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Table C – Chemical Resistance Table

Many factors combine to determine the useful life of a cable tie material and none is as important as chemical exposure. Various chemicals will have different effects on plastics depending on such variables as chemical concentrations, temperature, stress and ultraviolet light. This table is an excellent guideline for the selection of the best cable tie material for various cable tie environments. It should be noted that the exposure for this chemical resistance chart is at 70°F (21°C).

## Resistance of Panduit® cable tie materials to chemical attack at 70°F (21°C)

A = Excellent                      1 = Pitting occurs under some conditions  
 B = Satisfactory                2 = Attack may occur if sulfuric acid present  
 C = Slight Attack                Aq. = Aqueous  
 D = Attacked                      C.S. = Cold Saturated  
 — = Not Tested

Materials	Percent Concentration	Nylon 6.6*	Nylon 12	Polypropylene	TEFZEL■	HALAR▲	PEEK	304 Stainless Steel	316 Stainless Steel
Acetaldehyde	90	B	—	C	A	A	A	—	—
Acetic Acid	97	D	D	A	A	A	A	A	A
Acetic Acid	10	C	B	A	A	A	—	A	A
Acetic Anhydride	90	—	B	A	A	A	—	A	A
Acetone	100	A	A	A	A	A	A	A	A
Acetophenone	100	—	—	B	A	A	—	A	A
Acetylene	100	—	—	A	A	A	A	A	A
Aluminum Chloride	10	B	A	A	A	A	A	—	—
Aluminum Fluoride	10	B	A	A	A	A	—	—	—
Aluminum Hydroxide	Aq. C.S.	—	A	A	A	A	—	A	A
Aluminum Potassium Sulfate	10	B	A	A	A	A	—	A <sup>1</sup>	A <sup>1</sup>
Ammonia	All	—	A	A	A	A	A	A	A
Ammonium Carbonate	1 to 5	—	A	—	A	A	—	A	A
Ammonium Chloride	10 to 25	D	A	A	A	A	A	A	A
Ammonium Hydroxide	10	A	—	—	A	A	A	—	—
Ammonium Nitrate	100	—	A	A	A	A	A	A	A <sup>1</sup>
Ammonium Sulfate	10	—	A	A	A	A	A	E <sup>1</sup>	A
Amyl Acetate	100	—	—	C	A	A	A	A	A
Aniline	100	—	B	A	A	A	A	A	A
Antimony Trichloride	All	D	—	A	A	A	A	A	A
Arsenic Acid	1 to 80	—	—	A	A	A	—	A	A
Barium Carbonate	All	—	A	A	A	A	—	A	A
Barium Chloride	All	—	A	A	A	A	—	A <sup>1</sup>	A
Barium Sulfate	All	—	A	A	A	A	—	A	A
Barium Sulfide	All	—	A	A	A	A	—	A	A
Benzene	100	A	A	C	A	A	A	A	A
Benzoic Acid	100	D	A	A	A	A	A	A	A
Benzoyl Chloride	100	—	—	C	A	A	—	—	—
Benzyl Alcohol	100	—	—	A	A	A	A	—	—
Boric Acid	All	D	A	A	A	A	A	B	—
Bromine	100	D	D	D	A	A	D	D	D
Butadiene	100	—	—	C	A	A	—	A	A
Butane	100	—	A	A	A	A	A	A	A
Butanediol	100	—	—	A	A	A	—	—	—
Butyl Acetate	100	—	A	C	A	A	A	—	—
N. Butyl Alcohol	100	—	A	A	A	A	A	A	A
Butyl Phthalate	100	—	—	A	A	A	—	—	—
Butyraldehyde	100	—	—	A	A	A	—	—	—
Butyric Acid	10 to 100	D	—	A	A	A	—	A	A
Calcium Carbonate	Aq. C.S.	—	—	A	A	A	A	A	A
Calcium Chlorate	Aq. C.S.	—	—	A	A	A	—	A	A
Calcium Chloride	5	C	A	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
Calcium Hydroxide	50	—	—	A	A	A	A	A	A

\*Includes all 6.6 Nylons (weather resistant, heat stabilized, and flame retardant).

