

# FRP Pressure Tanks Chemical Resistance/Corrosion Resistance

The corrosion or chemical resistance of FRP pressure vessels depends upon: type of *thermoset resin*, the *identity and concentration* of the material being confined, the *maximum temperature* in use, the *maximum pressure* applied and whether the pressure loading is *cyclic* or *static*.

The variables involved in each application necessitate that the following tables be used only as a guide, but are, to the best of our knowledge, accurate. However, none of the data shown in the chart is to be construed as a guarantee expressed or implied.

The data was obtained from several sources including the

resin manufacturers' own recommendations, and other sources which we consider reliable.

We are in a position to effectively assist our customers with their corrosion problems providing we are given specific information regarding the variable factors shown above.

The absence of a material in the following chart indicates that data was not available when this chart was published. Since we are adding test data constantly, we may have an answer for you today. Write or call our sales department.

**Legend:** GP — polyester resin, VE — vinylester resin, R — recommended, M-I — marginal, investigate further, NR — not recommended, NA — information not available.

CHEMICAL EXPOSURE (COMMON NAME)	CONCENTRATION	VESSEL RESIN	
		GP-P	VE-D
Acetic Acid	10%	R	R
Acetic Acid	25%	R	R
Acetic Acid	50%	M-I	R
Acetic Acid	75%	NR	R
Acetic Acid, glacial		NR	na
Acetic Anhydride		NR	na
Acetone	100%	NR	NR
Acetone/water	10/90	na	NR
Aluminum Chloride	all	M-I	R
Aluminum Fluoride	all	NR	na
Aluminum Potassium Sulfate	all	R	R
Aluminum Sulfate	all	R	R
Ammonia Aqueous	5%	M-I	R
Ammonia Aqueous	10%	NR	R
Ammonia Aqueous	20%	NR	R
Ammonia Aqueous	29%	NR	M-I
Ammonium Bicarbonate	10%	na	R
Ammonium Bicarbonate	20%	R	R
Ammonium Bicarbonate	50%	na	R
Ammonium Carbonate	10%	R	R
Ammonium Carbonate	50%	R	M-I
Ammonium Carbonate	100%	R	na
Ammonium Chloride	all	R	R
Ammonium Fluosilicate		NR	na
Ammonium Nitrate	all	R	R
Ammonium Persulfate	all	R	R
Ammonium Sulfate	20%	R	R
Amyl Acetate	100%	NR	na
Amyl Alcohol	all	R	R
Amyl Chloride	100%	NR	na
Aniline	100%	NR	na
Aniline Sulfate	all	R	R
Antimony Trichloride	all	R	R
Barium Carbonate	all	NR	R
Barium Chloride	all	R	R
Barium Hydroxide	10%	NR	R
Barium Sulfide	all	na	R
Benzaldehyde	100%	NR	NR
Benzene		NR	NR
Benzene Sulfonic Acid	0-75%	R	R
Benzoic Acid	all	R	R
o-Benzoyl Benzoic Acid	all	na	R
Benzyl Alcohol	all	na	R
Boric Acid	all	R	R
Bromine, wet and dry		NR	NR
Butyl Acetate	100%	NR	na
Butyl Alcohol	all	na	R
Butyric Acid	25%	R	R
Butyric Acid	50%	R	R
Calcium Chlorate	all	R	R
Calcium Chloride	all	R	R
Calcium Hydroxide	25%	NR	R
Calcium Hypochlorite	all	M-I	R
Calcium Sulfate	all	R	R
Camphor	100%	R	na
Carbon Dioxide	all	R	R
Carbon Disulfide	100%	NR	M-I
Carbon Monoxide	all	R	R
Carbon Tetrachloride	100%	R	M-I
Chloroacetic Acid	25 & 50%	R	R
Chloroacetic Acid	100%	M-I	na
Chlorine Dioxide	all	M-I	R
Chlorine Gas, wet and dry		R	R
Chlorine Water, Sat'd		R	R
Chlorobenzene	100%	M-I	M-I
Chloroform	100%	NR	NR
Chlorosulfonic Acid	100%	NR	na
Chromic Acid	5-20%	R	R
Chromic Acid	30%	M-I	NR
Citric Acid	all	R	R
Copper Chloride	all	R	R

