

Tank Handling and Installation Instructions

The Mur-Tex Company does not end its customer satisfaction program with the finishing of the tank fabrication. Indeed, we take great lengths to assure that the best techniques and procedures are utilized in packing, crating and strapping of the tank for a safe and damage-free delivery. Remember that the flexural, impact and shear properties of FRP structures are lower than those of steel structures. Special considerations must therefore be given to weight distribution of loads and contact points during the handling and installation instructions as guidelines for use in maneuvering your Mur-Tex tank. It is the responsibility of the Purchaser to convey these instructions and recommendations to those personnel responsible for the handling and installation of this equipment.

Equipment Inspection

IT IS THE RESPONSIBILITY OF THE
PURCHASER TO INSPECT TANKS FOR ANY
FREIGHT DAMAGE BEFORE UNLOADING

CAUTION: BEFORE UNLOADING

Do not unload equipment or sign the Bill of Lading until each item has been inspected for in-transit damage. Thorough inspection will preclude any later questions about the condition of the equipment upon receipt. Following, you will find the key areas to inspect, provided to assist you in this inspection. Claims for any damage must be filed immediately with the delivering carrier. On rail shipments, the local freight agent must be notified prior to unloading damaged equipment and the damage and claim procedures of the delivery railroad followed.

FRP tanks are susceptible to both internal and external damage as a result of severe physical shock encountered in transit. Inspect the tank thoroughly inside as well as outside. The external areas most susceptible to damage are the highest and the widest points of the load, any projections such as nozzles, and the areas where the tank has been in contact with the crating, blocking and banding. The internal surfaces of these same areas must be inspected closely for signs of surface crazing or cracking. Any damage must be repaired prior to putting the tank into service. If the damage is not first repaired by the Mur-Tex Company prior to the tank being put into service, the Purchaser accepts all future responsibility for the effects of tank failure resulting from such damage.

Color irregularities commonly occur in FRP equipment due to different thickness, different reinforcements, or different manufacturing processes for various portions of the product. This is a normal phenomenon and is not a defect. In addition, our Quality Assurance inspections may have required rework of certain areas. Although they appear as "patches" or discolorations, they do not detract from the corrosion resistance or structural integrity of the tank.

THE **MUR-TEX** COMPANY

FIBERGLASS FABRICATORS

Check for obvious structural damages such as a crack or break in the tank wall, which could occur if an object hits the tank during shipment. Careful visual inspection of the interior of the tank should be made with attention given to any cracks or star-shaped crazes (which are actual breaks in the resin-rich barrier). The repair of this type of damage is simple, and the integrity of the tank is not harmed.

Should a problem be found, call your Mur-Tex sales representative or the factory to discuss any questions after reporting damage to the carrier.

It is suggested that prior to tank usage, a hydrostatic test be performed to assure that no hidden damage occurred in shipment.

Key areas to inspect:

1. Extreme dimension of tank: sidewalls, top and bottom.
2. Appurtenances that extend beyond the tank wall. Inspection of lifting lugs should be done. Note: Lifting lugs are designed to handle specified loads. Loading above the specified loads can be dangerous and voids any warranty on the tank.
3. Internal and external areas where banding and support cradles come in contact with tank.
4. Internal and external areas where end blocking is utilized.
5. Internal and external equipment shipped installed on tank should be checked for breakage or detachment.
6. Internal areas where the tank exterior has been scraped or damaged.

If freight damage is present:

Contact Mur-Tex personnel immediately to determine a procedure for obtaining repair of damage. Note on carrier's Bill of Lading that damage has occurred and appropriate claims and supporting documents will follow. Completely document damaged areas and extent thereof, complete with photographs if possible. Copies of the report should be submitted to Mur-Tex along with the carrier's company. Note: If the damage is not first repaired by The Mur-Tex Company, prior to the tank being put into service, the Purchaser accepts all future responsibilities for the effects of tank failure resulting from such damage.

Equipment Handling

- Proper rigging practices must be observed at all times.
- Guidelines must be used to prevent the tank from swinging out of control.
- Do not drop the tank or allow it to fall.

