

# CHEMICAL RESISTANCE CHART

CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
ACETALDEHYDE	D	D	D	C	A	D	A	-	B	A	A	A	C	D
ACETAMIDE	D	A	A	B	A	A	A	-	A	A	A	-	A/70	A/140
ACETATE SOLV <sup>2</sup>	D	D	D	C	C	-	A	-	B	-	A	-	D	-
ACETIC ACID, GLACIAL <sup>1</sup>	C	D	D	B	B	D	A	A	B	D	A	A	A/100	A/120
ACETIC ACID	C	C	C	A	A	C	A	A	B	D	A	A	B/70	A
ACETIC ANHYDRIDE	D	B	D	A	B	D	A	-	B	-	A	A	C	B/70
ACETONE	D	D	D	B	A	D	A	B	A	-	A	A	D	D
ACETOPHENONE	D	D	D	D	A	D	A	-	B	A	B	-	A/70	A/70
ACETYL CHLORIDE	D	D	D	D	C	B	A	-	D	A	B	-	-	A/120
ACETYLENE <sup>2</sup>	-	B	A	B	A	A	A	A	A	-	A	-	D	-
ACRYLONITRILE	-	D	D	C	D	D	A	-	B	-	A	B	B	A/70
ADIPIC ACID	-	D	B	-	-	-	A	-	B	B	B	-	B	B
ALCOHOLS	-	-	-	-	-	-	-	-	-	-	-	A	-	-
AMYL	C	B	B	A	A	B	A	A	B	-	A	A	B	A
BENZYL	-	B	D	B	C	A	A	-	B	-	A	A	A/70	A
BUTYL	D	A	A	A	A	A	A	-	B	-	A	A	B	A
DIACETONE <sup>2</sup>	B	D	D	D	B	D	A	-	A	-	A	A	D	A/70
ETHYL	D	A	A	A	A	A	A	A	B	A	A	A	A	A
HEXYL	D	B	A	B	B	A	A	-	A	-	A	A	A/70	A
ISOBUTYL	D	A	C	A	A	A	A	-	B	-	A	A	-	A
ISOPROPYL	D	B	C	A	B	A	A	A	B	C	A	A	A	A/150
METHYL	D	A	A	A	B	D	A	A	B	A	A	A	A/120	A
OCTYL	D	B	B	B	A	A	A	-	A	-	A	A	-	-
PROPYL	D	A	A	A	B	A	A	-	A	-	A	A	A	A/120
ALKAZENE	B	D	D	D	D	A	A	-	-	-	-	-	-	-
ALUM-NH3-Cr-K	-	A	A	A	A	D	A	-	-	-	-	-	-	A
ALUMINIUM ACETATE	D	B	C	B	A	D	A	-	A	D	B	B	-	-
ALUMINIUM CHLORIDE 20%	B	A	A	B	A	A	A	D	B	D	C	A	A	A
ALUMINIUM FLUORIDE	C	A	A	A	B	-	A	-	-	-	C	B	A	A
ALUMINIUM HYDROXIDE	-	A	A	A/120	A	A	A	-	A	D	A	-	A	A
ALUMINIUM NITRATE	C	A	A	A	A	A	A	-	B	D	A	-	A	A
ALUMINIUM PHOSPHATE	-	A	A	A	A	A	A	-	-	-	A	-	-	-
ALUMINIUM POTASSIUM SULFATE (ALUM)	-	A	A	A	A	A	A	-	B	-	A	B	A	A
ALUMINIUM SULFATE	D	A	A	A	A	A	A	D	A	D	A	A	A	A
AMINIES	D	B	D	D	-	D	-	-	A	-	A	-	-	-
AMMONIA, ANHYDROUS	D	A	B	D	A	D	A	-	B	D	A	A	A/70	D
AMMONIA, GAS (COLD)	-	A	A	A	D	A	A	-	-	-	-	-	B	D
AMMONIA, GAS (HOT)	-	B	C	B	C	D	A	-	-	-	-	-	-	-
AMMONIA, LIQUIDS	B	A	B	D	A	D	A	-	D	A	A	B	A/70	A
AMMONIA NITRATE	D	C	A	D	-	-	-	-	C	-	A	-	A	-
AMMONIUM BIFLUORIDE	-	A	A	-	-	A	A	-	D	-	A	B	A/70	A
AMMONIUM CARBONATE	-	A	D	-	-	B	A	-	C	C	A	B	A	A
AMMONIUM CASENITE	-	A	-	-	-	-	-	-	-	-	A	-	-	-
AMMONIUM CHLORIDE	A	A	A	A	A	A	A	A	C	D	C	A	A	A
AMMONIUM HYDROXIDE	A	A	B	A	A	B	A	D	C	A	A	A	A	A
AMMONIUM NITRATE	D	A	A	A	A	B	A	-	B	A	A	A	A	A
AMMONIUM NITRITE	-	A	A	A	A	-	A	-	-	-	-	-	A/70	A
AMMONIUM OXALATE	-	A	A	-	-	-	-	-	-	-	A	A	-	-
AMMONIUM PERSULFATE	D	A	D	A	B	A	A	-	C	D	A	A	A	A
AMMONIUM PHOSPHATE, DIBASIC	-	A	A	A	A	A	A	-	B	-	A	A	A	A
