Technical Information

Food Grade Resins

The resins used in Saint-Gobain Performance Plastics low-density and high-density polyethylene tanks comply with 21 CFR Regulation 177.1520. These tanks may be used with the following kinds of food products:

- Nonacid, aqueous products; may contain salt or sugar or both (pH above 5.0)
- Dairy products and modifications: oil-in-water emulsions, high or low fat
- Moist bakery products with surface containing no free fat or oil
- Dry solids with the surface containing no free fat or oil (no end-test required) and under all conditions of use as described in Table 2 of 21 CFR Regulation 177.1520 except for condition A—high-temperature heat sterilization (e.g., over 100°C)

Saint-Gobain Performance Plastics rotomolded polypropylene complies with 21 CFR 177.1520 (c) 3.1 Regulation. The resin used in Saint-Gobain PVDF tanks complies with 21 CFR Regulation 177.2510.

Plastic Products for Biotechnology

Knowing whether a plastic is toxic to cell cultures is critical to biotechnology production. To test cytotoxicity, we submitted representative molded resin samples to an independent laboratory.

Samples were evaluated utilizing an MEM Elution Procedure, utilizing a W.I. 38 or MRC-5 cell line. This is a standard cytotoxicity test for pharmaceutical, medical devices and ophthalmic products (though it typically utilizes an L929 cell line.)

Dimensions and Wall Thickness

Dimensional information contained in this catalog is for reference only, for the purpose of selecting product from the catalog. **There is no inference to tolerances for the listed approximate dimensions. For additional information, contact Saint-Gobain Performance Plastics.**

Physical Service Capabilities

Maximum service temperature listings refer to temperatures that should not be exceeded for the materials utilized in the specific product line. Many factors, such as chemical resistance, specific gravity, external stresses, product geometry, environment and many others affect the suitability of a particular product. For additional information, contact Saint-Gobain Performance Plastics.

Environmental Stress-Cracking

Environmental stress-cracking is the failure of a plastic material in the presence of certain types of chemicals. This failure is not a result of chemical attack. Simultaneous presence of three factors causes stress-cracking:

- Tensile stress
- A stress-cracking agent
- Inherent susceptibility of the plastic to stress-cracking

Tensile Stresses

These are set up during some molding and fabrication processes. Environmental conditions can add tensile stress, particularly if the tank is inadequately supported. Rotational molding creates parts that are virtually stress-free, so rotomolded tanks are less subject to environmental stress-cracking than fabricated tanks. Use of an FRP casing will minimize tensile stress from added load and further decrease the likelihood of environmental stress-cracking.

Resins Non-Toxic to Cell Cultures

Contact Saint-Gobain for details, 800-451-0770.

Resin	Color	Product
High-Density Polyethylene (HDPE)	Natural	Tanks
Low-Density Polyethylene (LDPE)	Natural	Tanks
Polypropylene (PP)	Natural	Tanks
Polyvinylidene Fluoride (PVDF)	Natural	Tanks

Common Stress-Cracking Agents

Detergents, surface active chemicals, lubricants, oils, ultra-pure water and plating additives such as brightener and wetting agents.

Relatively small concentrations of stress-cracking agent may be sufficient to cause cracking. (Stress cracking agents are identified in the Chemical Resistance Chart.)

Susceptibility to Stress-Cracking

This varies from plastic to plastic depending on several characteristics of the molecular structure. Cross-linked high-density polyethylene is inherently more resistant to stress-cracking than either low- or high-density polyethylene. PVDF also has excellent stress-crack resistance.

Physical Service Capabilities

Prolonged use of a plastic tank at temperatures above ambient will shorten tank life. Temperature effects are directly dependent on the characteristics of the plastic resin, specific gravity of tank contents, tank size and configuration, exterior support, and wall thickness of the tank.

Temperature cycling will shorten tank life. The impact resistance of most rotomolded tanks declines at low temperatures. Cross-linked high-density polyethylene retains much of its impact resistance in low temperature applications.

Ultraviolet (UV) Stabilization

Plastics are attacked and deteriorate when exposed to direct sunlight. When plastic tanks absorb the sun's ultraviolet light, the UV energy excites the polymers' chains, causing them to break. The effects are discoloration, embrittlement and eventual cracking. Elevated temperatures and oxygen tend to accelerate the deterioration. Those Saint-Gobain Performance Plastics tanks listed as suitable for outdoor service are protected from UV attack by: coloring or pigmenting and/or adding internal stabilizers which preferentially absorb or dissipate the UV energy. Shading tanks from the sun will also prevent deterioration.

Tanks must be free to expand or contract; avoid excessive tension on the tank.