



SIERRA SALES  
SERVING THE WORLD WITH PE TANKS  
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<http://petanks.com>

**Poly Storage Tanks, All Plastic IBC's, Batch Tanks,  
Safe Double Wall Tanks, Horizontal and Cone Bottom Tanks**

## General - Frequently Asked Questions

### 1. What makes poly tanks a good choice for my chemical storage/application?

- Poly tanks are lower cost than stainless steel or fiberglass
- Lightweight - less than one-half the weight of steel
- Seamless construction for easy cleaning and leak proof service
- Exceptional Impact resistance
- Broad range of chemical resistance
- Better weatherability
- Available in a variety of resins
- Translucent when molded of natural resin for visible liquid level
- Virtually maintenance free

### 2. What chemicals can I store in your tanks?

Poly tanks have a broad range of chemical resistance to both Agricultural and Industrial chemicals. For Industrial Chemicals refer to the Snyder Chemical Resistance Recommendation Chart on that site or contact the chemical supplier to see if their product is compatible with high density linear polyethylene (HDLPE) or cross-linked polyethylene (XLPE). If they cannot answer your question, call Snyder Industries and we will be happy to research it for you. Try to have as much information available as possible such as the temperature of the product, the percent concentration of product (Ex: Sodium Hypo chlorite, 15%) etc.

### 3. What material does SIERRA use to manufacture its poly tanks?

SIERRA uses HDLPE (high density linear polyethylene) to manufacture our tank line. High density linear polyethylene has good structural rigidity and impact resistance. It is resistant to a broad range of chemicals including sulfuric acid, sodium hypo chlorite, and sodium hydroxide.

We also offer, for specific applications XLPE (cross-linked polyethylene). Cross-link polyethylene has excellent structural rigidity and impact resistance. It is used as an alternative to HDLPE for storing surfactants or solvent-based chemicals, or for higher service temperatures.

#### **4. Which tank material is best?**

General guidelines of material selection are not advisable. It is always best to provide the tank manufacturer with specific application details (chemical, concentration, specific gravity, temperature, dimensions, mechanical loading) so a proper tank design recommendation can be made by the factory and/or your SIERRA distributor.

#### **5. How heavy a material can polyethylene tanks hold?**

A tank with a specific gravity of 1.5 can hold a liquid up to 12.5 pounds per gallon at 100 degrees F. A tank with a specific gravity of 1.9 can hold a liquid up to 15.75 pounds per gallon at 73 degrees F. Please note that an increase in liquid temperature will substantially decrease the specific gravity rating. Also, certain chemicals have environmental stress cracking agents in them so higher specific gravity tanks are needed to compensate even though the weight of the chemical may be lower. Please refer to the Snyder Chemical Resistance Recommendation Chart or call SIERRA Industries to determine which tank design is best suited for the chemical application.

#### **6. What is the wall thickness of your tanks?**

Because SIERRA tanks have a stratiform wall thickness (varies from top to bottom on a tank), wall thickness is not the best gauge for determining the quality of a tank. The very bottom of the tank is the thinnest part of the tank and is made that way to flex when the tank is empty or full. The actual weight of the tank is also not a good comparison when shopping for tanks. Just because a competitor may use more material in the tank does not make it a better tank. That is determined by the resin, mold design and the steps taken during the rotomolding process. Lower grades of resins will require a thicker tank wall to compensate.

#### **7. Are your tanks FDA compliant?**

The resin used to manufacture our linear polyethylene tanks (HDLPE) meet specifications contained in FDA Regulations 21 CFR 177.1520, © 3.2 and so may be used as an article or component of articles intended for use in contact with food, subject to any limitations in the regulation. Cross-linked polyethylene (XLPE) tanks do not meet FDA regulations. The HDLPE resin that SIERRA uses is also NSF 61 listed.

#### **8. What is the maximum temperature that your tanks will withstand?**

Linear polyethylene (HDLPE) storage tanks have a maximum storage temperature of 130 degrees F. Cross-linked polyethylene (XLPE) storage tanks have a maximum storage temperature of 140 degrees F. NOTE: The leading manufacturers in this industry design their tanks based upon 100 degrees F with ASTM D 1998 calling out 73 degrees F. It is important to contact the factory when your application will continuously be above 100 degrees (ambient). The tank can be designed specifically for your elevated temperature application.

