

Specification and Performance Warranty F 900 REV B

Guide Specifications For Single and Double Wall Fibreglass Reinforced Plastic (FRP) Underground Storage Tanks.

SHORT FORM: FTS will provide Single or Double Wall Fibreglass Reinforced Plastic (FRP) Underground Storage Tanks as shown on the drawings. Sizes and fittings shall be as shown. The tanks will be fibreglass tanks as manufactured by FTS, under licence to Xerxes Corporation of USA. Tanks will be tested and installed with crushed stone or pea gravel as specified in the current installation instructions provided with the tank.

LONG FORM:

1.0 General

1.1 Quality Assurance

- A. Acceptable Manufacturer: FTS
- B. Governing Standards as applicable:
 1. AS1692 CAT.4 TANKS
 2. Underwriters Laboratories Inc. (UL) Standard for safety 1316. File MH 9061 (N) for storage of flammable liquids.

1.2 Submittals

- A. Shop Drawings: FTS will submit a general arrangement drawing for each tank. Drawings will show locations of all fittings, accessories and critical dimensions.
- B. Catalogue Data: Installer will submit one copy of manufacturer's literature to include one copy of manufacturer's current installation instruction.

2.0 Products

2.1 Single and Double Wall Fibreglass Reinforced Plastic (FRP) Underground Storage Tanks

Note that Double Wall tanks will have space between the primary and secondary shell walls to allow for the free flow and containment of all leaked product from the primary tank. The space also allows the insertion of a monitoring device through a monitoring fitting. Each monitor fitting will consist of a 100mm BSP fitting on the secondary tank.

- A. Loading Conditions - Tank will meet design criteria below:
 1. Internal Load: Tank will withstand without leakage a 35kPa .35153 kg/cm² pressure test. Installer will test prior to installation as this test is to test for leakage.
 2. Vacuum Test: Every tank will be tested to 266 mm mercury vacuum by the tank manufacturer to assure structural integrity.
 3. Surface Loads: Tank will withstand surface H-20 axle loads when properly installed according to current manufacturer's installation instruction.
 4. External Hydrostatic Pressure: Tank will withstand 2133mm burden with the hole fully flooded with a 3:1 safety factor against buckling.
 5. Tanks will support accessory equipment i.e. drop tubes, submersible pumps and ladders when installed according to tank manufacturer's recommendations and limitations.
 6. Striker plates will be installed under each service fitting and manway opening.
 7. B.S.P. Threaded Fittings.
 - A. All threaded fittings will be of a material of construction consistent with the requirements of AS1210 and located as per drawings.
 - B. All standard threaded fittings will be B.S.P. sockets and will be 100 mm diameter. Reducers are to be used for smaller sizes where shown and provided by installer.
- B. Product Storage:

1. Tanks will be capable of storing petroleum products with a specific gravity up to 1:1; and will be chemically inert to petroleum products.

2. All tanks will be vented to atmosphere. Tanks are not designed as pressure vessels.

3. Tanks will be capable of storing gasoline or gasohol (10% ethanol and 90% gasoline mixture), 90.5% gasoline and 9.5% Oxinol-50* (4.75% methanol and 4.75% GTBA mixture); Dupont EPA waiver (gasoline with 5% methanol and a minimum 2.5% cosolvent - the blend may contain a maximum concentration of up to 3.7 weight percent oxygen in the final fuel); MTBE (methyltertiarybutylether) - gasoline with up to 20%, by volume, of MTBE; jet fuel; av-gas; kerosene; diesel fuel; motor oil; or potable water at ambient underground temperatures; or used for fuel oil at temperatures not to exceed 66°C.

- C. Materials: Tanks will be manufactured with 100% resin and glass fibre reinforced with no sand filters.

- D. Tank Dimensions (Refer FTS literature).

- E. Webbing straps with "man out of hole" binding straps provided as standard. Number and location of straps to be determined by manufacturer. Straps will be capable of withstanding the buoyancy load of the tank diameter.

2.2 Optional Accessories

- A. Manholes:
 1. All manholes to be flanged at 600 ID complete with Australian Standard listed gaskets, black bolts and covers. For larger tanks 700NB manholes are available.
 2. Location as shown on drawings.
- B. Manhole Risers - Provide fibreglass manhole risers (not attached to manholes) to permit access to manhole. (Street box at grade level to be furnished by others).
- C. Fill Tubes - Can be Aluminium and factory installed by manufacturer (optional).
 1. Location as shown on drawing.
 2. Aluminium tubes shall be 100 mm diameter with 100 mm threaded fitting.
- D. Ladders - Will be standard ladder as supplied by tank manufacturer (aluminium).

3.0 Execution

3.1 Installation and Testing

Tanks will be tested and installed according to current installations instructions provided with the tank. (Refer to FTS Fibreglass publication and include as part of specification).

PERFORMANCE WARRANTY

FTS warrants that our underground storage tanks, if used in accordance with our specifications and installed according to our published installation instructions:

1. Will not fail for a period of thirty (30) years from date of original purchase due to external corrosion
2. Will not fail for a period of thirty (30) years from date of original purchase due to internal corrosion, provided the tank is used solely with or without tank water bottoms for gasoline, gasohol (90% gasoline/10% ethanol mixture), 90.5% gasoline and 9.5% Oxinol-50 (4.75% methanol and a minimum of 2.5% cosolvent - the blend may contain a maximum concentration of up to 3.7 weight percent oxygen in the final fuel); MTBE (methyltertiarybutylether) - gasoline with up to 20% by volume of MTBE; jet fuel; av-gas; kerosene; diesel fuel; motor oil; or potable water at ambient underground temperatures; or used for fuel oil at temperatures not to exceed 66°C
3. Will not fail for a period of thirty (30) years from date of original purchase due to structural failure (defined as breaking or collapse) provided the installation is performed and validated by a qualified installation contractor and the tank is used as stated above
4. Will meet our published specifications and will be free from material defects in materials and workmanship for a period of one (1) year following date of original delivery by us

If any tank(s) is to be removed from an installation, moved to another location and is intended for active service at a new location, the tank(s) must be recertified by FTS in order to maintain the warranty as originally extended. The foregoing warranties do not extend to tank failures caused by earthquakes, hydrological or geological changes or other extraordinary natural forces which may act upon the Products.

FTS's liability under this warranty shall be limited to, at FTS's option:

1. Repair of the defective product
2. Delivery of a replacement product to the point of the original delivery, or
3. Refund of the original purchase price,

and we shall not be liable for any labour, other installation costs, indirect or consequential damages or other damages in connection with such tanks. A claim must give FTS the opportunity to observe and inspect the tank prior to removal from the ground or the claim will be barred. All claims must be made in writing within one year of tank failure or be forever barred.

The foregoing warranty constitutes FTS's exclusive obligation and FTS makes no warranty or representation, express or implied, with respect to the product or any service, advice or consultation, if any, furnished to customer by FTS or its representatives, whether as to merchantability, fitness for a particular purpose, or otherwise the remedies set forth in the above warranties are the only remedies available to any person for breach of the warranty or for breach of any covenant, duty, or obligation on the part of FTS hereunder, FTS shall have no liability for incidental, consequential or punitive damages of any description, whether any such claim be based upon warranty, contract, negligence, strict liability or other tort, or otherwise.

**This Warranty Is Only Valid If The Installation Checklist Is Returned to FTS
Within 30 Days Of The Initial Installation Of The Tank.**