AMMONIUM PHOSPHATE, MONOBASIC	-	A	A	A	A	A	A	-	B	-	A	A	A	A
AMMONIUM PHOSPHATE, TRIBASIC	-	A	A	A	A	A	A	-	B	-	A	A	A	A
AMMONIUM SULFATE	A	A	A	A	A	D	A	B	B	C	A	B	A	A
AMMONIUM THIO-SULFATE	-	A	A	-	A	-	A	-	-	D	A	-	-	-
AMYL-ACETATE	D	D	D	D	B	D	A	B	B	-	A	B	C/70	A/120
AMYL-ALCOHOL	D	B	B	A	A	B	A	-	B	-	A	A	B	A
AMYL-BORATE	-	B	A	A	D	A	A	-	-	-	-	-	-	-
AMYL-CHLORIDE	-	D	D	D	D	A	A	-	D	-	A	A	-	-
AMYL-CHLORONAPHTHALENE	D	D	B	D	D	A	A	-	-	-	-	-	-	-
AMYL-NAPHTHALENE	D	D	D	D	D	A	A	-	-	-	-	-	-	-
ANILINE	-	D	D	D	-	D	A	D	C	-	A	B	B	C/70
ANILINE DYES	D	B	C	B	A	A	A	-	B	A	B	-	-	-
ANILINE HYDROCHLORIDE	D	D	C	D	B	B	A	-	D	D	D	-	-	-
ANIMAL FATS	B	B	A	B	A	A	A	-	A	A	A	-	-	-
ANSUL ETHER	B	D	C	D	C	D	A	-	-	-	-	-	-	-

**Ratings:** A. Recommended; B. Minor to moderate effect; C. Moderate to severe effect; D. Not recommended - insufficient information. Footnotes: 1. Kynar - satisfactory to 200°F; 2. Polypropylene - satisfactory to 72°F; 3. Polypropylene - satisfactory to 175°F; PVDF to 225°F.

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CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
ANTI-FREEZEE	-	C	A	-	-	A	-	-	A	A	A	-	A	-
AQUA REGIA (80%, HCl, 20% HNO3)	D	D	D	C	C	C	A	-	D	-	D	D	B	A/70
AROCHLOR (S) 1248	-	D	D	D	C	A	A	-	A	B	A	-	-	-
AROMATIC HYDROCARBONS	D	D	D	D	D	A	A	-	A	A	A	-	D	-
ARSENIC ACID	C	A	A	A	A	A	A	-	D	-	A	-	A	A
ARSENIC TRICHLORIDE	-	A	C	-	D	D	A	-	D	D	D	-	-	-
ASKAREL	D	C	B	D	D	A	A	-	-	-	-	-	-	-
ASPHALT	B	B	B	D	D	A	A	D	C	-	A	-	A	-
BARIIUM CARBONATE	-	-	A	-	A	A	A	-	B	-	A	-	A	A
BARIIUM CHLORIDE	A	A	A	A	A	A	A	-	D	C	C	A	A	A
BARIIUM CYANIDE	-	A	C	-	-	A	-	-	-	-	A	-	-	-
BARIIUM HYDROXIDE	A	A	A	A	A	A	A	D	D	-	A	B	A	A
BARIIUM NITRATE	-	A	A	-	-	A	-	-	-	A	A	-	-	-
BARIIUM SULFATE	A	-	A	A	A	A	A	-	D	-	A	-	A	A
BARIIUM SULFIDE	A	A	A	A	A	A	A	-	D	-	A	-	A	A
BEER <sup>2</sup>	D	A	A	A	A	A	A	A	A	D	A	-	A	A/175
BEET SUGAR LIQUIDS	D	B	A	A	A	A	A	-	A	A	A	-	A	A
BEET SUGAR LIQUORS	D	A	A	A	A	A	A	-	A	B	A	-	-	-
BENZALDEHYDE	D	D	D	D	B	A	D	-	B	-	A	-	D	A/70
BENZENE <sup>2</sup>	D	D	D	D	D	D	A	B	B	-	A	B	D	A/70
BENZENSULFONIC ACID	D	A	C	B	C	A	A	-	D	D	B	-	-	A/70
BENZYL BENZOATE	-	D	D	D	B	A	A	-	A	B	B	-	-	-
BENZYL CHLORIDE	D	D	D	D	D	A	A	-	D	D	B	-	D	C
BENZOIC ACID <sup>2</sup>	D	D	D	D	B	A	A	-	B	-	A	A	B	A
BENZOL	D	D	D	B	D	A	A	-	B	-	A	A	D	A/70
BLAST FURNACE GAS	D	A	C	D	B	A	A	-	-	-	-	-	-	-
BLEACH SOLUTIONS	D	D	D	A	A	A	A	-	D	-	-	-	B	-
