A large, cylindrical industrial tank is the central focus, supported by four legs. The tank has a flat top with several circular openings and a smaller opening on the side. In the background, a worker in a light-colored shirt and dark pants is standing on a red floor, looking at a device. The scene is set in a factory with metal walls and shelves in the background. The entire image has a blue tint.

TANK MATERIALS GUIDE



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Choosing the appropriate material of construction for your pressure vessel or storage tank is a critical step to the successful completion of your project. In addition to the importance of the selected material meeting the requirements of your application, there could be a significant financial impact, as well as potential limitations to fabricator availability. Below we've outlined the most common materials used to fabricate tanks in order to help you easily determine which material is best for your project.

Stainless Steel Tanks

Of all the materials included in this guide, stainless steel offers the most versatility. It is resistant to rust, which inherently offers a longer lifespan than carbon steel, and offers far more durability than plastic or fiberglass. It is also generally able to withstand higher and lower temperatures than the other three options. Finally, stainless steel is stain resistant and easily cleaned for high purity applications. However, all of these benefits come at a cost, as stainless steel is typically the most expensive of the four material options listed.



Stainless Steel Tank

Stainless steel tanks are commonly used in the pharmaceutical, energy, and chemical industries, in addition to being widely used in the food and beverage industry.

Carbon Steel Tanks

If you are looking for a material that possesses some of the significant benefits of stainless steel, such as the ability to handle high pressures and superior durability, but with a cheaper price tag, than carbon steel may be the correct material for you. Carbon steel can handle higher and lower temperatures than either plastic or fiberglass. It is also known for its ability to store products without experiencing cracking, melting, or other damage. Although carbon steel is susceptible to rust, many tank manufacturers can coat or galvanize the tank to offer enhanced rust resistance.

Due to versatility of carbon steel, tanks of this material are widely used in paper and pulp, fuel storage, and mining industries, as well as the oil and gas industries.

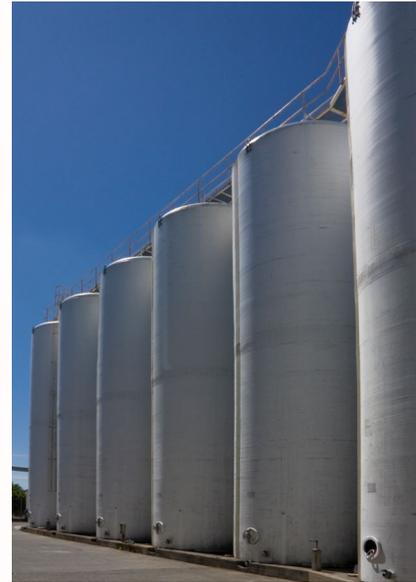


Carbon Steel Tank

Fiberglass Tanks

If you are in need of a storage tank that is innately resistant to rust and considerably less expensive than stainless steel, then fiberglass may be the right material for you. It offers a comparable lifespan to stainless steel if used correctly and due to the weight of the material, fiberglass tanks are also lighter than steel tanks. Fiberglass also offers the least amount of expansion and contraction with heat, cold, or stress. It can also be molded to fit complex geometries; however, it is more susceptible to cracking or scratching than steel tanks. Fiberglass generally cannot handle the higher temperatures or pressure ratings that either steel option can.

Due to the corrosion resistant properties of fiberglass, tanks of this material are primarily used for water and fuel storage.



Fiberglass Tanks

Plastic Tanks

Plastic storage tanks are perfect for non-pressure, ambient temperature storage applications. Plastic is the lightest of the four material options; so light, that some plastic tanks can be moved by hand. They are also typically the least expensive of the four materials. Due to its rust resistant properties, a standard plastic tank will typically outlast an uncoated carbon steel tank in environments prone to moisture. However, plastic tanks generally offer limited customization as compared to steel tanks and cannot generally withstand anything but ambient temperatures. Plastic tanks are usually not suitable to hold pressure.



Plastic Tanks

Using a scale of 1-5 (5 being the best, 1 being the worst).

	Carbon Steel	Stainless Steel	Plastic	Fiberglass
Price	★ ★ ★	★	★ ★ ★ ★ ★	★ ★ ★
Weight	★	★	★ ★ ★ ★	★ ★ ★ ★
Handle High Temp	★ ★ ★ ★	★ ★ ★ ★ ★	★	★ ★
Handle High PSI	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★	★ ★
Corrosion Resistance	★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★



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