

## Chemical Resistance Guide

It is important to consider the effects of chemical exposure to materials in the design stage. Many factors should be evaluated, including chemical type, concentration, duration of exposure, and operating temperature. Enduro Composites should be contacted for material recommendations regarding specific applications and for information on chemical exposures not listed in this guide.

Enduro Composites offers Tuff Span panels in two standard resin systems, which provide outstanding corrosion protection for a broad range of applications. Premium grade isophthalic polyester is recommended for splash and spill chemical exposure and moderate operating temperatures. Having better strength retention at elevated temperatures, vinyl ester is recommended for certain higher temperatures and chemical exposures.

Chemical	Max. Cont. Temp. (°F)			Chemical	Max. Cont. Temp. (°F)		
	%	Iso Polyester	Vinyl Ester		%	Iso Polyester	Vinyl Ester
Acetic Acid	10	150	210	Kerosene/Fuel Oil	100	150	180
Acetic Acid	50	125	180	Magnesium Chloride	100	150	210
Acetone	All	NR	180	Methyl Alcohol	100	90	120
Alum	Vapor	150	210	Mineral Oil	100	150	210
Aluminum Potassium Sulfate	All	150	210	Naptha	100	150	180
Aluminum Sulfate	All	150	210	Nitric Acid	5	150	160
Ammonia	–	–	100	Nitric Acid	20	–	120
Ammonium Hydroxide	10	90	160	Nitric Acid Vapor	20	150	180
Ammonium Nitrate	All	150	210	Phosphoric Acid	85	150	210
Benzene	All	90	NR	Potassium Aluminum Sulfate	Sat'd	150	210
Benzenesulfonic Acid	30	150	210	Sodium Bicarbonate	10	140	180
Bromine (Dry & Wet Gases)	100	90	100	Sodium Bisulfate	All	150	210
Calcium Chloride	All	150	210	Sodium Carbonate	All	90	160
Carbon Tetrachloride	Vapor	70	175	Sodium Chloride	Sat'd	150	210
Chlorine Dioxide	Fumes	90	210	Sodium Hydroxide	5	150	180
Chlorine (Wet Gas)	All	90	210	Sodium Hydroxide	Vapor	150	180
Chlorine Cell Plant	Fumes	90	210 (4)	Sodium Hypochlorite	5	125	180
Chromic Acid	10	–	150	Sodium Hypochlorite	Vapor	150	180
Cooling Tower Water	–	130	170	Sodium Nitrate	All	150	210
Copper Sulfate	All	150	210	Sodium Silicate	All	NR	210
Diammonium Phosphate	Vapor	90	210	Sodium Sulfate	All	150	210
Dibutyl Phthalaic	100	90	150	Soya Oil	100	130	210
Ethylene Chlorohydrin	100	90	150	Sulfite Liquors	–	120	210
Ethylene Dichloride	All	NR	100	Sulfur Dioxide	Dry/Wet	150	210
Ethylene Glycol	All	150	210	Sulfur Trioxide	100	90	210
Fatty Acids	100	150	210	Sulfuric Acid	50	150	210
Ferrous Sulfate	All	150	210	Sulfuric Acid	70	150	180
Flousilic Acid	10	100 (4)	180 (4)	Sulfuric Acid	Vapor	150	210
Fungicides, Organic	100	90	–	Tannic Acid	All	150	210
Hydrochloric Acid	15	150	210	Trisodium Phosphate	25	–	210
Hydrochloric Acid	32	100	180	Urea	Sat'd	90	180
Hydrochloric Acid	Vapor	150	210	Water Distilled	100	150	210
Hydrofluoric Acid	10	100 (4)	150 (4)	Water (city/sea)	100	150	210
Hydrogen Chloride (Gas)	100	120	210	Zinc Sulfate	All	150	210
Hydrogen Sulfide	All	150	210				

### Notes

- Design engineers and plant personnel should use this guide to help with selecting the appropriate resin for their application. Since specific applications vary, this information should be used as a guide only and not considered as a guarantee of performance.
- The information shown is for standard Tuff Span iso-polyester and vinyl ester materials having a Class I Flame Spread rating.
- The resin system for Tuff Span FM approved panels is an iso-polyester with specific additives for enhanced fire retardance. The chemical resistance for Tuff Span FM Series panels is excellent but should not be considered the same as standard iso-polyester. Enduro Composites should be contacted for specific recommendations.
- A surfacing veil is recommended for this exposure.