BORAX (SODIUM BORATE)	A	D	B	A	A	A	A	A	C	A	A	A	A	A
BORDEAUX MIXTURE	D	A	A	A	A	A	A	-	D	C	A	-	-	-
BORIC ACID	A	A	A	A	A	A	A	A	B	D	A	A	A	A
BRINE	A	A	A	A	A	A	A	-	-	C	-	A	A	A
BREWERY SLOP	-	A	A	-	-	A	-	-	-	A	A	-	-	-
BROMINE <sup>2</sup>	D	D	D	C	C	A	A	-	D	-	D	A	D	A/150
BROMINE-ANHYDROUS	D	D	-	B	C	A	A	D	D	D	D	-	D	A/150
BROMINE-TRIFLUORIDE	D	D	D	D	D	D	A	-	D	D	B	-	D	-
BROMINE-WATER	D	B	-	B	-	A	A	-	D	D	B	-	D	A
BROMOBENZENE	D	D	D	D	D	B	A	-	D	B	B	-	D	-
BUNKER OIL	B	B	A	D	D	A	A	-	A	A	A	-	-	-
BUTADIENE	D	B	A	B	C	A	A	-	A	-	A	-	-	A
BUTANE <sup>21</sup>	A	B	A	B	C	A	A	A	A	-	A	-	C	A
BUTTER	A	B	A	B	A	A	A	-	A	D	A	-	-	-
BUTTERMILK	-	A	A	-	-	A	-	-	A	-	A	-	-	-
BUTYL ACETYL RICINOLEATE	D	B	A	B	D	A	A	-	A	A	A	-	-	-
BUTYL ACETATE <sup>1</sup>	C	D	D	C	B	D	A	B	A	-	C	B	D	A/70
BUTYL ACRYLATE	-	D	D	D	D	D	A	-	-	-	-	-	D	A/70
BUTYL AMINE	D	D	B	D	B	D	A	-	-	-	-	-	-	B/70
BUTYL BENZOATE	-	D	-	D	A	A	A	-	B	B	B	-	-	-
BUTYL CARBITOL	-	B	A	B	A	A	A	-	-	-	-	-	-	-
BUTYL CELLOSOLVE	D	C	B	B	B	C	A	-	-	-	-	-	-	-
BUTYL OLEATE	-	D	-	D	B	A	A	-	-	-	-	-	-	-
BUTYL STEARATE	-	D	A	D	D	A	A	-	B	B	B	-	-	-
BUTYLENE	D	-	B	D	B	A	A	-	A	-	A	-	D	A
BUTYRALDEHYDE	C	C	D	D	C	D	A	-	-	-	-	-	D	B
BUTYRIC ACID, AQUEOUS	-	D	D	D	-	D	A	-	B	-	A	A	A	A
CALSIUM BISULFIDE	A	A	A	A	A	A	-	-	C	-	B	-	A	A
CALSIUM CARBONATE	-	A	A	A	A	A	A	-	C	-	A	A	A	A
CALSIUM CHLORIDE	A	A	A	A	A	A	A	A	C	C	C	A	A	A
CALSIUM HYDROXIDE	A	A	A	A	B	A	A	B	C	-	A	A	A	A
CALSIUM HYPOCHLORITE	D	B	B	A	A	A	A	A	C	D	A	A	A	A
CALSIUM NITRATE	A	A	A	A	A	A	A	-	B	C	B	-	A	A
CALSIUM SULFATE	-	D	A	-	A	A	A	-	B	-	A	B	A	A
CALSIUM SULFIDE	A	B	A	A	-	A	A	-	A	B	B	-	A/120	A
CALGON	-	A	A	-	-	A	-	-	-	D	A	-	A	-
CANE JUICE <sup>2</sup>	D	A	A	A	A	-	-	-	B	A	A	-	D	-
CANE SUGAR LIQUORS	D	A	A	A	A	A	A	-	A	B	A	-	A	-

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CARBAMATE	D	B	C	B	B	A	A	-	-	-	-	-	-	-
CARBITOL	D	B	B	B	B	A	A	-	B	B	B	-	C	A
CARBOLIC ACID (SEE PHENOL)	C	C	D	C	C	A	A	-	A	A	B	-	C	-
CARBON BISULFIDE <sup>2</sup>	C	D	D	D	D	A	A	B	A	-	A	-	D	A
CARBON DIOXIDE	A	B	A	B	A	B	A	A	A	D	A	-	A	A
CARBON DISULFIDE <sup>2</sup>	C	D	D	D	D	A	A	-	C	-	A	-	D	A/70
CARBON MONOXIDE	A	B	A	A	C	A	A	A	A	-	A	-	A	-
CARBON TERTRACHLORIDE <sup>21</sup>	C	D	C	D	D	A	A	D	D	C	A	A	D	A
CARBONATED WATER	-	A	A	-	-	A	-	-	A	-	A	-	A	A
CARBONIC ACID	A	A	B	-	A	A	A	-	A	D	B	A	A	A
CATSUP	-	C	A	-	-	A	-	A	D	D	A	-	A	-
CELLOSOLVE	D	C	C	D	A	B	A	-	B	B	B	-	A	A
