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hotshot heated product storage tank - installation instructions

site preparation, handling, placement, & air testing

HT-5513

Read and understand this entire document before beginning testing process
Tank MUST be operated at or below 190º F

Permitting

Check with local authorities for permitting process and requirements. Obtain proper permit(s) before installing this tank.

Excavation and Bedding

The excavation shall be free from any hard or sharp material that may cause damage to the tank. Maximum depth of burial is 5 feet (1,524 mm) from top of tank to grade.

Bedding and backfill shall be homogeneous material consisting of clean sand, pea gravel, No. 8 crushed stone (No. 8 Coarse aggregate per ASTM-D448, 3/4 inch maximum size) or equivalent. The bottom of the excavation shall be covered with a minimum of 12 inches (304.8 mm) of bedding, suitably graded and leveled.

The excavation shall extend at least 18 inches (457.2 mm) around the perimeter of the tank.

Where anchoring by means of a concrete pad is required, the tank shall not be placed directly on the pad. A layer of clean bedding material at least 6 inches (152.4 mm) deep must be spread evenly over the dimensions of the pad to separate the tank from the pad. The tank shall not be placed on any hard or sharp material or saddles.

In a tidal area, the tank “bedding” material shall be crushed stone or pea gravel. Sand backfill may be used only if measures are taken to prevent washout of sand and prevent the infiltration of native soil into the backfill during the design life of the system.

Job Site Testing

Each Highland Tank is carefully tested before shipment; however, transportation and handling may cause a defect that was not present at the time the tank was factory tested. Some codes require testing at the job site before installation. Check with authority having jurisdiction before installing.

Some models of double-wall underground tanks may be shipped from the factory with a vacuum drawn on the interstice. Upon delivery, if the vacuum is still intact, further aboveground tightness testing may not be required. Check with authority having jurisdiction. Allowing a small amount of air into the interstice by opening the valve on the gauge assembly will demonstrate that the gauge is operating.

Tank Handling

Equipment to handle the tank shall be of adequate size to lift and lower the tank without dropping, dragging or rolling to prevent damage to tank.

The tank may arrive with factory installed removable lifting lugs for tank handling. Make sure lifting lugs are tightly secured to the tank and positioned properly, parallel to the longitudinal center line of the tank, before using.

The tank shall be carefully lifted and lowered into the excavation hole by use of cables or chains of adequate length attached to the lifting lugs proved. A spreader bar shall be used where necessary. **Do not use slings, chains or cable around the tank to lift it. Do not drop, roll, or drag tank.**

The angle between the vertical and one side of the lifting cable must not exceed a 60-degree included angle. Lift tank only at designated lift points with the lift lugs provided. Lift points are designated either by a sticker or by the presence of a lifting device.

Care shall be taken to prevent impact of the tank with any objects which can damage the tank, including concrete pads, deadman anchors, other tanks, tools and compaction equipment. Use of tank guidelines attached to lift lugs will provide a means of manually controlling tank movement and placement. Do not attach guidelines to the vacuum test station.

Do not store or place tank on sharp objects or debris. Use nonabrasive cushion-type chock (i.e., rubber tires) to prevent tank movement during storage. For high wind conditions, the tank should be tied down using nonmetallic straps.

Tank Storage

If the tank must be temporarily stored prior to installation, it should be placed in an area away from activity where tank damage could occur. If the tanks is to be stored outdoors for more than 60 days, it should be covered with a tarp or other similar material.

Anchoring Tank

High water tables or partially flooded excavation sites exert significant upward buoyant forces on tanks. Buoyant forces are partially resisted by the weight of the tank, the backfill and the pavement on top of the tank. Additional buoyant restraint, when required, is obtained using properly designed hold-down straps in conjunction with concrete hold-down pads or deadman anchors.

The use of steel cable and round bar as hold-down straps on the tank is prohibited.

Special care should be taken when installing steel hold-down straps to ensure that the straps are separated from the tank by protective inert padding materials. The padding should be 2 inches (50.8 mm) wider than the hold-down straps, or wrap around the hold-down straps, to prevent direct strap contact with the tank's polymer shell. Use of polyester hold-down straps is strongly recommended.

The hold-down straps at the end of the tank shall be located at a distance of not more than L/10, where L is the tank length. The remaining hold-down straps shall be spaced out approximately equally.

Anode Integrity

Although the HotShot coating system is engineered to provide complete corrosion resistance, HotShot tanks are equipped with supplemental anodes, which provide the additional benefit of cathodic protection. Should it be desired to test the effectiveness of the anodes, please consult the factory for proper procedures and monitoring methods. To insure the effectiveness of the supplemental anodes provided, the installer must remove all protective packaging and thoroughly saturate with water at the time of backfill.

