trucks. Wet suppression is used at all times when emission sources controlled by it are in operation. The slag is saturated before it is run through the crushing and screening processes. There are no water sprayers for the conveyors; however, the process is continuous, so the slag does not dry out while on the conveyors.

SINGLE SOURCE DETERMINATION

This facility, TMS International LLC - Darlington, and Nucor Corporation - Darlington Plant (0820-0001) are a single source. Refer to the Statement of Basis dated October 31, 2019.

VOID EQUIPMENT



STATEMENT OF BASIS
Page 2 of 6
BAQ Air Permitting Division

Company Name:	TMS International LLC - Darlington	Permit Writer:	Michael Epting
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The following emission units/equipment have been deemed VOID and will be removed from the current operating permit. A comprehensive record of voided equipment for the site can be found in ePermitting under Program Components.

Emission Unit ID	EU Description	Equipment ID	Equipment Description	Reason for VOID Status	Date Removed
01	Main Separator Plant	C-2	17.0 tph 24" x 33' Conveyor C-2	Removed from site	2024
01	Main Separator Plant	C-10	108 tph 30" x 80' Conveyor C-10	Removed from site	2024

EMISSIONS

In the 2019 Title V Renewal, uncontrolled emissions were calculated based on 225,000 TPY of steel slag used and PTE was based on the maximum PWR from Nucor Corporation – Darlington scaled to 8,760 hours, 175 ton/hr = 1,533,000 TPY. In this renewal, both the uncontrolled emissions and PTE calculations are conservatively based on the maximum PWR of the front-end loader scaled to 8,760 hours, 300 ton/hr = 2,628,000 TPY.

For the main plant processes of transferring, screening, and crushing, AP-42 is used to determine the emissions. The initial transfer from the front-end loader to the jaw crusher (CR-1) utilizes Table 12.5-4, specifically the batch drop from a front-end loader with low silt slag, to calculate emissions. The remaining transfer calculations, as well as screening and crushing, utilize Table 11.19.2-2. Based on a file review of this facility, the decision to use crushed stone processing emission factors has been historically accepted since 1996, in which it is stated that, "These factors will be used for all slag crushing operations associated with steel mills in SC".

There are several different wet suppression control efficiencies used in the emission calculations. For transfers, screening, and crushing, uncontrolled emission factors and controlled emission factors are used from AP-42. For unpaved roads, 95% control efficiency is used per engineering judgement, taking into consideration the amount of water applied, the frequency of applications, as well as limited traffic speed. For material loading and wind erosion of stockpiles, an inherent control efficiency of 50% is applied as slag stockpiles cannot be processed until the moisture content exceeds 1.5%. This control efficiency is also based on engineering judgement, as well as the BMPs the facility uses.

Emissions calculations that required meteorological data, such as stockpile calculations, used the National Weather Service to determine the wind speed.

TMS INTERNATIONAL FACILITY WIDE EMISSIONS			
Pollutant	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
PM	191.04	14.50	191.04
PM ₁₀	65.28	5.45	65.28
PM _{2.5}	37.70	1.25	37.70
SO ₂	1.70E-06	--	1.70E-06



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TMS INTERNATIONAL FACILITY WIDE EMISSIONS			
Pollutant	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
NO _x	0.075	--	0.075
CO	0.043	--	0.043
VOC	0.006	--	0.006

NUCOR CORPORATION FACILITY WIDE EMISSIONS¹			
Pollutant²	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
PM	12,566	182	194
PM ₁₀	12,651	273	279
PM _{2.5}	9,025	196	197
SO ₂	252	252	252
NO _x	471	471	471
CO	2,316	2,316	2,316
VOC	285	285	285
Lead	327	1.6	1.6
Fluoride	9.09	9.09	9.09
Highest HAP: Hexane (H, T, V) (CAS# 110-54-3)	5.18	5.18	5.18
Total HAPs	392	21.18	21.18

¹ PM, PM₁₀, PM_{2.5}, VOC, and Total HAPs emissions are from the Statement of Basis dated October 19, 2022 (2022-10-19_0820-0001.dm.sob). SO₂, NO_x, CO, Lead, Fluoride, and Hexane emissions are from the Statement of Basis dated June 15, 2020 (2020-06-15_0820-0001.0tv.sob).

² H = HAP, T = TAP, V = VOC

SINGLE SOURCE EMISSIONS			
Pollutant¹	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
PM	12,757	196	385
PM ₁₀	12,716	278	344
PM _{2.5}	9,063	197	235
SO ₂	252	252	252
NO _x	471	471	471
CO	2,316	2,316	2,316
VOC	285	285	285
Lead	327	1.6	1.6
Fluoride	9.09	9.09	9.09



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REGULATIONS

Not Applicable - Section II(E) (Synthetic Minor)

This facility has not established any federally enforceable limits.

Not Applicable - Standard No. 1 (Emissions from Fuel Burning Operations)

The definition of a fuel burning operation as outlined in SC Regulation 61-62.1, Section I(31), is:

"...use of a furnace, boiler, device, or mechanism used principally, but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion."

The exempt revert scrap cutting torch is used principally for the purpose of direct heating in which the material being heated is directly contacted. As such, the standard does not apply.

