



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Guidance Regarding the ACT-100-U[®] Tank Technology

FROM: Anna Hopkins Virbick, Director
Office of Underground Storage Tanks

TO: State UST Program Managers
EPA Regional Program Managers

Introduction

Pursuant to a request from the Steel Tank Institute (STI), the Environmental Protection Agency (EPA) is providing guidance regarding a newer composite tank technology called the ACT-100-U[®]. This technology is similar to the new tank standard at 40 CFR § 280.20(a)(3) which describes one acceptable tank as being constructed of a steel-fiberglass-reinforced-plastic composite. The difference with the ACT-100-U[®] technology is that it is constructed of a steel-polyurethane composite. Therefore, the newer ACT-100-U[®] technology does not meet the regulations at § 280.20(a)(3) because the cladding is not fiberglass-reinforced-plastic (FRP). However, when the underground storage tank (UST) regulations were written, flexibility for new and emerging tank technologies was provided for at § 280.20(a)(5). It is here where the ACT-100-U[®] tank technology may fit into the UST regulations.

Recommendation

EPA recommends that implementing agencies determine that the ACT-100-U[®] tank technology is designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than those tanks already specifically listed in the regulations.

Discussion

EPA recommends that implementing agencies make this determination based upon the following information:

1. Underwriters Laboratories (UL) Listing

The ACT-100-U[®] has received a third party listing issued by UL (see attachment 1) dated 6/5/96 as a coated composite tank for flammable liquids (UL 1746). The tank is fabricated by coating a tank listed under UL 58 with a polyurethane coating. The coating material passed the same tests as the ACT-100[®] FRP coating under UL 1746 part II requirements. Note: UL is in the process of finalizing testing criteria (to be called UL 1746 part IV) specific to ACT-100-U[®] coating. The following tests were performed by UL on coupon samples containing a minimum 70 mil thick polyurethane coating:

- Accelerated Air Oven Aging Testing
- Immersion Testing
- Light and Water Exposure Testing
- Abrasion Resistance Testing
- Impact and Cold Exposure Testing
- Corrosion Evaluation Testing
- Identification Testing
- Strength of Pipe Fittings Testing (both bending moment and torque)
- Strength of Lift Fittings Testing
- Tank Impact Testing
- Tank Examination and Holiday Testing

2. ACT-100-U[®] Specification

STI has prepared an ACT-100-U[®] Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks (see attachment 2). The purpose of this specification is to establish ACT-100-U[®] production procedures which are fully supported by quality assurance measures and proper installation requirements. The specification contains information regarding a specific method of underground external corrosion control for steel tank. It includes requirements for fabrication and performance, electrical isolation, approved resins, and cladding application.

3. Installation Instructions

STI has written installation instructions (see attachment 2, appendix K) which are specific to the ACT-100-U[®] tank technology. These instructions provide for the inspection and repair of any coating damage, electrical isolation of the tank, and detailed instructions for the installation of the tank.

4. Side-By-Side Comparison of ACT-100-U[®] with ACT-100[®] (National Association of Corrosion Engineers (NACE) International Paper No. 583 Presented at the Corrosion 97 Conference)

A paper (see attachment 3) titled “21st Century Underground Steel Tank Protection Today” was presented at the NACE International Conference in 1997. This paper provides

information regarding the testing of the polyurethane coating along with a side-by-side comparison of the ACT-100® and ACT-100-U® tank technologies. One Environmental advantage that the paper discusses for the ACT-100-U® is that the polyurethane coating is 100% solids and does not contain amines, styrenes, or volatile organic compounds (VOCs).

Note: The NACE paper contains some information regarding cathodic disbondment resistance and flexibility for the polyurethane coating. This information was obtained from UL testing conducted in 1993 (see attachment 4) on coating samples that ranged from 12 to 31 mils in thickness and is not part of the UL 1746 listing.

Please contact Paul Miller of my staff via E-mail at miller.paul@epamail.epa.gov or phone at (703) 603-7165 if you have questions regarding this guidance.

Attachments (4)

cc (w/o attachments): Wayne Geyer, Steel Tank Institute
David Wiley, OUST
OUST Management Team