



UREA DIESEL EXHAUST FLUID (AUS 32) FIBERGLASS UNDERGROUND CHEMICAL TANK SPECIFICATION

SHORT FORM SPECIFICATION

The contractor shall provide the appropriate double-wall fiberglass chemical storage tank and accessories as indicated on tank drawings. Capacity, dimensions and fitting locations will be indicated on tank drawings. Tanks shall be manufactured by Containment Solutions, Inc. The tank must be tested and installed according to manufacturer's current installation instructions.

LONG FORM SPECIFICATION

1. GENERAL

1.1. Quality Assurance

1.1.1. Acceptable Manufacturers:
Containment Solutions, Inc., Conroe, Texas

1.1.2. Governing Standards, as applicable:

1.1.2.1. International Standards Organization (ISO) 22241 – Diesel Engines NOx Reduction Agent AUS32

1.1.2.2. Petroleum Equipment Institute Recommended Practices for the Storage and Dispensing of Diesel Exhaust Fluid (DEF) (PEI/RP 1100)

1.1.2.3. Certification by a nationally recognized and accredited laboratory that exposure of the Urea DEF solution to the tank interior surface for 30-60-90 day test durations will not compromise the quality of the Urea DEF solution as defined in ISO 22241.

1.1.2.4. Underwriters Laboratories Inc. Standard 1316, Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures.

1.1.2.5. Underwriters Laboratories of Canada standard ULC-S615, Reinforced Plastic Underground Tanks for Flammable & Combustible Liquids.

1.1.2.6. National Fire Protection Association codes and standards:

- NFPA 30 Flammable and Combustible Liquids Code
- NFPA 30A Motor Fuel Dispensing Facilities and Repair Garages Code
- NFPA 31 Installation of Oil-Burning Equipment Standard

1.1.2.7. City of New York Department of Buildings M.E.A., 71-85-M

1.1.2.8. American Concrete Institute standard ACI 318, Building Code Requirements for Structural Concrete.

1.2. Submittals

1.2.1. Contractor shall submit ____ copies of: shop drawings, manufacturer's product brochures, installation instructions and calibration charts.

2. PRODUCTS

2.1. Double-Wall Fiberglass Underground Storage Tanks

2.1.1. Loading Conditions - Tanks shall meet the following design criteria:

2.1.1.1. External hydrostatic pressure: Buried in ground with 7' of over burden over the top of the tank, the excavation fully flooded and a safety factor of 5:1 against general buckling.

2.1.1.2. Surface Loads: When installed according to manufacturer's current installation instructions, tanks shall withstand surface HS-20 axle loads (32,000 lbs/axle).

2.1.1.3. Internal Load: Primary and secondary tanks shall withstand 5 psig (35 kPa), or 3 psig for 12' diameter tanks, air pressure test with 5:1 safety factor.

2.1.1.4. Tanks shall be designed to support accessory equipment such as ladders, drop tubes, etc. when installed according to manufacturer's recommendations and limitations.

2.1.2. Product-Storage Requirements

2.1.2.1. All primary tanks must be vented. Tanks are designed for operation at atmospheric pressure only, except for use with vapor recovery systems at a pressure or vacuum not to exceed 1 psig (7 kPa).

2.1.2.2. Tanks shall be capable of storing liquids with specific gravity up to 1.1.

2.1.2.3. Tank shall be capable of storing the following products:

- Urea DEF (AUS32) as defined by ISO 22241-1

2.1.3. Materials

- 2.1.3.1. The tank shall be manufactured as a matrix of premium resin, glass fibers and silane-treated silica that together result in a composite providing improved corrosion protection.
- 2.1.3.2. The tank inner wall shall be fabricated using a non-air inhibited computer controlled manufacturing process against a metal mold to produce a fully cured and high gloss laminate inner surface without the need of wax coats. The inner wall surface will have a low coefficient of friction and a natural resistance to the build-up of algae or other surface contamination. Wax and wax resin coatings cannot be used to achieve full surface cure on tank shells and endcaps.

2.1.4. Dimensional Requirements (refer to Containment Solutions literature)

- 2.1.4.1. Nominal capacity of the tank shall be ____ gallons / liters.
- 2.1.4.2. Nominal outside diameter of the tank shall be ____ feet.
- 2.1.4.3. Nominal overall length of the tank shall be ____ feet.