CELLOSOLVE ACETATE	D	D	C	D	A	A	A	-	-	-	-	-	-	A/120
CELLULUBE	D	D	D	D	A	A	A	-	-	-	-	-	-	-
CLORACETIC ACID <sup>2</sup>	D	D	D	D	B	D	A	-	D	D	C	A	D	A
CHLORINATED GLUE	-	D	C	-	-	A	-	-	D	D	A	-	-	-
CHLORINE (DRY)	D	C	C	B	C	A	A	D	D	D	-	-	D	A
CHLORINE (WET)	D	D	D	C	D	A	A	D	D	B	D	A	D	A
CHLORINE, ANHYDROUS LIQUID	-	D	D	C	-	A	A	-	D	D	D	A	D	A
CHLORINE DIOXIDE	-	D	D	C	C	A	A	-	D	D	D	A	-	A
CHLORINE TRIFLUORIDE	D	D	D	D	D	C	A	-	D	D	A	-	-	-
CHLOROACETONE	D	C	D	D	D	B	A	D	D	B	B	-	D	-
CHLOROBENZENE (MONO)	D	D	D	D	D	A	A	D	D	-	A	A	D	A/150
CHLOROBROMOMETHANE	D	D	D	-	B	A	A	-	D	B	B	-	D	-
CHLOROBUTADIENE	D	D	D	D	D	A	A	-	D	B	A	-	D	-
CHLORODODECANE	D	D	D	D	D	A	A	-	D	-	-	-	D	-
CHLOROFORM	C	D	D	D	D	A	A	D	D	D	A	B	D	A
1-CHLORONAPHTHALENE	-	D	D	-	D	A	A	-	D	B	B	-	D	-
1-CHLORO 1-NITRO ETHANE	D	D	D	D	D	C	A	-	D	-	-	-	D	-
CHLOROSULFONIC ACID	D	D	D	D	D	D	A	D	D	D	D	B	D	D
CHLOROTOLUENE	D	D	D	D	D	A	A	-	D	B	B	-	D	-
CHLOROX (BLEACH)	D	B	C	B	-	A	-	-	D	D	A	A	B	-
CHOCOLATE SYRUP	-	-	A	-	-	A	A	-	A	D	A	-	A	-
CHROMIC ACID 5%	D	D	D	B	A	A	A	-	C	D	A	A	A/70	A/120
CHROMIC ACID 50%	D	D	D	B	C	A	A	-	C	D	B	A	A/70	A/120
CHROME PLATING SOLUTIONS	D	D	D	D	D	A	A	-	D	D	D	A	B	A
CIDER	-	A	A	-	-	A	-	-	B	D	A	-	-	-
CITRIC ACID	A	A	A	A	A	A	A	A	C	D	A	A	A	A/250
CITRIC OILS	-	D	A	-	B	A	A	-	C	-	A	-	A	-
COBALT CHLORIDE (2N)	D	A	A	A	C	A	A	-	D	D	-	-	A	-
COFFEE	D	A	A	A	-	A	-	-	A	-	A	-	A	-
COKE OVEN GAS	D	C	C	D	D	A	A	-	-	-	-	-	-	-
COPPER ACETATE	D	B	B	D	A	-	A	-	D	D	C	-	-	-
COPPER CHLORIDE	A	B	A	A	A	A	A	A	D	D	D	-	A	A
COPPER CYANIDE	A	A	A	A	A	A	A	-	D	D	A	A	A	A
COPPER FLUOBORATE	-	A	B	-	-	A	-	-	D	D	D	B	-	-
COPEPR NITRATE	-	A	A	-	A	A	A	-	D	D	A	A	A	A
COPPER SULFATE (5% SOLUTION)	A	A	A	A	A	A	A	A	D	D	A	-	A	A
CREAM	-	C	A	-	-	A	-	-	A	D	A	-	A	-
CRESOLS	D	D	D	D	D	A	A	-	B	-	A	-	D	A/150
CRESYLIC ACID	D	D	D	D	D	A	A	-	C	-	A	B	C	A/150
CYCLOHEXANE	B	D	A	D	D	A	A	A	A	-	A	-	D	A
CYCLOHEXANOL	-	A	B	B	C	A	A	-	C	B	B	-	B	A/150
CYCLOHEXANONE	D	D	D	D	C	D	A	-	B	B	B	-	D	B/70
CYANIC ACID	-	D	C	-	-	-	-	-	-	-	A	-	-	-
DECALIN (DEKLIN)	D	D	D	D	D	A	A	-	-	-	-	-	B/120	A/175
DECANE	B	D	B	D	C	A	A	-	-	-	-	-	A/70	-
DENATURED ALCOHOL	D	B	A	A	A	B	A	-	A	A	A	-	A	A
DETERGENTS	A	B	A	B	A	A	A	-	A	-	A	-	A	-
DEVELOPING FLUIDS	D	A	A	A	A	A	A	-	-	-	B	-	-	-
DIACETONE	B	-	D	D	A	D	A	-	A	A	A	-	D	A/70
DIBENZYL ETHER	B	D	D	D	C	C	A	-	B	B	B	-	-	-
DIBENZYL SEBECATE	D	D	D	D	B	B	A	-	-	-	-	-	-	-
DIBUTYL AMINE	-	D	C	D	D	B	A	-	-	-	-	-	D	-