Backfill

Homogeneous backfill similar to bedding material shall be placed carefully around the entire tank to create a uniform homogeneous environment.

Special care shall be taken when installing backfill along the bottom sides of the tank to ensure that the tank is not damaged and is fully and evenly sup-ported around the bottom quadrant.

The backfill material shall be carefully placed and consolidated along the bottom, under the tank shell, by manually shoveling and tamping.

The initial 2 feet (609.6 mm) of backfill shall be completed in 12-inch (304.8 mm) maximum lifts, uniformly placed around the tank. Light hand-operated compaction equipment is recommended for all sand backfills to at least 3 feet (914.4 mm) above the tank.

Electrical Continuity

Contact between the steel tank and all other structures such as external and internal piping, pumps, valves, gauges and monitoring equipment, and grounding systems, will nullify the cathodic protection design. Continuity shall not be present.

Tank Piping Connection Test

Remove all factory-installed thread protectors and replace with permanent piping or plugs.

Pressure applied to the tank shall be 3-5 PSIG (34.47 kpa). Shut off the compressed air source to the system. A soap solution shall be applied around all tank piping connections while test is being performed. Bubbles and/or foam indicate leakage.

After passing leak testing, release tank air pressure by allowing it to escape slowly through the connection used to pressurize the tank.

Final Backfill

Homogeneous backfill shall be deposited carefully around the tank up to top of tank and to a depth of at least one foot (304 mm) over the tank to avoid damage to polymer shell, especially where tamping is required. (See NFPA 30 or UFC and state or local codes for minimum depth of cover required prior to allowing vehicular traffic over the tanks.)

Some of the specifications and recommended practices in this publication have been contributed by the industry organizations listed below:

Petroleum Equipment Institute (PEI)
Recommended practices for installation of Underground Liquid Storage Systems PEI/RSP 100.

American Petroleum Institute (API)
Installation of Underground Petroleum Storage Systems

National Fire Protection Association (NFPA) Flammable and Combustible Liquids Code
NFPA 30.

International Fire Code Institute
Uniform Fire Code.

Highland Tank

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814.893.5701

Manheim, PA
4535 Elizabethtown Road
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Watervliet, NY
958 19th Street
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Mancelona, MI
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Mancelona, MI 49659-7968
231.587.8412

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hotshot protected tank - installation instruction checklist

HT-5513

HotShot Underground Composite Tank Installation Checklist

_____

Tank Owner

Address _____

_____

HotShot Tank U.L. Label No.:

_____

Tank Capacity: _____ - Gallons

Tank Dimensions:

Diameter: _____Inches,

Length: _____ft., _____in

Delivery Date: _____

Installation Date: _____

Product to be stored: _____

Handling - Lift equipment used:

_____

Lifting capacity (lbs.): _____

Type of chocks used if tank stored:

_____

Describe any damage observed:

_____

_____

_____

Testing

Pre-installation test completed:_____
(initial)

Excavation Size (feet - inches)

Length: _____ - _____

Width: _____ - _____

Depth: _____ - _____

Burial depth: _____ - _____

Top of tank to grade _____ Inches

18-inches minimum around each tank?

☐ YES ☐ NO

Burial depth meets AHJ code requirements:

☐ YES ☐ NO

Anchoring (Check one)

☐ No pad at this site
☐ Deadman anchors
☐ Concrete pad

Soil & pavement overburden used:

_____

(ref: PEI/RP-100)

Bedding depth (when concrete pad is used:

_____

Hold-down straps used: ☐ YES ☐ NO

Attached to: ☐ Concrete pad ☐ Deadman

☐ Other: _____

Strap quantity: _____

Width: _____

Protective padding used: ☐ YES ☐ NO

Material: _____

Homogeneous Backfill Material:

☐ Clean sand ☐ Pea Gravel

☐ #8 Stone

Depth of backfill below tank: _____ -inches

Backfill placed to assure full support along

bottom quadrant of tank? _____
(initial)

Tank Piping Connection Test

All pipe fittings tested at 5 PSIG (34.47 kpa) while applying soap solution onto fittings to check for leaks? ☐ Yes ☐ No

Precision test system gauge reading at _____ -inches

Date: _____ - _____ - _____

Signature of installing foreman or project engineer

_____

Installer return original copy of this checklist to the tank owner listed above and retain a copy for your permanent files.

Note: This checklist includes key steps in the proper installation of a double-wall underground storage tank with polymer secondary containment and is intended only as an aid to tank installers who are knowledgeable and experienced in underground tank installation. Compliance herewith does not necessarily meet the requirement of all applicable federal, state and local laws, regulations and ordinances concerning tank installation.

Tank owner: A copy of this checklist should be returned to you by the installer for retention with your permanent records.

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