



# CHEMICAL RESISTANCE OF ANCHORING ADHESIVES

## Resistance of Adhesives to Water Treatment Chemicals

Chemical	Concentration	Acrylic-Tie AT	Epoxy-Tie SET	Epoxy-Tie ET
Acetic Acid	Glacial	Failed	Failed	Failed
	5%	Resistant	Failed	Failed
Aluminum Ammonium Sulfate (Ammonia Alum)	10%	Resistant	Resistant	Resistant
Aluminum Potassium Sulfate (Potassium Alum)	10%	Resistant	Resistant	Resistant
Aluminum Sulfate (Alum)	15%	Resistant	Resistant	Resistant
Ammonium Hydroxide (Ammonia)	28%	Resistant	Resistant	Resistant
	10%	Resistant	Resistant	Resistant
Ammonium Nitrate	15%	Resistant	Resistant	Resistant
Ammonium Sulfate	15%	Resistant	Resistant	Resistant
Calcium Hypochlorite (Chlorinated Lime)	15%	Resistant	Resistant	Resistant
Calcium Oxide (Lime)	5%	Resistant	Resistant	Resistant
Fluorosilicic Acid	25%	Resistant	Resistant	Not Resistant
Hydrochloric Acid	Concentrated	Resistant	Failed	Failed
	10%	Resistant	Not Resistant	Failed
Hydrogen Peroxide	30%	Resistant	Failed	Not Resistant
	3%	Resistant	Not Resistant	Resistant
Iron(III) Chloride (Ferric Chloride)	15%	Resistant	Not Resistant	Not Resistant
Iron(II) Chloride (Ferrous Chloride)	15%	Resistant	Resistant	Resistant
Nitric Acid	Concentrated	Failed	Failed	Failed
	40%	Failed	Failed	Failed
	10%	Resistant	Not Resistant	Failed
Phosphoric Acid	85%	Failed	Failed	Failed
	40%	Resistant	Not Resistant	Failed
	10%	Resistant	Not Resistant	Failed
Potassium Permanganate	10%	Resistant	Resistant	Not Resistant
Sodium Bicarbonate	10%	Resistant	Resistant	Resistant
Sodium Bisulfite	15%	Resistant	Not Resistant	Failed
Sodium Carbonate	15%	Resistant	Resistant	Resistant
	2%	Resistant	Resistant	Resistant
Sodium Chloride	15%	Resistant	Resistant	Resistant
Sodium Fluoride	10%	Resistant	Resistant	Resistant
Sodium Hexafluorosilicate (Sodium Silicon Fluoride)	5%	Resistant	Resistant	Resistant
Sodium Hypochlorite	25%	Resistant	Resistant	Resistant
	5%	Resistant	Resistant	Resistant
Sodium Nitrate	15%	Resistant	Resistant	Resistant
Sodium Phosphate (Trisodium Phosphate)	10%	Resistant	Resistant	Resistant
Sodium Silicate	50%	Resistant	Resistant	Resistant
Sulfuric Acid	Concentrated	Failed	Failed	Failed
	30%	Resistant	Not Resistant	Failed
	3%	Resistant	Not Resistant	Failed
Water	n/a	Resistant	Resistant	Resistant

**Acrylic-Tie® AT and Epoxy-Tie® SET and ET adhesives were tested to determine their suitability for use in environments where chemicals are present.**

### Description of Test Method & Usage Guidelines

Adhesive samples were immersed in aqueous solutions of the chemicals listed for four months or until they became significantly saturated. Samples were not considered significantly saturated until they experienced a weight gain of less than 0.05% over a four week period. The samples were then weighed to determine chemical absorption and loaded in compression to determine mechanical strength.

Samples were characterized as resistant, not resistant, or failed according to the following requirements:

#### Resistant Samples:

Met all of the following requirements:

1. Achieved significant saturation.
2. No visible damage.
3. Total chemical absorption < 5% of sample weight.
4. Reduction in mechanical strength < 25%.

#### Not Resistant Samples:

Did not meet at least one of the four requirements. The adhesive should not be used in applications where constant or frequent exposure to the chemical is expected.

#### Failed Samples:

Did not meet at least one of the four requirements and also exhibited excessive visible damage or experienced greater than a 50% reduction in mechanical strength. The adhesive should not be used in applications where exposure to the chemical is expected.

*For information on the full line of Simpson Strong-Tie® adhesive and mechanical anchors, powder/gas actuated fastening systems and carbide bits, call and request our Anchoring and Fastening Systems for Concrete and Masonry catalog or visit [www.simpsonanchors.com](http://www.simpsonanchors.com).*