

Chemical Resistance Tables for Diaphragms

The elastomer material ratings in this section are provided courtesy of DuPont. These ranges are designed to help in the evaluation of diaphragm materials for Resistoflex Diaphragm Valves. Please note that the ratings apply to the brand name materials listed and should not be used to evaluate generic materials due to elastomer formula and quality variations.

PTFE 1-piece and 2-piece diaphragms are relatively inert. PTFE diaphragms can be selected using the same ratings, permeation, and ESC comments as apply to Resistoflex Plastic-Lined Piping Products with one exception. PTFE, Viton, and Nordel diaphragms are limited to 300°F and pressures at or below 150 psig due to valve construction. Hypalon diaphragms are limited to 225°F, and Neoprene diaphragms are limited to 200°F.

RATING KEY: A – Fluid has little or no effect T – No data – likely to be compatible NR – Not recommended
 B – Fluid has minor to moderate effect X – No data – not likely to be compatible
 C – Fluid has severe effect Blank indicates no evaluation has been attempted

Chemical ¹	HYPALON ² Synthetic Rubber	Neoprene	Norde ² Hydrocarbon Rubber (EPDM)	VITON ² Synthetic Rubber
Acetaldehyde	C	C	A	C
Acetic acid, 20%	A	A	A	C
Acetic acid, 30%	A	A	A	C
Acetic acid, glacial	A-B	C	B	C
Acetic anhydride	A	A	T	C
Acetone	B	B	A	C
Acetylene	B	B	A	A
Aluminum chloride solutions	A	A	A	A
Aluminum sulfate solutions	A (225°F)	A (158°F)	A	A
Ammonia, anhydrous	B	A	T	C
Ammonium chloride solutions	A	A	A	A
Ammonium hydroxide solutions	A (200°F)	A (158°F)	A	A
Ammonium sulfate solutions	A (200°F)	A (158°F)	A	A
Amyl acetate	C	C	A	C
Amyl alcohol	A (200°F)	A (158°F)	A	A (212°F)
Aniline	B	C	A-B	A-B
ASTM oil #1	A	A	C	A (300°F)
ASTM reference fuel A	A	A	C	A
ASTM reference fuel B	C	C	C	A
ASTM reference fuel C	C	C	C	A
Barium hydroxide solutions	A (200°F)	A (158°F)	A	A
Beer	A	A	A	A
Benzaldehyde	C	C	B	C
Benzene	C	C	C	A (158°F)
Benzoyl chloride	C	C	C	B
Borax solutions	A (200°F)	A (158°F)	A	A
Boric acid solutions	A (200°F)	A (158°F)	A	A
Bromine, anhydrous liquid	B	C	C	A (212°F)
Butane	A	A	B	A
Butyl acetate	C	C	X	C
Butyraldehyde	B-C	B-C	B	C
Butyric acid	B-C	C	X	T
Calcium bisulfite solutions	A (200°F)	A (158°F)	T	A
Calcium chloride solutions	A	A	A	A
Calcium hydroxide solutions	A (200°F)	A (158°F)	A	A
Calcium hypochlorite, 5%	A	B	A	A

¹ Unless otherwise noted, concentration of aqueous solutions are saturated. All ratings are at room temperature unless specified.

² Registered trademarks of E.I. duPont de Nemours & Company, Inc.

