

STEEL TANK INSTITUTE

Technology Summary

PERMATANK®, Double Wall Steel-Fiberglass Underground Storage Tank

(NOTE: This document is only a summary and as such does not contain specific details of the tank construction.)

PREFACE

The Permatank® specification covers an underground double wall tank technology utilizing an inner steel tank of UL 58 thickness contained within an outer fiberglass reinforced plastic (FRP) tank. A polyester film/mesh standoff is installed between tanks and a factory installed vacuum gauge is used to monitor the space between the tanks.

Development of this technology began in the mid-1980s with a subsequent UL 1746 listing achieved in the early 90's. January, 1992 marked the beginning of a licensing program utilizing the process for fabricators of STI.

Salient features of Permatank® are the UL 58 thickness steel tank -- to maintain structural integrity and product compatibility - - with an outer FRP tank providing corrosion protection and secondary containment. Removable lift hooks on pipe connections make field touch-up of FRP laminate on traditional tank lift lugs unnecessary. A factory sealed vacuum on the interstitial space ensures tank integrity.

Dielectric bushings are optional since the FRP is laminated to the edge of each fitting. The resulting tank has the structural strength of steel and the corrosion resistance of an FRP tank. Anodes are unnecessary as well since the outer FRP tank provides a complete barrier to the outside soil environment. Wear plates under each tank opening greater than ½" inhibit internal corrosion.

1. PRODUCT NAME

Permatank®, a Double Wall Steel-Fiberglass Underground Storage Tank

2. MANUFACTURER

Manufacturers of Permatank® double wall underground storage tanks are members of Steel Tank Institute (STI), 570 Oakwood Road, Lake Zurich, IL 60047.
Phone: (847) 438-8265

3. PRODUCT DESCRIPTION

The Permatank® double wall underground storage tank utilizes a full-thickness UL 58 primary steel tank in conjunction with a multi-layer fiberglass-reinforced plastic (FRP) outer wall to create a strong, yet light-weight double wall tank.

The primary tank, made of steel, and the outer tank, made of fiberglass, are both manufactured in accordance with standards of Steel Tank Institute and Underwriters Laboratories. Polyethylene standoff material or embossed mylar are used to create a defined interstitial space between the inner and outer walls ensuring prompt, effective leak detection. This double wall design is classified as a Type II by Underwriters Laboratories. The interstitial space can be monitored using a variety of leak detection methods.

The Permatank® design also provides a cost reducing interstitial Precision Test System (PTS) as a standard feature. The Precision Test System meets third-party testing

requirements established by the U.S. Environmental Protection Agency (EPA) for tightness testing of underground storage tanks in excavations. This eliminates the expense of a third-party precision test during installation, as required by some state and local regulations.

Permatank® double wall tanks are built to Steel Tank Institute Publication No. F922, Specification for Permatank® and is also Underwriters Laboratories listed under UL 1746. Each qualified manufacturer is subject to exacting quality assurance inspections.

Permatank® delivers:

- Alternative fuels compatibility without the additional cost of internal liners
- Steel inner tank gives Permatank® flexibility and strength
- Striker plates beneath each tank opening protect the tank bottom from internal corrosion.
- Customized multi-product storage compartments in capacities up to 50,000 gallons aggregate per tank
- The lighter weight of the Permatank® double wall tank often results in lower shipping and handling costs.

4. TECHNICAL DATA

Permatank® meets the requirements of:

- U.S. Environmental Protection Agency underground storage tank regulations (40 CFR 280)
- Steel Tank Institute F922, Permatank® fabrication specification,
- Underwriters Laboratories UL 58 Standard for, Steel Underground Tanks for Flammable and Combustible Liquids
- Underwriters Laboratories UL 1746 Standard for, External Corrosion Protection Systems for Steel

Underground Storage Tanks

- Underwriters Laboratory of Canada Standard C 58.10
- Relevant fire codes

5. INSTALLATION

Illustrated installation instructions for Permatank® underground storage tanks (Document No. R923) are available upon request from STI and qualified manufacturers, 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

Permatank® steel double wall underground storage tanks are available from qualified STI manufacturing plants throughout North America. Contact STI for a complete list of qualified manufacturers.

Information on tank costs can be obtained directly from qualified Permatank® manufacturers. Installation costs should be requested from qualified and experienced tank installation contractors.

7. WARRANTY

For installations in the United States of America and Canada, Permatank® double wall 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 Permatank® manufacturer warrants the tank against failure due to defective materials and workmanship for one

year following the delivery of the tank. Each Permatank® double wall tank is registered with STI by its serial number. A copy of the complete Permatank® warranty is available from qualified STI manufacturers.

Except as specifically provided in the Permatank® 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, STI members, 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 Permatank® double wall underground storage tanks.

9. TECHNICAL SERVICES

Engineering and installation assistance can be provided by qualified Permatank® manufacturers.

Steel Tank Institute's " Specification for Permatank®," Publication #F922, is available for a nominal fee from the STI website, www.steeltank.com, or by contacting Steel Tank Association, Inc (STA) by calling (847) 438-0989.