Not Applicable - Standard No. 3 (state only) (Waste Combustion and Reduction)

This facility does not contain waste combustion or reduction sources.

Applicable - Standard No. 4 (Emissions from Process Industries)

This facility is subject to the opacity limit of 20% in Section IX and the PM limits in Section VIII of this standard. The facility is a non-enclosed operation and is subject to the management practices in Section X of this standard. The facility will use wet suppression to comply with Section X.

Process	Max Process Weight Rate (tons/hr)	PM Allowable at Max (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
01	300	63.0	23.24	1.62	Operating the process at or below the equipment's maximum process weight rate.



STATEMENT OF BASIS
Page 5 of 6
BAQ Air Permitting Division

Company Name:	TMS International LLC - Darlington	Permit Writer:	Michael Epting
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Permit Number:	TV-0820-0047 v2.0		

Not Applicable - Standard No. 5 (Volatile Organic Compounds)

This facility is located in the exempt counties of Anderson, Bamberg, Barnwell, Chesterfield, Darlington, or Hampton. As such, this standard does not apply.

Not Applicable - Standard No. 5.2 (Control of Oxides of Nitrogen (NOx))

This facility does not have any sources that have uncontrolled potential to emit more than 5 tons per year of NOx; therefore, the standard does not apply.

Applicable - Standard No. 7 (Prevention of Significant Deterioration)

This facility is not one of the listed 28-source categories and the facility's PTE for all regulated PSD pollutants is less than 250.0 TPY; however, due to being a single source with Nucor Corporation - Darlington Plant, this facility is major for PSD. This renewal does not trigger PSD.

Applicable - 61-62.6 (Control of Fugitive Particulate Matter)

The facility is subject to the state-wide requirements described under Section III of this standard. The facility is using wet suppression along with monitoring the slag pile moisture content to comply with this regulation. The facility receives slag from the mill. The metallic portion of the slag is separated and returned to the mill. The nonmetallic part of the processed slag consists mostly of CaO. This part of the processed slag does contain magnesium but is still considered the nonmetallic portion. The facility is required to keep this nonmetallic material at a moisture content (%) above 1.5%. The basis for this minimum moisture content is a document titled "Use of Controlled Emission Factors in Non-Metallic Mining Industries."

40 CFR 60 and 61-62.60 (New Source Performance Standards (NSPS))

Not Applicable - Subpart LL (Metallic Mineral Processing Plants), applies to any combination of equipment that produces metallic mineral concentrates from ore. This facility obtains the concentrate from slag. As such, this subpart does not apply.

Not Applicable - Subpart OOO (Nonmetallic Mineral Processing Plants), applies to equipment in fixed or portable nonmetallic mineral processing plants, which includes crushers, screening operations, and belt conveyors. Per ADI 9900001, "As a consequence of iron and steelmaking processes, slag is produced. Although these processes consume raw materials that might meet the definition of nonmetallic minerals, the processes transform the raw materials into products and by-products, such as slag, that do not contain recognizable nonmetallic minerals or mixtures thereof." As such, this subpart does not apply.

40 CFR 61 and 61-62.61 (National Emission Standards for Hazardous Air Pollutants (NESHAP))

Not Applicable - This facility does not emit the pollutants in a way that is subject to this standard (asbestos, benzene, beryllium, coke oven emissions, arsenic, mercury, radio nuclide, radon, or vinyl chloride).

40 CFR 63 and 61-62.63 (National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories)

Not Applicable - Although TMS is a single source with a facility that is an area source of HAP emissions, this facility is not subject to any area source regulations.



STATEMENT OF BASIS
Page 6 of 6
BAQ Air Permitting Division

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Not Applicable - 61-62.68 (Chemical Accident Prevention Provisions)

This facility does not store or use chemicals subject to 112(r) above the threshold quantities.

Not Applicable - 40 CFR 64 (Compliance Assurance Monitoring)

This facility does not use a control device to comply with an emissions limit.

AMBIENT AIR STANDARDS REVIEW

Applicable - Standard No. 2 (Ambient Air Quality Standards)

This facility has demonstrated compliance through modeling; see modeling summary dated **DRAFT**.

Not Applicable - Standard No. 8 (state only) (Toxic Air Pollutants)

TMS does not emit TAPs; however, it is modeled with Nucor as they are a single source, and Nucor does emit TAPs. See modeling summary dated **DRAFT**.

PERIODIC MONITORING					
ID	Applicable Requirement	Measured Parameter	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
01	S.C. Reg 61-62.5, Std No. 4, PM Limits	--	--	--	Compliance with the applicable requirement is demonstrated through the operation of equipment at or below the maximum process weight rate.
01, Roadways	S.C. Reg 61-62.5, Std No. 4, PM Limits, Opacity and Non-Enclosed Operations, S.C. Reg 61-62.6, Fugitive PM	Follow BMPs	Varies	Semiannual Visual Inspection Reports/Other Records On-Site	Following BMPs will ensure accuracy of the uncontrolled PM emissions used in Std 4 PM limits. BMPs will also ensure minimal fugitive PM emissions and minimal opacity.

PUBLIC NOTICE

This Title V Permit will undergo a 30-day public notice period and a 45-day EPA comment period in accordance with SC Regulation 61-62.1, Section II(N) and SC Regulation 61-62.70.7(h).

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.