



## Pressure & Vacuum Liquid Waste Tanks Steel or Fibreglass?

When deciding whether to specify a steel or fibreglass tank for your next liquid waste road tanker project, it is important to be aware of a few basic concepts.

### **TANK MATERIAL DUCTILITY:**

Ductility allows a material to bend rather than break. The higher the ductility, the more the material can change shape without cracking or rupturing. One measure of ductility is the amount a material can stretch without brittle fracture. Steel stretches about 15 times more than fibreglass reinforced plastic.

Steel is an elastic material with excellent ductility, while fibreglass exhibits poor ductility. Simply put, when steel only dents, fibreglass (composite) will break.

An elastic material like steel expands as pressure or vacuum loads are applied, and just as quickly returns to its original state once the load is removed. In comparison, a rigid, viscoelastic material like fibreglass is subject to time-dependent strain and weakens over time as load is applied.

### **TANK MATERIAL STRENGTH & HARDNESS:**

Hardness of material is its resistance to indentation. Steel used to fabricate tanks is inherently hard enough to resist penetration from sharp objects.

The hardness level of a fibreglass tank must be regularly measured to ensure that it remains consistent over time. Inadequate hardness may be an indicator of incompatibility with transported products that could lead to fracture and leaking.

Steel is your strongest choice.

### **TANK ASSET LIFE – FATIGUE RESISTANCE:**

Steel can exhibit an infinite fatigue life under appropriate design loads whereas fibreglass does not. Under cyclic pressure and vacuum conditions, the fatigue life expectancy of a steel pressure / vacuum tank is far greater than the fatigue life expectancy of a fibreglass pressure / vacuum tank.

### **TANK CAPITAL COST:**

The up front capital cost of a fibreglass tank is considerably higher than the up front capital cost of a high-strength carbon steel tank.

### **DG APPLICATION:**

**Under no circumstances should a fibreglass tank be used to transport Class 3 Flammable Waste Liquids.**

**Specify steel when choosing the material for your pressure / vacuum tank. Remember that only steel has long term material strength that is not time-dependent, as well as superior mechanical properties.**



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