Chemical ¹	HYPALON® Synthetic Rubber	Neoprene	Nordel® Hydrocarbon Rubber (EPDM)	VITON® Synthetic Rubber
Calcium hypochlorite, 20%	A (200°F)	B	A	A (158°F)
Carbon bisulfide	C	C	T	A
Carbon dioxide	A (200°F)	A	T	A
Carbon monoxide	A (200°F)	A	T	T
Carbon tetrachloride	C	C	C	A (158°F)
Castor oil	A (158°F)	A (158°F)	B	A
Chlorine gas, dry	NR	NR	NR	NR
Chlorine gas, wet	B	C	X	B
Chloroacetic acid	A	A	A	C
Chlorobenzene	X	X	X	A
Chloroform	C	C	C	A
Chlorosulfonic acid	C	C	C	C
Chromic acid, 10-50%	A (158°F)	C	C	A
Citric acid solutions	A	A	A	A
Copper chloride solutions	A	A	A	A
Copper sulfate solutions	A	A	A	A
Cottonseed oil	A	A	A-B	A (300°F)
Creosote oil	C	C	C	A (212°F)
Cyclohexane	C	C	C	A
Dibutyl phthalate	C	C	A	B
Diethyl sebacate	B	C	B	B
Diocetyl phthalate	C	C	B	B
DOWTHERM® A Heat Transfer Fluid	B	B	C	A (212°F)
Epichlorohydrin	T	--	B	C (122°F)
Ethyl acetate	C	C	B (158°F)	C
Ethyl alcohol	A (200°F)	A (158°F)	A	A
Ethyl chloride	C	C	B	A
Ethylene dichloride	C (120°F)	C (120°F)	B (120°F)	A-B (120°F)
Ethylene glycol	A (200°F)	A (158°F)	A	A (250°F)
Ethylene oxide	X	X	X	C (158°F)
Ferric chloride solutions	A (200°F)	A	A	A
Fluosilicic acid	A (225°F)	A (158°F)	T	T
Formaldehyde, 40%	A	A	A	A
Formaldehyde, 40%	C (158°F)	C (158°F)	--	--
Formic acid	A	A	A	C (158°F)
FREON ² -11	A (130°F)	A-B (130°F)	C	A-B (130°F)
FREON-12	A (130°F)	A (130°F)	B	A-B (130°F)
FREON-22	A (130°F)	A (130°F)	C	C (130°F)
FREON-113	A (130°F)	A (130°F)	C	A (130°F)
FREON-114	A (130°F)	A (130°F)	C	B
Furfural	B	B	B	C (158°F)
Gasoline	B	B	B-C	A
Glue	A (200°F)	A (158°F)	A	A
Glycerin	A (200°F)	A (158°F)	A	A (250°F)
n-Hexane	A	A	C	A
Hydrazine	-	-	A	C
Hydrochloric acid, 20%	A (158°F)	A	T	A (230°F)
Hydrochloric acid, 37%	A (122°F)	A	A-B	A (158°F)
Hydrochloric acid, 37%	B (158°F)	T	--	T

¹ Unless otherwise noted, concentration of aqueous solutions are saturated. All ratings are at room temperature unless specified.

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Chemical ¹	HYPALON® Synthetic Rubber	Neoprene	Nordel® Hydrocarbon Rubber (EPDM)	VITON® Synthetic Rubber
Hydrochloric acid, 37%	C (200°F)	C (200°F)	--	B (230°F)
Hydrocyanic acid	A	A	A	A
Hydrofluoric acid, 48%	A (158°F)	A	B	A
Hydrofluoric acid, 75%	A	B	C	B (158°F)
Hydrofluoric acid, anhydrous	A	B	C	A
Hydrogen	A	A	A	A
Hydrogen peroxide, 90%	NR	NR	NR	NR
Hydrogen sulfide	A	A	A	B (270°F)
Isooctane	A	A	X	A
Isopropyl alcohol	A (200°F)	A	T	A
Isopropyl ether	B	C	C	C
JP-6	C	C	C	A (100°F)
Kerosene	B	C	C	A (158°F)
Lacquer solvents	C	C	C	C
Lactic acid	A	A	A	A
Linseed oil	A	A	B	A
Lubricating oils	B (158°F)	B (158°F)	C	A (158°F)
Magnesium chloride solutions	A (220°F)	A (158°F)	A	A
Magnesium hydroxide solutions	A (220°F)	A (158°F)	A	A
Mercuric chloride solutions	A	A	A	A
Mercury	A	A	A	A
Methyl alcohol	A	A (158°F)	A	B
Methyl ethyl ketone	C	C	A	C
Methylene chloride	C	C (100°F)	B	B (100°F)
Mineral oil	A	A	C	A
Naphtha	C	C	C	A (158°F)
Naphthalene	C	C (176°F)	C	A (176°F)
Nitric acid, 10%	NR	NR	NR	NR
Nitric acid, 30%	NR	NR	NR	NR
Nitric acid, 60%	NR	NR	NR	NR
Nitric acid, 70%	NR	NR	NR	NR
Nitric acid, red fuming	NR	NR	NR	NR
Nitrobenzene	NR	NR	NR	NR
Oleic acid	B	B	B	B
Oleum, 20-25%	B	C	C	A
Palmitic acid	B	B (158°F)	B	A
Perchloroethylene	C	C	C	A (212°F)
Phenol	C	C	B	A (212°F)
Phosphoric acid, 20%	A (200°F)	A	A	A
Phosphoric acid, 60%	A (200°F)	A	A	A (212°F)
Phosphoric acid, 70%	A (200°F)	A	A	A
Phosphoric acid, 85%	A (200°F)	A	A	A
Pickling solution (20% nitric acid, 4% HF)	A	C	C	A
Pickling solution (17% nitric acid, 4% HF)	A (150°F)	C	C	A
Picric acid	A	A	B	A
Potassium dichromate solutions	A (200°F)	A	A	A
Potassium hydroxide dilute solutions	A (200°F)	A (158°F)	A	A
Pydraul 312C	C	C	C	A
Pyridine	C	C	B	C