DIBUTYL ETHER	B	C	B	D	C	C	A	-	B	B	B	-	D	A/120

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	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
DIBUTYL PHTHALATE	C	D	D	D	A	B	A	A	A	A	A	-	C	D
DIBUTYL SEBECATE <sup>2</sup>	D	D	D	D	B	B	A	A	-	A	A	-	C	D
DICHLOROBENZENE	D	D	D	D	D	A	A	-	D	B	B	-	B/70	A/150
DICHLORO-ISOPROPYL ETHER	B	D	D	D	C	C	A	-	D	-	-	-	D	-
DICYCLOHEXYLAMINE	D	D	D	D	D	B	A	-	-	-	-	-	-	-
DIESEL FUEL	B	D	A	B	D	A	A	-	A	A	A	-	B/70	A
DIETHYL BENZENE	D	D	D	D	D	A	A	-	-	-	-	-	-	-
DIETHYL ETHER	A	C	B	D	D	D	A	-	B	B	B	-	-	A/70
DIETHYL SEBECATE	D	D	D	D	B	A	A	-	A	A	A	-	A/120	A/120
DIETHYLAMINE	C	B	B	C	-	D	-	-	A	A	A	-	C	A/70
DIETHYLENE GLYCOL	D	A	A	A	A	A	A	-	-	-	A	-	-	-
DIISOBUTYLENE	D	C	B	D	-	A	A	-	B	B	B	-	-	A
DIISOPROPYL BENZENE	-	D	D	D	D	A	A	-	-	-	-	-	-	-
DIISOPROPYL KETONE	D	D	D	D	A	D	A	-	-	-	-	-	-	-
DIMETHYL ANILINE	-	D	D	-	B	C	A	-	-	-	-	-	A	A/70
DIMENTHYL FORMAMIDE	-	D	C	D	-	A	A	-	A	A	A	-	A/120	D
DIMENTHYL PHTHALATE	-	D	D	D	B	C	A	-	-	-	B	-	A/70	A/70
DINITROTOLUENE	D	D	D	D	D	B	A	-	-	-	-	-	-	-
DIOCTYL PHTHALATE	C	D	D	D	B	A	A	A	A	A	A	-	-	-
DIOCTYL SEBECATE	B	D	D	D	B	B	A	-	-	-	-	-	-	-
DIOXANE	D	D	D	D	A	D	A	-	B	A	A	-	C/120	C/120
DIOXOLANE	D	D	D	D	C	B	A	-	-	-	-	-	-	-
DIPENTENE	D	D	C	D	D	A	A	-	A	A	A	-	-	-
DIPHENYL	D	D	D	D	D	A	A	-	A	B	B	-	-	A/120
DIPHENYL OXIDE	D	D	D	D	D	A	A	-	-	-	A	-	-	-
DOWTHERM OIL	B	D	-	D	D	A	A	-	C	B	A	-	-	-
DRY CLEANING FLUIDS	C	D	C	D	D	A	A	-	A	A	A	-	D	-
DYES	-	C	-	-	-	A	-	-	B	-	A	-	-	-
EPICHLOROHYDRINE	D	D	D	D	B	D	A	D	D	A	A	-	B/70	D
EPSOM SALTS (MAGNESIUM SULFATE)	-	A	A	A	A	A	A	-	A	-	A	B	A	-
ETHANE	B	B	A	B	D	A	A	-	A	-	A	-	-	-
ETHANOLAMINE	C	B	B	C	B	D	A	-	-	-	A	-	D	-
ETHER <sup>3</sup>	C	D	D	D	D	C	A	-	A	-	A	B	C	A/70
ETHYL ACETATE <sup>2</sup>	D	D	D	D	B	D	A	B	B	-	A	B	B	D
ETHYL ACETOACETATE	C	D	D	D	B	D	A	-	A	A	-	-	-	A/70
ETHYL ACRYLATE	D	D	D	D	B	D	A	-	A	A	A	-	D	C
ETHYL BENZENE	D	D	D	D	D	A	A	-	A	B	B	A	D	C
ETHYL BENZOATE	D	D	D	D	B	A	A	-	A	A	A	-	-	-
ETHYL CELLOSOLVE	D	C	C	D	A	B	A	-	-	-	-	-	-	-
ETHYL CELLULOSE	B	B	B	B	B	A	A	-	B	A	B	-	-	-
ETHYL CHLORIDE	C	A	A	D	C	A	A	D	D	C	A	B	D	A
ETHYL CHLOROCARBONATE	D	C	-	D	-	A	A	-	D	A	-	-	-	-
ETHYL CHLOROFORMATE	D	C	-	D	-	A	A	-	D	-	-	-	D	-
ETHYL ETHER	C	D	B	D	D	D	A	-	C	B	A	-	C	-
ETHYL FORMATE	-	B	D	B	B	C	A	-	C	A	B	-	-	-
ETHYL MERCAPTAN	-	D	D	C	D	B	A	-	B	A	B	-	-	-
ETHYL OXALATE	A	D	D	D	A	B	A	-	A	-	-	-	-	-