#### **9. Can I store petroleum products in your tanks?**

We do not recommend storing petroleum products in our tanks because they will permeate (soften) the tank walls. Contact SIERRA with your specific application. You will find that aromatic hydrocarbons and halogenated hydrocarbons will not be recommended for polyethylene.

#### **10. Can your tanks be pressurized?**

No, our tanks cannot be pressurized. They are all designed to atmospheric pressure.

#### **11. Can your tanks be buried?**

Tanks specifically designed for above ground use cannot be put underground because the weight of the ground around the tank can cause the wall to collapse. If you have an application for a below ground tank we do have a cistern and septic tank line that is available that is designed for below ground use.

#### **12. What is the warranty on your tanks?**

SIERRA warrants to the purchaser for any manufactured tank product proven to be defective in material or workmanship within 3 years from date of original invoice from factory. An extended tank warranty is available as a purchased option for an additional 5-year period (total of 8 years) on SIERRA Vertical Storage Tanks and Cone Bottom Tanks on some applications. SIERRA also offers chemical specific warranties on certain chemicals including sulfuric acid, sodium hypochlorite and others. Contact SIERRA on questions regarding warranty for your specific application.

#### **13. How many years will my tank last?**

There are many variables that can have an effect on the life of a polyethylene tank. The type of material

being stored in the tank, its concentration, and temperature. The temperature of the application can be a factor, especially if the tank design is not based upon the temperature of the application. Some applications may permeate the polyethylene at elevated temperatures. Special considerations - some chemicals will have long term effects on the polyethylene and may require special considerations. As an example, sodium hypo chlorite will degrade from UV exposure and elevated temperature. As it degrades it can build up sediment in the bottom of the tank. If this sediment is periodically flushed from the tank it will extend the life of the tank.

**Installation and PIPING!** - The number one reason for tank failures is due to improper installation. It is important to follow SIERRA's "Guidelines for Use & Installation". Having flexible connections that compensate for the expansion and contraction of the tank will extend the life of the tank.

Is the tank used indoors or outdoors? The amount of U.V. exposure will be based upon the time of exposure and the closeness of the installation to the sun (elevation). What part of the country are you in? Tanks used outdoors in states subjected to more intense sunshine will be more affected by the sun. UV rays will have a detrimental effect on the life span of all poly tanks.

**Storage or process** - Is the tank a holding tank or a processing tank? A tank that is continuously cycled will see more stress than a tank that remains at one level or close to one level for extended periods of time. Tanks with excessive agitation may also be exposed to undue stress. Stationary tanks will also not see the stress of a tank that is being transported.

#### **14. Will freezing temperatures hurt my poly tank?**

Freezing temperatures will not have an affect on a polyethylene tank, however, if there is liquid in the tank, make sure the freezing liquid has enough head room to expand.

SIERRA utilizes a test called "Low Temperature Impact Resistance". This is a test utilized by both the ARM (Association of Rotational Molders) and ASTM D 1998. SIERRA has testing capabilities that exceed the requirements of ARM and ASTM D 1998. They call out -20 degrees F for the test, but SIERRA has conducted testing at -40 degrees F. This test is critical to determine if the resin has been properly processed and it will give you an idea as to the temperatures that the resins can see. It is important that efforts be made to avoid impacting the tank, especially with sharp items, at any temperature.

#### **15. Is there some way to tell when my tank was made?**

SIERRA tanks are produced with a molded-in serial number (wheel-date/month format). In addition, the tank's bar code label has a 10-digit serial number and date of manufacture. Your SIERRA Sales or Customer Service person, can help you interpret the date of manufacture.

### **Industrial Tanks - Frequently Asked Questions**

#### **1. Does SIERRA's warranty cover my specific chemical application? Or does it only cover specified workmanship and material failures?**

All SIERRA tanks have a standard 3 year warranty against defects in material and workmanship. Additionally, SIERRA offers extended warranties up to 8 years for many chemical applications. Furthermore, SIERRA offers "Chemical Specific" warranties on chemical applications listed in our chemical resistance chart.

#### **2. How does the tank manufacturer calculate their specific gravity ratings? What hoop stress value was utilized to make the calculations?**

ASTM-D-1998-97; 600 P.S.I. Hoop Stress

#### **3. Can SIERRA provide a wall thickness audit to verify ASTM-D1998-97 standards have been met?**

Yes, but we do ask that this request be made at the time a purchase order is released.