THE **MUR-TEX** COMPANY

FIBERGLASS FABRICATORS

- Do not roll or slide the tank – always lift.
- Do not pull or lift using any nozzles or other attachments.
- While working around the tank, care must be taken to prevent tools from striking the tank or being dropped inside the tank. Workmen entering the tank must wear soft-soled shoes. Ladders used inside or outside in contact with the tank must be wood or must have rubber protection at touch points and not be permitted to scratch the tank surface.
- Under no conditions, should chains or cables be allowed to contact the tank.
- Tanks, which can be shipped inside a truck van are crated or skidded to facilitate handling with a forklift. Where the crate or skid has to be slid out of the truck, the pull should be only at the bottom of the skid or crate. Do not pull on the nozzles or piping connections. Take precautions to prevent the forklift points from touching the tank.
- The recommended method for removing a larger tank shipped on a rail car or flat bed truck is to lift off with slings around the tank which are fastened to a spreader bar attached to the hoist cable. The slings should be canvas or nylon.
- When storing the tank on the ground prior to installation, place it on the padded shipping cradles and tie it down securely so that it cannot roll due to wind or to a sloping elevation. All cradles must be used and placed in the same location as when shipped.
- A number of different lifting lug systems may be provided varying from a single lug to as many as four lugs. It is critical to use each lug in the system so that the loads are applied as intended.
- When up righting tanks, place suitable protective padding under the bottom pivot point. Take precautions to prevent the tank from striking other objects when the tank swings free in the vertical. Guidelines must be used to prevent the tank from swinging out of control and to insure that the tank is gently set down.

Equipment Installation

Flat Bottom and Sloped Bottom Tanks

Flat bottom and sloped bottom vertical tanks must be installed on a foundation, which provides full and uniform support over the entire bottom area. The foundation must be designed to prevent settling or deflection under maximum design loads.

THE **MUR-TEX** COMPANY

FIBERGLASS FABRICATORS

The foundation surface should be non-porous and free of cracks, depressions and vertical projections. Reinforced concrete, trowel-finished to American Concrete Institute Specifications (ACI-301-73, Section 11.7.3, "Trowel Finish"), is often used as a support base.

In order to provide continuous contact between the tank bottom and the foundation, and to compensated for surface irregularities in the foundation and the tank bottom, cushioning comprised of a minimum of two layers of 30-pound roofing felt is to be laid **over** the entire foundation in alternating directions.

Sweep the foundation before applying the cushioning, and take care to prevent gravel or foreign objects from getting into the tank foundation when applying the cushioning. Also inspect the bottom prior to setting it on the cushioning to make certain that no gravel or foreign object is accidentally adhering to the tank bottom.

Where openings must be provided in the foundation to accommodate bottom projecting fittings, keep the unsupported area around the fittings to a minimum, and round all corners of the foundation opening. Carry the foundation cushioning over the rounded corners of these openings. With 1 to 2 feet of liquid in the tank fill any foundation opening with suitable grout packed around the fitting so that no area of the tank bottom remains unsupported.

Use all tie-down lugs to secure the tank to its foundation.

Dished Bottom and Cone Bottom Tanks

Install dished bottom and conical bottom tanks so that their weight is supported uniformly on all provided legs or mounting lugs. Use shims or grouting as necessary.

Above Ground Horizontal Tanks

Install horizontal tanks so that the saddles will support the tank without deflection on the shell. Use a grout mix beneath the saddles where necessary to insure that each saddle is set evenly and will uniformly support the loaded weight of the tank. Do not fill the tank saddles until the grout has hardened. Anchors, when used, should be preset in the foundation and allowed to protrude into the holes provided on the bottom of the saddles. Care must be exercised to insure that anchors do not contact the tank exterior.

Hollow tank support saddles are to be filled with concrete of sufficient strength to accommodate loads. Openings are provided at the top of the hollow saddles to allow filling with a fluid mixture of concrete. Use a vibrating device to insure void-free filling. Do not fill tank until concrete has cured to full strength.

