

STANWADE METAL PRODUCTS

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PREFACE

Steel has proven to be the most flexible and durable material to withstand the powerful forces exerted upon USTs. ACT-100-U® tanks use proven steel tank fabrication technologies coupled with the durability and corrosion resistance of polyurethane laminates to provide a long-lasting, reliable UST.

It is the intent of the ACT-100-U® specification to incorporate the technical gains and achievements from previous specifications and standards, while enabling new forms of thick coated steel tank technology to be adopted.

1. PRODUCT NAME

ACT-100-U®, Composite Steel
Underground Storage Tank

2. MANUFACTURER

Stanwade Metal Products
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Hartford, Ohio 44424
(800)826-5243

3. PRODUCT DESCRIPTION

In both double-wall and single-wall configurations, composite steel underground storage tanks are manufactured of steel and protected against corrosion through application of a polyurethane laminate. Durable polyurethane laminates, properly applied to steel underground storage tanks (USTs) at a minimum 70 mils, eliminate metal-to-soil exposure, thereby creating an effective barrier to corrosion.

During recent years, society's wishes for protection of the environment and underground water reserves have resulted in an increasing number of states, counties, and municipalities requiring secondary containment of USTs. A double-wall UST is basically a tank-within-a-tank that meets this mandate.

Many tank specifiers prefer double-wall without regard to regulatory requirements. As a result, secondary containment tank use continues to increase and single wall tanks now comprise less than 50% of the underground storage tanks specified in America.

Regardless of whether single or double wall designs are specified, ACT-100-U® tanks provide:

- Alternative fuels compatibility without additional cost of internal linings
- Easy customization for multi-product storage compartments up to 30,000 gallons aggregate per tank
- Steel striker plates below each tank opening to protect the tank bottom
- Potential cost savings during installation through a variety of acceptable backfill options.
- A variety of dimensions are available from manufacturers.
- Steel shell fabrication, surface preparation and polyurethane coating application all take place at Stanwade Metal Product's plant.

4. TECHNICAL DATA

ACT-100-U® technology meets the requirements of

- U.S. Environmental Protection Agency underground storage tank regulations (40 CFR 280)
- Steel Tank Institute ACT-100-U® Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks, Publication #F961.
- Underwriters Laboratories UL 58 Standard for Steel Underground Tanks for Flammable and Combustible Liquids
- Relevant fire codes

A. General Characteristics

An ACT-100-U® tank has characteristics unique to the composite tank technology:

Polyurethane Laminate : Primary corrosion protection for any underground steel structure is first achieved by preventing soil to metal contact through application of dielectric coatings. ACT-100-U® tanks are separated from the surrounding backfill through application of the polyurethane laminate at a minimum 70 mils thickness. The polyurethane laminates are STI tested to STI requirements and then approved for adoption into the ACT-100- U® specification. In addition to corrosion protection the polyurethane laminate provides a tough, durable surface which is resistant to impact and abrasion.

Polyurethane laminates have strong adhesion properties when applied to a properly prepared surface. The exterior steel surface of the UL 58 constructed tank goes through several steps to assure permanent adhesion of the polyurethane laminate. Initial steps include removal of all weld spatter and greasy, oily areas. The tank is then blast cleaned. The polyurethane laminate is then applied either in multiple passes or multiple coats until the desired dry film thickness is achieved.

Testing and Inspection : After the laminate has cured, a non-destructive dry film thickness gauge is utilized to assure the laminate is the proper dry film thickness over the entire tank's surface. A holiday detector with a minimum 10,000-volt spark is employed over the entire surface of each ACT-100-U® tank to prove that no steel is exposed. Holiday tests assure that lamination techniques meet or exceed the ACT-100-U® specification.

Electrical Isolation : All ACT-100-U® tanks must be electrically isolated from all metallic underground structures that will be exposed to backfill. Tank openings are electrically isolated by use of dielectric nylon bushings or flange isolators that will be compatible with stored product.

Electrical isolation eliminates the possibility of corrosion between dissimilar metals, which can occur if other metallic structures are attached to the tank. Objects such as interstitial leak detection and other equipment such as pumps, conduit or dispensers must be electrically isolated from the tank. This includes hold down straps installed to prevent the tank from floating out of the excavation during a high water table.

This isolation is intact when shipped from the factory. In systems where non-metallic piping is used, electrical isolation may not be needed and is not required to be furnished with ACT-100-U® tanks. Such options should be discussed with the tank manufacturer.

B. Secondary Containment Tank Characteristics

The vast majority of double-wall ACT-100- U® tanks are built to conform with the Steel Tank Institute Standard for Dual Wall Underground Steel Storage Tanks (F841). This STI standard details double wall tank construction requirements, which include built-in interstitial leak detection monitoring capability.

Primary Inner Tank : The UL 58 standard steel thickness requirements are determined by several factors such as tank diameter, tank length, and tank burial depth. However, UL 58 notwithstanding, the primary inner tank is built with a minimum steel thickness of 10 gauge.

Steel striker plates at least 1/4" thick are installed on the interior bottom below each tank opening greater than 1/2". This does not apply to manways which do not have openings in the lid. These striker plates prevent wear from inventory sticking and product flow.

Secondary Outer Tank : Construction of the steel outer wrap is separate from the inner wall, but intimate contact or face-to-face lay-up will occur. This intimate contact allows the flow of liquid through the interstice to designated monitoring points, if an internal leak were to occur.

Interstitial Leak Detection Monitoring : ACT-100- U® composite double-wall tanks come with built-in interstitial leak detection monitoring capability. Four different monitoring options are available:

- An external monitoring pipe
- A monitoring pipe with sump
- An interstice monitoring opening by an extended outer tank head beyond the inner tank head
- An internal monitoring pipe

Interstitial monitoring options should be discussed with the tank manufacturer.

5. INSTALLATION

Illustrated installation instructions for ACT-100- U® underground storage tanks (Document No. R971) are available upon request from Stanwade Metal Products, and a copy is shipped with each tank.

Tank installation is a specialized craft. It is important to assure that installers have the necessary knowledge, skills and equipment to enable proper and safe underground storage tank installation.

6. AVAILABILITY

ACT-100-U® steel single and double-wall underground storage tanks are available from Stanwade Metal Products.

Information on tank costs can be obtained directly from Stanwade Metal Products. Installation costs should be requested from qualified and experienced tank installation contractors.

7. WARRANTY

For installations in the United States of America, Canada or Puerto Rico, ACT-100- U® composite underground storage tanks are backed by a 30-year limited warranty against tank failure caused by cracking, breakup or collapse; corrosion caused by reaction of the tank with its soil environment; and internal corrosion for those tanks equipped with wear plates and used to store heating or motor fuels, including alcohols, and other compatible chemicals. In addition, the steel tank manufacturer warrants the tank against failure due to defective materials and workmanship for one year following the delivery of the tank.

Each ACT-100-U® composite tank is registered with STI by its serial number. A copy of the complete ACT-100-U® warranty is available from Stanwade Metal Products.

Except as specifically provided in the ACT-100- U® limited warranty, there are no warranties, express or implied, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. In no event shall STI, Stanwade Metal Products, STA, Stico, or any subsidiaries thereof, be liable for loss of profits, indirect, incidental, special, consequential, or other similar damages.

8. MAINTENANCE

No maintenance is required on ACT-100- U® double-wall or single-wall underground storage tanks.

9. TECHNICAL SERVICES

Engineering and installation assistance can be provided by Stanwade Metal Products.