ETHYL PENTACHLOROBENZENE	C	D	D	D	D	A	A	-	D	-	-	-	D	-
ETHYL SILICATE	-	A	A	B	A	A	A	-	B	A	A	-	-	-
ETHYL SULFATE	-	-	A	-	-	A	A	-	-	-	D	-	-	-
ETHYLENE	-	-	B	-	C	A	A	-	A	A	A	-	-	-
ETHYLENE CHLORIDE <sup>2</sup>	D	D	D	D	C	A	A	-	D	C	A	B	D	A
ETHYLENE CHLOROXYDRIN	D	B	D	B	A	B	A	-	D	B	B	-	D	A/70
ETHYLENE DIAMINE	D	A	B	B	A	D	A	-	D	A	A	-	A	D
ETHYLENE DICHLORIDE	D	D	D	D	B	A	A	D	D	-	A	B	D	A
ETHYLENE GLYCOL	B	A	A	A	A	A	A	A	A	B	A	-	A/120	A
ETHYLENE OXIDE	C	D	D	D	D	D	A	A	A	-	-	-	D	A
ETHYLENE TRICHLORIDE	D	D	D	D	D	A	A	-	D	A	A	-	D	A
FATTY ACIDS	-	B	C	D	D	A	A	-	B	D	A	A	B/70	-
FERRIC CHLORIDE	A	B	A	B	A	A	A	B	D	D	D	B	A	A
FERRIC NITRATE	A	A	A	A	A	A	A	-	D	-	A	A	A	A
FERRIC SULFATE	-	A	B	A	A	A	A	-	D	D	A	A	A	A
FERROUS CHLORIDE	D	A	B	A	A	A	A	-	D	D	D	B	A	A
FERROUS SULFATE	-	A	B	-	A	A	A	-	D	-	A	B	A	A
FISH OIL	-	-	A	-	-	A	A	-	-	-	-	-	-	-

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# CHEMICAL RESISTANCE CHART

CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
FLUOBORIC	-	A	B	A	A	A	A	-	D	D	B	A	A	A
FLUORINE (LIQUID)	-	C	D	-	C	B	A	-	D	D	A	-	D	A/70
FLUOROBENZENE	-	D	D	D	D	A	A	-	D	-	-	-	D	-
FLUIRICARBON OILS	-	-	-	-	A	-	A	-	D	-	-	-	D	-
FLUOROLUBE	-	A	C	A	A	B	A	-	-	-	-	-	-	-
FLUORINATED CYCLIC ETHERS	-	-	-	-	-	-	-	-	D	-	-	-	D	-
FLUISILICIC ACID	B	A	A	A	B	-	A	B	D	D	B	-	A	A
FORMALDEHYDE	D	D	C	C	A	A	A	B	A	D	A	B	A	A/120
FORMIC ACID	D	D	D	A	B	B	A	B	D	D	A	A	A	A
FREON 11	D	D	C	A	D	C	A	A	D	C	A	-	D	A
FREON 12 (WET)2	A	B	A	A	B	A	A	A	D	-	A	-	D	A
FREON 13	-	A	A	A	A	A	A	A	D	-	-	-	D	A
FREON 21	-	D	D	D	D	D	A	-	D	-	-	-	D	A
FREON 22	D	A	D	A	C	D	A	-	D	-	A	-	D	A
FREON 31	-	A	D	B	A	D	A	-	D	-	-	-	-	-
FREON 32	-	A	A	A	A	C	A	-	D	-	-	-	-	-
FREON 112	-	B	B	B	D	A	A	-	D	-	-	-	-	-
FREON 113	B	A	A	A	D	C	A	A	D	-	A	-	D	A
FREON 114	A	A	A	A	C	A	A	A	D	-	-	-	D	A
FREON 115	-	A	A	A	A	B	A	-	D	-	-	-	-	-
FREON 142b	-	A	A	A	A	D	A	-	D	-	-	-	-	-
FREON 152a	-	A	A	C	A	D	A	-	D	-	-	-	-	-
FREON 218	-	A	A	A	A	A	A	-	D	-	-	-	-	-
FREON C316	-	A	A	A	A	A	A	-	D	-	-	-	-	-
FREON C318	-	A	A	A	A	A	A	-	D	-	-	-	-	-
FREON 13B1	A	A	A	-	A	A	A	-	D	-	-	-	-	-
FREON 114B2	-	A	B	A	D	B	A	-	D	-	-	-	-	-
FREON 502	-	A	B	-	-	B	A	-	D	-	-	-	-	-
FREON TF	A	A	A	A	D	B	A	-	D	-	A	-	-	-
FREON T-WD602	A	B	B	B	B	A	A	-	D	-	-	-	-	-
FREON TMC	B	B	B	B	B	A	A	-	D	-	-	-	-	-
FREON T-P35	A	A	A	A	A	A	A	-	D	-	-	-	-	-
FREON TA	A	A	A	A	A	C	A	-	D	-	-	-	-	-
FREON TC	A	A	A	A	B	A	A	-	D	-	-	-	-	-
FREON MF	C	C	A	D	-	-	A	-	D	-	-	-	-	-