THE **MUR-TEX** COMPANY

FIBERGLASS FABRICATORS

Piping and Venting

Precautions must be taken in piping up to fiberglass reinforced plastic tanks. All valves and piping attached to the tank fittings must be independently supported. Only full flat face flanges may be used to bolt up to flanged tank nozzles; raised face flanges cannot be used. Use 1/8" minimum thickness full-face gaskets of 50 to 70 durometer. An even torque of 35 foot pounds should be applied to each of the bolts. Prefabricated interconnecting piping should have adequate field joint provision to accommodate normal fabrication tolerances of the piping material as well as tolerances for the nozzle placement on the tank. Flexible connections must be used where required to isolate tank nozzles from piping system vibrations or thermal expansion differences between the tank and piping or other attachments.

All tanks must be positively vented to the atmosphere at all times, unless otherwise clearly marked on the vessel. On tanks provided with hinged top man ways, remove the second or locking bolt from the hinge, allowing the Manway to open in the event of pressure buildup in the tank. It is the Purchaser's responsibility to affix suitable signs on the tank to insure that vent lines will not be accidentally or unknowingly closed. Extreme caution must be taken when pressure is used to unload from another vessel into an FRP tank. Leave the top entry man way open during the air pressure unloading process since this method of filling the FRP tank will create a venting requirement considerably greater than normal venting practice would dictate.

Cleaning

Clean tanks prior to putting them into service. This is absolutely essential for tanks, which are to be used in food grade, or similar service. Tanks manufactured for food grade service have been suitable post-cured prior to shipment. It is the Purchaser's responsibility to suitably sterilize and sanitize according to accepted procedures for the particular service prior to use.

Limitations of Service

Do not allow contents in tank to freeze.

Do not exceed the pressure, temperature or service limitations stated on the tank Identification Label, or change to different chemical service without first consulting The Mur-Tex Company. Unless specifically designed for such, a tank should not be used for a mixing or reaction tank without first consulting The Mur-Tex Company.

THE **MUR-TEX** COMPANY

FIBERGLASS FABRICATORS

Customer Service

Consult your Mur-Tex Sales Representative, or call Mur-Tex direct, to discuss any questions regarding applications, inspection, installation or tank repairs. Whenever field repairs or alterations become necessary, personnel are available, subject to prior scheduling, to perform such work.

Any statement or recommendation made or assistance given by The Mur-Tex Company or its representatives, to the Buyer or its representatives or customers in connection with the use or installation by the Buyer or its customers of any goods sold hereunder shall not constitute a waiver by the Seller of any provision hereof or affect the liability of the Seller as defined herein. The Buyer acknowledges that it has approved, prior to fabrication, all construction, drawings, designs, construction specifications, material specifications, orientation and dimensions. The furnishing of published or special design and installation information or field supervision does not constitute the Seller's acceptance of the Buyer's design as its own or a guarantee of performance.

IT IS THE RESPONSIBILITY OF THE PRUCHASER TO CONVEY THESE INSTRUCTIONS AND RECOMMENDATIONS TO THOSE PERSONNEL RESPONSIBLE FOR THE HANDING AND INSTALLATION O THIS EQUIPMENT. THE PURCHASER IS FULLY RESPONSIBLE FOR THOROUGH INSPECTION OF THE TANK OR VESSEL UPON ARRIVAL, AND FOR THE PROPER HANDLING AND INSTALLATION, AND SHALL INSURE THAT GOOD, WORKMANLIKE PRACTICES AND CONSTRUCTION PROCEDURES ARE FOLLOWED DURING THE HANDLING AND INSTALLING OF THE TANK, REGARDLESS OF THE INCLUSION OR OMISSION OF ANY APPLICABLE SUGGESTION IN THES INSTRUCTIONS. SITUATIONS OR CONDITIONS NOT COVEREDIN THESE INSTRUCTIONS ARE THE RESPONSIBILITY OF THE PURCHASER. THE PURCHASER ACCEPTS ALL LIABILITY FOR LOSS OR DAMAGE TO THE TANK OR CONTENTS RESULTING FROM IMPROPER HANDLING OR INSTALLATION. THE PRESENCE OF A MUR-TEX REPRESENTATIVE AT THE SITE DOES NOT RELIEVE THE PURCHASER OF HIS RESPONSIBILITY FOR PROPER HANDLING AND INSTALLATION.