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▲ HALAR is a registered trademark of Solvay Solexis

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Table C – Chemical Resistance Table (continued)

Materials	Percent Concentration	Nylon 6.6*	Nylon 12	Polypropylene	TEFZEL ■	HALAR ▲	PEEK	304 Stainless Steel	316 Stainless Steel
Calcium Hypochlorite	2	D	—	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
Calcium Nitrate	50	—	A	A	A	A	A	—	—
Calcium Sulfate	2	C	—	A	A	A	A	A	A
Carbon Tetrachloride	100	A	A	—	A	A	A	A	A
Carbon Tetrachloride	Aq. 10	—	—	—	—	A	—	C <sup>1</sup>	A <sup>1</sup>
Chlorine	Dry	—	D	D	A	A	D	C	C
Chlorine	Wet	—	D	C	A	A	D	D	D
Chloroacetic Acid	10 to 50	D	—	A	A	A	A	D	C
Chlorobenzene	100	—	C	A	A	A	A	—	—
Chloroform	100	A	C	C	A	A	A	A	A
Chlorosulphonic Acid	10 to 100	D	D	D	B	A	D	D	D
Chromic Acid	10 to 50	D	D	A	A	A	A	C	C
Citric Acid	10 to 50	B	B	A	—	A	A	A	A
Copper Chloride	1 to 10	D	—	A	A	A	A	A <sup>1</sup> -D	A <sup>1</sup> -C <sup>1</sup>
Copper Cyanide	Aq. C.S.	—	—	A	A	A	A	A	A
Copper Nitrate	50	—	—	A	A	A	A	A	A
Cresol	100	D	D	—	A	A	—	A	A
Crotonaldehyde	100	—	—	A	A	A	—	—	—
Cyclohexane	100	—	A	C	A	A	A	A	—
Cyclohexanol	100	—	A	A	A	A	A	A	—
Cyclohexanone	100	—	A	C	A	A	A	A	—
Dibutyl Phthalate	100	—	—	A	A	A	A	—	—
Dichloroethane	100	—	—	A	—	A	A	A	A
Dichloroethylene	100	—	—	C	A	A	—	—	—
Diesel Fuel	100	—	A	C	A	A	A	A	A
Diethyl Ether	100	—	A	A	A	A	A	A	A
Diglycolic Acid	Aq. C.S.	—	—	A	A	A	—	—	—
Diisobutyl Ketone	100	—	—	A	A	A	—	—	—
Dimethyl Amine	100	—	—	A	A	A	—	—	—
Dimethyl Formamide	100	—	A	A	A	A	A	A	—
Dimethyl Sulfate	100	—	—	C	A	A	—	—	—
Diethyl Phthalate	100	—	—	A	A	A	A	A	—
1,4-Dioxane	100	—	B	C	A	A	A	A	—
Ethyl Acetate	100	A	A	B	A	A	A	A	A
Ethyl Alcohol	100	A	A	A	A	A	A	A	A
Ethyl Chloride	100	—	—	C	A	A	—	A	A
Ethylene Chloride	100	A	C	C	A	A	—	A	A
Ethylene Glycol	100	A	A	A	A	A	A	A	A
Ethylene Oxide	100	—	—	C	A	A	A	—	—
Fatty Acids	100	—	—	A	A	A	—	—	—
Ferric Chloride	50	D	—	A	A	A	C	D	D
Ferric Hydroxide	All	—	—	A	A	A	—	A	A
Ferric Nitrate	All	—	—	A	A	A	A	A	A
Ferrous Chloride	Aq. C.S.	D	—	A	A	A	A	D	C
Ferrous Sulfate	10	—	—	A	A	A	A	A <sup>1</sup>	A
Fluorine (Dry)	100	—	—	D	A	—	D	D	D
Formaldehyde	40	A	B	A	A	A	A	A <sup>1</sup>	A
Formic Acid	All	D	D	A	A	A	C	A	A
Freons	100	A	—	—	A	A	A	—	—
Fuel Oil	100	—	A	—	A	A	A	A	A
Furfural	100	A	—	—	A	A	—	A	A
Gallic Acid	Aq. C.S.	—	—	—	A	A	—	A	A
Gasoline	100	A	—	C	A	A	A	A	A
Glycerin	100	—	A	A	—	A	—	A	A
Glycolic Acid	40	D	—	A	A	A	—	—	—
Heptane	100	—	A	A	A	A	A	A	A
Hexane	100	—	A	A	A	A	A	A	A

\*Includes all 6.6 Nylons (weather resistant, heat stabilized, and flame retardant).