CHEMICAL EXPOSURE (COMMON NAME)	CONCENTRATION	VESSEL RESIN	
		GP-P	VE-D
Copper Cyanide	all	R	R
Copper Sulfate	all	R	R
Cresvic Acid	100%	NR	na
Crude Oil, Sweet & Sour	100%	na	R
O-Dichlorobenzene	100%	NR	NR
Electrosol	5%	na	R
Ethyl Acetate	100%	NR	na
Ethyl Ether	100%	NR	NR
Ethyl Chloride	100%	R	na
Ethylene Chloride	100%	na	NR
Ethylene Dichloride	100%	NR	NR
Ethylene Glycol	100%	R	na
Fatty Acids	100%	R	R
Ferric Chloride	all	R	R
Ferric Nitrate	all	R	R
Ferric Sulfate	all	R	R
Ferrous Chloride	all	R	R
Ferrous Nitrate	all	R	R
Ferrous Sulfate	all	R	R
Fluoboric Acid	all	na	R
Fluorine	100%	NR	na
Fluosilicic Acid	25%	NR	M-I
Formaldehyde	10-40%	R	na
Formic Acid	all	NR	M-I
Furfural	5-10%	M-I	na
Furfural	25-100%	NR	na
Gasoline	100%	R	M-I
Glycerine	all	R	R
Gluconic Acid	50%	na	M-I
Heptane	100%	na	R
Hydrobromic Acid	25 & 50%	R	R
Hydrochloric Acid	10-37%	R	R
Hydrocyanic Acid	10%	R	R
Hydrogen Cyanide	100%	R	na
Hydrofluoric Acid	10%	NR	R
Hydrofluoric Acid	20%	NR	NR
Hydrogen Peroxide	3-30%	R	R
Hydrogen Sulfide	all	R	na
Hypochlorous Acid	10%	R	R
Hypochlorous Acid	20-50%	na	R
Iodine	100%	NR	na
Kerosene		R	na
Lactic Acid	all	R	R
Lead Acetate	all	R	R
Levulinic	all	na	R
Linseed Oil	100%	R	NR
Magnesium Carbonate	all	R	R
Magnesium Chloride	all	R	R
Magnesium Sulfate	all	R	R
Maleic Acid	all	na	R
Mercuric Chloride	all	R	R
Mercurous Chloride	all	R	R
Methyl Chloride	100%	R	na
Methyl Ethyl Ketone	100%	NR	NR
Methylene Chloride	100%	NR	NR
Milk, fresh or sour		R	R
Napththa	100%	R	R
Napththalene	100%	M-I	R
Nickel Chloride	all	R	R
Nickel Nitrate	all	R	R
Nickel Sulfate	all	R	R
Nitric Acid	5%	R	R
Nitric Acid	20%	M-I	R
Nitric Acid	40%	NR	na
Nitrobenzene	100%	NR	NR
Oleic Acid	100%	R	R
Oleum		NR	NR
Oxalic Acid	all	R	R
Perchloric Acid	10%	R	R
Perchloric Acid	30%	M-I	M-I
Phenol	5%	M-I	na
Phenol	10-100%	NR	na

CHEMICAL EXPOSURE (COMMON NAME)	CONCENTRATION	VESSEL RESIN	
		GP-P	VE-D
Phosphoric Acid	10-85%	R	R
Phthalic Anhydride	all	R	R
Picric Acid (alc. soln.)	10%	R	R
Potassium Bicarbonate	10%	R	R
Potassium Carbonate	10-25%	M-I	R
Potassium Chloride	all	R	R
Potassium Dichromate	all	R	R
Potassium Ferrocyanide	all	R	R
Potassium Hydroxide	10-25%	NR	R
Potassium Nitrate	all	R	R
Potassium Permanganate	all	R	R
Potassium Persulfate	all	R	R
Potassium Sulfate	all	R	R
Seleious Acid	all	na	R
Silver Nitrate	all	R	R
Sodium Acetate	all	R	R
Sodium Bicarbonate	10%	R	R
Sodium Bisulfate	all	R	R
Sodium Bisulfite	all	R	na
Sodium Bromide	all	R	na
Sodium Carbonate	10-32%	M-I	R
Sodium Chlorate	50%	na	R
Sodium Chloride	all	R	R
Sodium Cyanide	all	NR	R
Sodium Ferricyanide	all	R	R
Sodium Hydrosulfide	all	na	R
Sodium Hydroxide	5%	NR	R
Sodium Hydroxide	10%	NR	R
Sodium Hydroxide	25%	NR	R
Sodium Hydroxide	50%	NR	R
Sodium Hypochlorite	5%	R	R
Sodium Hypochlorite	10-15%	NR	R
Sodium Nitrate	all	R	R
Sodium Nitrite	all	R	R
Sodium Silicate	all	na	R
Sodium Sulfate	all	R	R
Sodium Sulfide	all	M-I	R
Sodium Sulfite	all	R	R
Sorgital Solutions	all	na	R
Stannic Chloride	all	R	R
Stannous Chloride	all	R	R
Stearic Acid	all	R	R
Succinonitrile Solutions		na	M-I
Sulfanilic Acid	all	na	R
Sulfonated Detergents	all	R	R
Sulfur Dioxide	100%	R	na
Sulfur Trioxide	100%	M-I	na
Sulfuric Acid	25-70%	R	R
Sulfuric Acid	75% & Up	NR	na
Sulfurous Acid	5%	R	na
Tannic Acid	all	R	R
Tartaric Acid	all	R	R
Tobias Acid	all	na	R
Trichloroacetic Acid	50%	M-I	R
Trichloroethylene	100%	NR	na
Tetrachlorethylene	100%	na	M-I
Toluene	100%	NR	M-I
Trisodium Phosphate	25%	NR	R
Trichloromonofluoromethane	100%	na	M-I
Urea-Amon. Nitrate Fertilizer		na	M-I
8-8-8 Fertilizer		na	M-I
Water, city		R	R
Water, de-ionized		R	R
Water, distilled		R	R
Water, well		R	R
Xylene	100%	na	M-I
Zinc Chloride	all	R	R
Zinc Nitrate	all	R	na
Zinc Sulfate	all	R	R