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Chemical ¹	HYPALON® Synthetic Rubber	Neoprene	Nordel® Hydrocarbon Rubber (EPDM)	VITON® Synthetic Rubber
SAE #10 oil	C	C	C	A
Sea water	A	A	A	A
Silicone grease	A	A	A	A
Soap solutions	A (200°F)	A (158°F)	A (212°F)	A
Sodium chloride solutions	A	A	A	A
Sodium dichromate, 20%	A (200°F)	B	A	A
Sodium hydroxide, 20%	A (200°F)	A	A	A
Sodium hydroxide, 46 1/2%	A	A (158°F)	A	A (70°F)
Sodium hydroxide, 50%	A (225°F)	A	A	C
Sodium hydroxide, 73%	A (225°F)	A	A	C
Sodium hypochlorite, 5%	A	A	A	A
Sodium hypochlorite, 20%	A (158°F)	B	A	B (158°F)
Sodium peroxide solutions	A (200°F)	A	A	A
Soybean oil	A	A	C	A (250°F)
Stannic chloride	B	B	--	A
Stannous chloride, 15%	A (200°F)	A (158°F)	B	A
Steam	NR	NR	NR	NR
Stearic acid	B (158°F)	B (158°F)	B	T
Styrene	C	C	C	A
Sulfur, molten	A	A	A	A (250°F)
Sulfur dioxide, gas	A	A	A	T
Sulfur dioxide, liquid	A	A	A	T
Sulfur trioxide	C	C	B	T
Sulfuric acid, up to 5%	A	A	A	A
Sulfuric acid, 5-10%	A	A	A	A
Sulfuric acid, 10-50%	A (225°F)	A (158°F)	B	A
Sulfuric acid, 50-80%	A (158°F)	B-C	C	A
Sulfuric acid, 60%	A	B	C	A (250°F)
Sulfuric acid, 90%	A	C	C	A (158°F)
Sulfuric acid, 95%	A-B	C	C	A
Sulfuric acid, 95%	B (122°F)	--	--	A (158°F)
Sulfuric acid, fuming (20% oleum)	B-C	C	C	A
Sulfurous acid	A (158°F)	C	C	C
Tannic acid, 10%	A	A	A	A
Tartaric acid	A (200°F)	A (158°F)	B	A
Tetrahydrofuran	C	C	C	C
Toluene	C	C	C	B (100°F)
Tributyl phosphate	C	C	C	C (212°F)
Trichloroethylene	C	C	C	A (100°F)
Tricresyl phosphate	C	C	A (212°F)	A (300°F)
Triethanolamine	A (158°F)	A (158°F)	A	C
Trisodium phosphate solutions	A	A	A	A
Tung oil	A	A	C	A
Turpentine	C	C	C	A (158°F)
Water	A (212°F)	A (200°F)	A (212°F)	A (212°F)
Xylene	C	C	C	A (100°F)
Zinc chloride solutions	A (200°F)	A	A	A

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