FREON BF	-	B	B	B	-	-	A	-	D	-	-	-	-	-
FRUIT JUICE	-	-	A	-	-	A	A	-	B	D	A	-	A	A
FUEL OIL	B	B	A	D	D	A	A	-	A	-	A	-	C	A
FUMARIC ACID	-	B	C	B	-	A	A	-	-	-	-	-	-	-
FURAN FURFURAN	-	D	D	D	D	C	A	-	-	-	-	-	C	-
FURAN RESIN	-	D	D	D	D	A	A	-	-	-	A	-	C	-
FURFURAL	D	D	D	D	A	D	A	-	A	-	A	B	D	B/120
GALLIC ACID	D	C	D	B	B	A	A	-	A	D	B	B	A	A/70
GASOLINE	B	D	D	B	D	A	A	A	A	A	A	A	D	A
GELATINE	A	A	A	A	A	A	A	-	A	D	A	A	A	A
GLUCOSE	A	A	A	A	A	A	A	-	A	B	A	-	A	A
GLUE P.V.A.	A	A	A	A	B	A	A	A	A	-	A	-	B	A
GLYCERINE	A	A	D	A	A	A	A	A	A	B	A	A	A	A
GYLCOLIC ACID	-	A	A	A	-	A	-	-	-	-	-	A	A/70	A/70
CYLCOLS	B	A	A	A	A	A	A	-	B	B	B	-	A	A
GOLD MONOCYANIDE	-	A	A	-	-	A	-	-	-	D	A	-	-	-
GRAPE JUICE	-	A	A	-	-	A	-	-	B	D	A	-	A	-
GREASE	-	D	A	-	D	A	A	-	A	-	A	-	-	-
GREEN SULFATE LIQUOR	A	A	A	B	A	A	A	-	-	-	-	-	A	-
HALOWAX OIL	-	D	D	D	D	A	A	-	-	-	-	-	-	-
HEPTANE	B	B	A	A	-	A	A	-	A	-	A	-	C/170	A
HEXANE	B	B	A	B	D	A	A	A	A	-	A	A	C/170	A
N-HEXALDEHYDE	B	A	D	C	B	C	A	-	A	A	A	-	-	-
N-HEXENE-1	A	B	A	B	D	A	A	-	-	-	-	-	-	-
HONEY	-	A	A	-	-	A	-	-	A	A	A	-	A	-
HYDRAULIC OILS (PETROLEUM)	A	B	A	B	C	A	A	-	A	A	A	-	D	-
HYDRAULIC OILS (SYNTHETIC)	-	-	C	-	-	A	-	-	A	A	A	-	D	-
HYDRAZINE	D	B	B	B	A	A	A	D	-	A	A	-	A/70	A/120
HYDROBROMI ACID	D	D	D	A	A	A	A	-	D	C	D	A	B	A

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# CHEMICAL RESISTANCE CHART

CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
HYDROCHLORIC ACID (20%)	B	D	C	-	A	A	A	B	D	D	D	A	A	A
HYDROCHLORIC ACID (37%) (HOT)	C	D	D	C	C	A	A	D	D	D	D	D	-	A
HYDROCHLORIC ACID (37%) (COLD)	C	D	C	A	B	A	A	D	D	D	D	A	A	A
HYDROCYANIC ACID	C	B	C	A	B	A	A	C	A	-	A	A	A	A
HYDROFLUORIC ACID (20%)	-	C	D	A/72	-	A	A	D	D	D	D	B	A	A
HYDROFLUORIC ACID (50%) <sup>2</sup>	D	C	D	A/72	A	A	A	D	D	D	D	B	B	A
HYDROFLUORIC ACID (75%) <sup>2</sup>	-	D	D	A	C	A	A	D	D	D	D	-	B	A
HYDROFLUORIC ACID (CONC.)(HOT)	D	D	D	-	-	B	A	D	D	D	D	-	D	A
HYDROFLUORIC ACID (CONC.)(COLD)	D	B	D	A	-	A	A	D	D	D	D	-	D	A
HYDROFLUOSILICIC ACID (20%)	B	B	B	-	B	A	A	D	D	D	D	-	A	A
HYDROGEN GAS	A	A	A	A	B	A	A	A	A	A	A	-	A	A
HYDROGEN PEROXIDE	C	D	B	-	C	A	A	-	A	D	A	A	A/70	A/70
HYDROGEN SULFIDE (WET)(COLD)	B	B	C	A	A	A	A	A	D	D	A	-	A	A
HYDROGEN SULFIDE (WET)(HOT)	-	C	D	C	A	B	A	A	D	D	A	-	A	A
HYDROGEN SULFIDE AQUEOUS SOLUTION	-	B	C	-	A	D	A	-	D	D	A	-	A	A
HYDROQUINONE	-	D	C	D	-	C	A	-	A	B	B	-	A	A
HYDROXYACETIC ACID (70%)	-	A	A	-	-	A	A	-	D	-	-	-	-	-
HYPOCHLOROUS ACID	-	D	D	D	B	A	A	-	D	D	D	-	A	A