2.1.5. Monitoring Capabilities

- 2.1.5.1. Double-wall tanks shall have a monitoring space between the walls to allow for the free flow and containment of leaked product from the primary tank. The monitoring space shall provide equal communication in all directions.
- 2.1.5.2. The following continuous monitoring conditions shall be compatible with the cavity between the inner and outer tanks:
 - Vented to atmosphere
 - Vacuum – 5 psig maximum
 - Positive air pressure (3 psig maximum)
- 2.1.5.3. The monitoring fitting for the monitoring space shall be a 4" NPT fitting.
- 2.1.5.4. Tank shall be monitored electronically with an annular space liquid probe or continuously with vacuum.

2.1.6. Tank Cleanliness

- 2.1.6.1. Tank shall be rinsed with deionized or distilled water prior to shipment.
- 2.1.6.2. Final preparation of the tank for Urea DEF storage in accordance to ISO 22241 shall remain with the contractor.

2.2. Accessories

2.2.1. Flanged Manways

- 2.2.1.1. The standard manway is 22" I.D. and shall have a stainless steel cover. It will be furnished with EPDM gaskets (30" and 36" manways are optional).
- 2.2.1.2. Location – see tank drawing.
- 2.2.1.3. Optional manway extensions shall be fiberglass and ____ feet long.

2.2.2. Secondary Containment Collar

- 2.2.2.1. Shall be factory installed.
- 2.2.2.2. The collar shall be fiberglass reinforced plastic, 42", 48" or 54" in diameter and shall be factory-installed in accordance with drawings.
- 2.2.2.3. The collar shall include an internal adhesive channel.

2.2.3. Adhesive Kit (Kit AD)

- 2.2.3.1. Adhesive kit shall be supplied by tank manufacturer.
- 2.2.3.2. Adhesive kit shall provide a watertight seal at the tank sump and containment collar joint to prevent the ingress of water or egress of fuel. The adhesive kit includes resin, catalyst, mixing stick, putty knife, grout bag, and installation instructions.

2.2.4. Tank Sumps

- 2.2.4.1. Tank sump shall be supplied by the tank manufacturer.
- 2.2.4.2. Tank sump components shall be constructed of fiberglass reinforced plastic. The tank sump shall be 42", 48" or 54" in diameter and must mount to the secondary containment collar. Standard tank sump shall consist of an octagon shaped base (round base is optional), round body extension and enclosure top.
- 2.2.4.3. The octagon base shall be 24" in height and provide 19" high panels for piping entry points. The base must be capable of joining to the collar with an internal adhesive channel.
- 2.2.4.4. A 34" or 40" watertight lid shall be provided by the tank manufacturer.
- 2.2.4.5. Refer to tank sump drawings for standard models and configurations.

2.2.5. Anchor Straps

2.2.5.1. Straps shall be supplied by the tank manufacturer.

2.2.5.2. Number and location of straps shall be as specified by manufacturer.

2.2.5.3. Each strap shall be capable of withstanding a maximum load of 25,000 lbs.

2.2.6. Prefabricated Concrete Deadmen Anchors

2.2.6.1. Design Conditions – Deadmen shall meet the following design criteria:

- Deadman shall be designed to ACI 318
- Manufactured with 4,000 psig concrete
- Manufactured in various lengths
- Provide adjustable anchor points for hold down straps

2.2.7. Liquid Sensor Drawstring

2.2.7.1. Galvanized steel drawstring shall be factory installed at the monitoring fitting to facilitate field insertion of sensor.

2.2.8. Fittings - Flanged

2.2.8.1. All flanged fittings shall be stainless steel or fiberglass and meet ANSI/ASTM B16.5. Fittings shall be located on a manway cover or within 12" of the tank top center line. Fittings to be supplied with blind flanges with full face EPDM gaskets installed at the manufacturing facility.

2.2.8.2. All standard fittings shall be 4" diameter.

2.2.8.3. Internal piping shall be terminated at least 4" from the tank bottom (6" for 12' diameter tanks).

2.2.8.4. All tank fittings (and manways) shall have a stainless steel deflector plate under each opening.

3. EXECUTION

3.1. Installation and Testing

3.1.1. Fiberglass underground tanks must be tested and installed according to the current installation instructions provided with the tank (refer to Containment Solutions Pub. No. INST 6001). Supplemental installation instructions (Pub. No. INST 6052) must also be followed. Tanks are installed with pea gravel or crushed stone as specified in current installation instructions. Containment Solutions' tanks are intended for storing products listed in the warranty; any other products not listed in the warranty must be approved in advance by Containment Solutions.

4. LIMITED WARRANTY

4.1. Limited Warranty

4.1.1. Warranty shall be Containment Solutions limited warranty in effect at time of delivery.