

Technical Specification

SECTION 1 SCOPE

1.1 Purpose

- Horizontal cylindrical tanks designed for underground storage of flammable and combustible liquids at atmospheric pressure.

1.2 Design

- The tanks consists of a single wall horizontal cylindrical steel tank completely contained within a leak tight non metallic fibre reinforced plastic (FRP) external jacket which provides secondary containment, corrosion protection and provides for monitoring leakage in the annular space between the primary steel core and the secondary containment

SECTION 2 GOVERNING STANDARDS

2.1 Standards for Manufacturing

- Underwriters Laboratory (UL) standard UL58 - Steel underground tanks for flammable and combustible liquids
- Australian Standard AS 1692 – Steel tanks for flammable and combustible liquids

2.2 Standards for Safety

- Underwriters Laboratory (UL) standard UL1746 – External corrosion protection systems for steel underground storage tanks
- Australian Standard AS 1940 – Storage and handling of flammable and combustible liquids
- Manufacturers Installation instruction and the NFPA30 – Flammable and combustible code.

SECTION 3 GENERAL CONDITIONS

3.1 Materials and Construction

- The core steel tank shall be manufactured from 250grade carbon steel using dished and flanged ends
- Thickness will be at or above those specified in AS 1692.
- The requirement for corrosion allowances must be specified to the manufacturer as part of the tank requirement
- A suitable stand off material will be installed between the core tank and FRP jacket to ensure separation
- The FRP jacket shall be a minimum of 5mm thick and shall not contain fillers
- The resin used must be capable of holding blended fuels including bio diesel and E85 petroleum
- The jacket will fully enclose the steel core tank including the fittings
- Exposed steel fittings e.g. lifting lugs must be covered during installation with the appropriate equipment supplied by the manufacturer.
- Cathodic protection devices shall not be attached to the tank
- The jacket shall be manufactured by a filament winding or chopper gun process

3.2 Operating and Static Head Pressure

- The tank shall not be subjected to an operating or static head pressure above the test pressure outlined below
- Where an operating or static head pressure is to be applied above 35kPa the loadings must be advised to manufacturer before manufacture is commenced and the tank design will be modified

3.3 Vacuum operations

- The tank shall not be subjected to an operating vacuum without reference to the manufacturer

3.4 Application

- The tank is designed to store petroleum based flammable and combustible liquids. Products. The use of other products without the manufacturer's approval may void the warranty
- The tank is designed as an underground tank and shall not be installed as an on-ground tank

3.5 Fittings

- Fittings shall be specified to the manufacturer before manufacture.
- Owners sign off of a general arrangement drawing showing fittings including man access if required and communicated to the manufacturer after order placement shall be regarded as approval to commence manufacture.

3.6 Surface treatment

- Internal of the core tank shall be mill finished steel, clean and dry
- External FRP coating shall have a wax in resin finish coat
- The manway if fitted will be blasted to 2.5 and finished with an epoxy coating to 150 micron minimum thickness

TECHNICAL SPECIFICATION

3.7 Testing

- A factory leak test shall be completed on the core tank before applying the external jacket – 35kPa pressure and soapy water test.
- Barcol and thickness tests shall be conducted on the jacket by the manufacturer.
- A factory vacuum test shall be conducted on the annular space to prove the integrity of the tank. The vacuum shall be pulled to negative 80kPa and held constant for a minimum of one hour after stabilising
- Hydro testing and NDT testing of the tank and jacket will be conducted to the owners specification

SECTION 4 TANK ACCESS

4.1 Factory supply

- Where requested by the owner the tank will be supplied by the manufacturer with a factory installed 600mm man access (manway) complete with water tight gasket and lid
- Where requested by the owner the manway lid will be factory fitted with five (5) 100NB sockets for the entry of pipe work into the tank
- When fitted with a manway the leak monitoring gauge will be factory located adjacent to the manway
- The manway will be enclosed in a tank riser (sump) consisting of an FRP collar attached to the tank, riser to be field laminated and a lid
- Requirement for water tight riser is to specified by the owner

SECTION 5 LEAK DETECTION

5.1 Factory supply

- The tank will be supplied by the manufacturer with a factory set vacuum
- A gauge for leak detection monitoring will be factory installed.
- Electronic leak detection monitoring will be factory fitted where requested by the owner
- A calibrated dipstick will be supplied by the manufacturer as part of the package

5.2 Operations

- It is the responsibility of the owner to monitor the operation of the tank.

SECTION 6 TANK ANCHORING

6.1 Anchoring

- It is recommended that a tank to be installed in a wet hole or a hole that could become wet is anchored

6.2 Anchors

- Factory supplied concrete anchors or logs complete with specifically located galvanised anchor hoops are recommended by the manufacturer

6.3 Man out of hole tie down system

- The tank will be supplied with non corrosive straps either webbing or FRP and the manufacturers binder system for each strap to be field connected to the anchor hoops without man entry to the excavation

SECTION 7 QUALITY ASSURANCE

7.1 Compliance

- Manufacturer's quality programme shall be in compliance with ISO 90001 or equivalent and shall be third party accredited

SECTION 8 APPROVED MANUFACTURER

- Tank Solutions Pty Ltd

SECTION 9 INSTALLATION AND TESTING

9.1 Training and certification

- Tanks installation should be by contractors or their employees who have been trained by the manufacturer

9.2 Installation

- Tanks should be installed in accordance with the manufacturers current installation published procedures

9.3 Pre and Post Installation Testing

- A vacuum check using the factory installed gauge should be conducted pre and post installation in accordance with the installation instructions

SECTION 10 WARRANTY

10.1 Defects and Failure

- Full details of the warranty are available in a separate warranty statement and summarised as follows:
 - Tanks will be free from defects, material and workmanship for a period of one (1) year following the date of delivery
 - And will not fail for a period of 30 years due to external and internal corrosion (subject to conditions)

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