#### **4. What is the processed density of the finished tank wall?**

Up to .946 on tanks with wall thickness greater than ½"

#### **5. What is the preprocessed density of the resin?**

.942 Linear; .938-.941 cross-linked

#### **6. What chemical compatibility testing has SIERRA done to support their material recommendations?**

In addition to almost 30 years of field results and warranty claim data, SIERRA funds ongoing independent chemical testing jointly with the University of Nebraska and Exxon Chemical. To our knowledge, SIERRA

is the only tank manufacturer to fund independent chemical testing for polyethylene tanks.

**7. What quality assurance testing documentation can the tank manufacturer provide on their raw materials?**

Upon receipt of raw material certification for a specific lot of material, SIERRA conducts impact tests, ESCR tests, and flowability tests.

**8. What is the temperature and foot/lbs. test criteria SIERRA uses for their standard Impact Test?**

400 ft/lbs. at -40 degrees Fahrenheit for tanks ½" wall thickness or greater, 200 ft/lbs at -40 degrees for tanks less than ½" wall thickness, which exceeds ASTM standards requirements and all competitors'.

**9. Does SIERRA have an engineering staff that utilizes Finite Element Analysis (FEA) to predetermine tank stresses before new product designs are finalized?**

SIERRA is the ONLY known polyethylene tank manufacturer who can document the use of FEA in a tank design.

**10. Will SIERRA provide installation recommendations to assure all fittings and accessory attachments decrease tank wall stress and maximize long-term ability to resist leaking?**

SIERRA has the industry's largest engineering staff available to supplement installer's efforts in reducing risk and ensuring long-term safety. Every SIERRA tank shipped includes a copy of our "Use and Installation Guidelines".

## IBC FREQUENTLY ASKED QUESTIONS

**1. Can I pressurize SIERRA SALES IBCs?**

No, most plastic IBCs are not designed to be pressure vessels. However, each IBC is production tested to 3 PSIG, and design qualification tests, required for U.N. marking of an IBC, vary from 14.7 PSIG to 62 PSIG. for a period of 10 minutes, depending on design type and applications. In some cases, users or shippers of IBCs may want to put a N2 blanket on the product or apply some pressure to help facilitate certain off-loading application requirements. Minimal intermittent pressure exposure of between .5 PSIG - 5 PSIG, for all IBC design types marked with a test pressure = 14.7 PSIG is possible to address these requirements.

**2. Do SIERRA SALES IBCs have to be vented before unloading?**

All SIERRA SALES IBCs come equipped with an automatic vacuum vent, which begins relieving internal tank pressure at .25 PSIG, so no manual operation is necessary by IBC users.

**3. How long will a SIERRA SALES IBC last?**

Useful life is dependent on many variables, including chemical attack, IBC design type, UV exposure, and handling wear and tear. SIERRA SALES has tanks that have been in the field for over twenty years. While the latest generation of thick walled IBCs have been on the market for only 10 years and many of those original units are still in service, it is difficult to make a judgment on expected useful life. For additional information regarding tank life please review the IBC Environmental Stress Inspection Guide

**4. What is the difference between rotationally molded IBCs and the "caged", blow molded plastic IBC design type?**

SIERRA SALES IBCs are typically acquired as an asset for long-term use in reusable/returnable shipping and handling applications. The lighter duty caged plastic IBCs are primarily sold for one-way or limited reuse shipping applications. Reason being, SIERRA SALES' IBCs are four times thicker, corrosion proof, and substantially more impact resistant, which results in a much longer lasting and more durable IBC construction.

**5. Can I ship filled IBC's stacked. How high can I stack them?**

If IBC's are UN labeled, they can be stacked two high when full, as long as the rated gross capacities is not exceeded.

**6. Can an IBC be FDA approved?**

"Designs" are not approved by the FDA; they only approve the MATERIAL used to construct the tank. SIERRA SALES can build IBC's using FDA compliant materials.

**7. Can I stack filled IBC's for storage?**

You can stack a SIERRA SALES IBC 3 high for storage, as long as you don't exceed the rated gross capacity of the container or the stacking test load shown in the U.N. marking.

**8. How long has SIERRA SALES been manufacturing plastic containers?**

SIERRA SALES has been manufacturing plastic containers for over 40 years. We have expanded over the years to include 4 additional plants with similar manufacturing capabilities. SIERRA SALES is the most experienced plastic IBC distributorship in the U.S. We have a full staff of engineers and testing personnel available.

**9. How often does the DOT/UN marking have to be updated?**

SIERRA SALES IBCs must be retested every 2 ½ years for either UN31H1 or UN31H2 Marking units.