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Table C – Chemical Resistance Table (continued)

	Materials	Percent Concentration	Nylon 6.6*	Nylon 12	Polypropylene	TEFZEL■	HALAR▲	PEEK	304 Stainless Steel	316 Stainless Steel
	Hydrobromic Acid	All	D	D	A	A	A	D	D	D
	Hydrochloric Acid	All	D	D	A	A	A	A	D	D
	Hydrocyanic Acid	All	—	D	A	A	A	A	C	C
	Hydrofluoric Acid	All	D	D	A	A	A	D	D	D
	Hydrofluorosilicic Acid	30	—	D	A	A	A	—	D	D
	Hydrogen Peroxide	30	D	B	B	A	A	A	B	A
	Hydrogen Sulfide	Dry	—	—	A	A	A	A	A	A
	Hydrogen Sulfide	Wet	D	—	A	A	A	—	C <sup>2</sup>	A <sup>2</sup>
	Hydroquinone	100	—	—	A	A	A	—	—	—
	Iodine	100	—	—	A	A	A	C	D	D
	Iodoform	100	—	—	—	A	A	—	A	A
	Isopropyl Alcohol	100	A	A	A	A	A	A	A	A
	Jet Fuel	100	A	—	A	A	A	A	A	A
	Lactic Acid	10	A	B	A	A	A	—	A	A
	Lanolin	10	A	A	A	A	A	—	A	A
	Lead Acetate	Aq. C.S.	—	—	A	A	A	A	A	A
	Linseed Oil	100	A	A	A	A	A	—	A	A
	Magnesium Carbonate	Aq. C.S.	—	A	A	A	A	—	A	A
	Magnesium Chloride	Aq. C.S.	C	A	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
	Magnesium Nitrate	Aq. C.S.	—	A	A	A	A	—	A	A
	Maleic Acid	100	—	—	A	A	A	A	—	—
	Malic Acid	Aq. C.S.	—	—	A	A	A	—	A	A
	Mercuric Chloride	Dilute	—	A	A	A	A	A	D	D
	Mercury	100	—	A	A	A	A	A	A	A
	Methyl Alcohol	100	A	A	A	A	A	A	A	A
	Methyl Bromide	100	—	—	D	A	A	—	—	—
	Methyl Chloride	100	—	—	C	A	A	—	—	A
	Methyl Chloroform	100	A	—	C	A	A	—	—	—
	Methyl Ethyl Ketone	100	—	A	C	A	A	A	A	A
	Methyl Isobutyl Ketone	100	A	—	C	A	A	—	A	A
	Methylene Chloride	100	C	D	C	A	A	A	A	A
	Naphtha	100	—	—	A	A	A	A	A	A
	Naphthalene	100	—	B	A	A	A	A	A	A
	Nickel Chloride	Aq. C.S.	—	A	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
	Nickel Sulfate	Aq. C.S.	—	A	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
	Nitric Acid	10 to 30	D	D	A	A	A	—	A	A
	Nitric Acid	30 to 68	D	D	D	B	A	C	A	A
	Nitro Benzene	100	—	C	C	A	A	A	A	A
	Nitro Methane	100	A	—	—	A	A	—	—	—
	Nitrous Acid	5	—	—	—	A	A	A	A	A
	Oleic Acid	100	—	C	A	A	A	A	A	A
	Oxalic Acid	10	—	C	A	A	A	A	A	A
	Oxygen	All	—	—	A	A	A	A	—	—
	Paraffin	100	A	A	A	A	A	—	A	A
	Perchloroethylene	100	—	—	C	A	A	A	A	A
	Petroleum Ether	100	—	A	A	A	A	A	A	A
	Phenol	90	D	D	A	A	A	D	A	A
	Phosphoric Acid	10	D	D	A	A	A	A	A	A
	Phosphorous Pentoxide	100	—	D	A	A	A	A	—	—
	Phosphorous Trichloride	100	—	D	C	A	A	—	A	A
	Phthalic Acid	50	—	—	C	A	A	—	A	A
	Picric Acid	1	—	—	A	A	A	A	A	A
	Potassium Borate	1	—	—	A	A	A	—	—	—
	Potassium Bromide	Aq. C.S.	—	—	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
	Potassium Carbonate	Aq. C.S.	—	C	A	A	A	A	A	A
	Potassium Chlorate	Aq. C.S.	—	B	A	A	A	A	A	A
	Potassium Chloride	5	—	A	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>
	Potassium Dichromate	Aq. C.S.	—	D	A	A	A	A	A	A

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Table C – Chemical Resistance Table (continued)

Materials	Percent Concentration	Nylon 6.6*	Nylon 12	Polypropylene	TEFZEL ■	HALAR ▲	PEEK	304 Stainless Steel	316 Stainless Steel
Potassium Ferrocyanide	25	—	—	A	A	A	A	A	A
Potassium Hydroxide	30	C	—	A	A	A	A	C	C
Potassium Iodide	Aq. C.S.	—	A	A	—	A	—	A	A
Potassium Nitrate	Aq. C.S.	—	A	A	A	A	A	A	A
Potassium Perchlorate	1	—	—	A	A	A	—	—	—
Potassium Permanganate	5	D	D	A	A	A	A	A	A
Potassium Persulfate	All	—	—	A	A	A	—	—	—
Potassium Sulfate	Aq. C.S.	—	A	A	A	A	A	A	A
Potassium Sulfide	Aq. C.S.	—	—	A	A	A	A	A	A
Propionic Acid	50	—	—	A	A	A	—	—	—
Propyl Alcohol	100	A	—	A	A	A	A	A	A
Pyridine	100	—	A	C	A	A	A	C	C
Sea Water	100	—	A	A	A	A	—	A <sup>1</sup>	A <sup>1</sup>
Silver Chloride	Aq. C.S.	—	A	A	A	A	—	D	D
Silver Nitrate	10	—	A	A	A	A	A	A	A
Sodium Acetate	Aq. C.S.	A	—	A	A	A	A	A <sup>1</sup>	A
Sodium Benzoate	Aq. C.S.	—	—	A	A	A	—	—	—
Sodium Bicarbonate	Aq. C.S.	A	A	A	A	A	A	A	A
Sodium Bisulfate	10	—	—	A	A	A	—	A	A
Sodium Bisulfite	Aq. C.S.	—	B	A	A	A	—	A	A
Sodium Borate	Aq. C.S.	—	—	A	A	A	—	A	A
Sodium Carbonate	2	A	A	A	A	A	A	A	A
Sodium Chlorate	25	—	C	A	A	A	A	A	A
Sodium Chloride	10	A	A	A	A	A	A	A	A
Sodium Chromate	Aq. C.S.	D	—	A	A	A	—	A	A
Sodium Fluoride	5	—	—	A	A	A	—	A <sup>1</sup>	A <sup>1</sup>
Sodium Hydroxide	10	A	A	A	A	A	A	A	A
Sodium Hypochlorite	5	B	C	A	A	A	A	C <sup>1</sup>	A <sup>1</sup>
Sodium Hyposulfite	Aq. C.S.	—	—	—	A	A	—	A	A
Sodium Nitrate	5	A	A	A	A	A	A	A	A
Sodium Perborate	Aq. C.S.	—	B	A	A	A	—	—	C
Sodium Perchlorate	10	—	—	—	A	A	—	A	A
Sodium Phosphate	5	—	A	A	A	A	—	A	A
Sodium Sulfate	5	—	A	A	A	A	A	A	A
Sodium Sulfide	5	—	A	A	A	A	A	A <sup>1</sup>	A
Sodium Thiosulfate	25	—	A	A	A	A	—	A <sup>2</sup>	A <sup>2</sup>
Stannic Chloride	Aq. C.S.	D	—	A	A	A	A	D	C
Stannous Chloride	Aq. C.S.	—	A	A	A	A	A	C	B
Stearic Acid	100	—	C	A	A	A	—	A	A
Succinic Acid	100	—	B	A	A	A	—	—	—
Sulfur	100	—	A	A	A	A	A	B	C
Sulfur Dioxide	All	D	—	C	A	A	A	A	A
Sulfuric Acid	5	D	C	A	A	A	C	C	A
Sulfuric Acid	50	D	D	A	A	A	—	D	C
Sulfuric Acid	Concentrate	D	D	C	A	A	D	C	C
Sulfurous Acid	10	A	—	A	A	A	A	C <sup>1</sup>	A <sup>1</sup>
Tannic Acid	10	—	A	A	A	A	A	A	A
Tartaric Acid	50	—	B	A	A	A	A	A	A
Tetrahydrofuran	100	—	C	C	A	A	A	A	A
Toluene	100	A	A	C	A	A	A	A	A
Trichloroacetic Acid	10	D	—	B	A	A	—	D	D
Trichloroethylene	100	—	D	C	A	A	A	A <sup>1</sup>	A <sup>1</sup>
Turpentine	100	—	B	D	A	A	A	A	A
Urea	50	—	A	A	A	A	—	—	—
Vinyl Acetate	100	—	—	A	A	A	—	—	—
Xylene	100	A	—	D	A	A	A	A	A
Zinc Chloride	70	D	A	A	A	A	A	A	A
Zinc Nitrate	Aq. C.S.	—	A	A	A	A	—	A	A
Zinc Sulfate	Aq. C.S.	—	A	A	A	A	A	A	A

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