INK	-	-	A	-	-	A	-	-	C	D	A	-	-	-
IODINE (IN ALCOHOL)	D	D	B	-	D	A	A	-	D	D	D	B	A/70	A/150
IODINE PENTAFLUORIDE	D	D	D	D	D	D	A	-	-	-	-	-	-	-
IODIFORM	-	-	-	-	A	-	A	-	B	A	B	-	-	A
SIOCTANE	B	B	A	-	D	A	A	A	-	-	-	-	A	-
ISOTANE <sup>2</sup>	-	-	A	-	-	A	-	-	A	-	-	-	D	-
ISOPHORONE	B	D	D	D	C	D	A	-	A	B	A	-	-	-
ISOPROPYL ACETATE	A	D	D	D	B	D	A	-	C	-	B	-	-	-
ISOPROPYL CHLORIDE	D	D	D	D	D	B	A	-	D	A	A	-	D	-
ISOPROPYL ETHER <sup>2</sup>	B	D	B	C	D	D	A	-	A	-	A	-	D	-
JET FUEL (JP3, JP4, JP5)	C	D	A	D	D	A	A	A	A	A	A	-	D	A
KEROSENE <sup>2</sup>	C	B	A	D	D	A	A	B	A	A	A	-	D	A
KETONES	A	D	D	-	B	D	A	B	B	-	A	-	D	A/70
LACQUERS	D	D	D	D	D	D	A	-	A	C	A	-	C	-
LACQUER SOLVENTS	D	D	D	D	D	D	A	-	A	B	A	-	C	D
LATIC ACID	-	C	B	A	B	A	A	B	C	-	A	-	A	A/70
LARD	A	B	A	D	C	A	A	A	A	A	A	-	A	A
LATEX	-	B	A	-	-	A	A	-	A	-	A	-	-	-
LAVENDER OIL	D	C	B	D	C	B	A	-	-	-	-	-	-	-
LEAD ACETATE	D	B	B	D	A	D	A	-	D	-	B	-	A	A
LEAD SULAMATE	-	A	B	A	A	A	A	-	-	-	-	-	A	-
LIGROIN <sup>3</sup>	B	B	A	C	D	A	A	-	-	-	A	-	D	-
LIME	-	B	A	-	A	A	A	-	C	A	A	-	-	-
LIME BLEACH	-	B	A	B	A	A	A	-	D	-	A	-	B	-
LIME SULFUR	-	A	D	A	C	A	A	-	-	-	A	-	A	-
LINDOL	C	C	D	D	A	B	A	-	-	-	-	-	-	-
LINOLEIC ACID	-	D	B	D	D	A	A	-	A	D	A	-	A/70	A
LIQUEFIED PETROLEUM GAS	A	B	A	D	D	A	A	-	-	-	A	-	D	-
LUBRICANTS	B	B	A	D	D	A	A	-	A	-	-	-	B	A
LUBRICANTS OILS (PETROLEUM)	B	B	A	D	D	A	A	-	A	A	A	-	B	A
LYE	C	B	C	A	B	B	A	-	-	-	A	-	A	A/150
MAGNESIUM CARBONATE	-	A	A	-	C	-	A	-	D	-	A	B	A	A
MAGNESIUM CHLORIDE	A	A	A	A	A	A	A	C	D	D	D	A	A	A
MAGNESIUM HYDROXIDE	A	B	B	A	A	A	A	C	D	B	A	-	A	A
MAGNESIUM NITRATE	-	A	A	-	A	-	A	-	D	-	A	-	A	A
MAGNESIUM OXIDE	-	A	A	-	-	-	A	-	-	-	A	-	-	-
MAGNESIUM SULFATE	-	A	A	A	A	A	A	-	D	C	A	B	B	A
MALEIC ACID	-	D	D	D	C	A	A	-	B	-	A	-	A	A
MALEIC ANHYDRIDE	-	D	D	D	C	A	A	-	-	-	-	A	-	-
MALIC ACID	-	C	B	B	D	A	A	-	B	D	A	-	B	A
MASH	-	A	A	-	-	-	-	-	-	-	A	-	-	-
MAYONNAISE	-	-	A	-	-	A	-	A	D	D	A	-	A	-
MELAMINE	-	-	C	-	-	-	-	-	-	-	D	-	-	-
MERCURIC CHLORIDE (DILUTE SOLUTION)	-	A	A	A	A	A	A	B	D	D	D	B	A	A
MERCURIC CYANIDE	-	A	A	-	A	-	A	-	D	-	A	-	A	A
MERCURY	A	A	A	A	A	A	A	A	C	A	A	-	A	A
MESITYL OXIDE	D	D	D	-	B	D	A	-	A	A	A	-	-	-

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METHANE	B	B	A	B	D	A	A	-	A	-	A	-		B	A	
MENTHANOL (SEE ALCOHOL METHYL)	D	A	A	A	B	C	A	-	B	-	A	-		A/120	A	
METHYL ACETATE	D	B	D	D	A	D	A	-	A	-	A	A		C	-	
METHYL ACRYLATE	-	B	D	D	B	D	A	-	-	-	-	-		-	-	
METHYL ACETONE	-	D	D	-	-	-	A	-	A	-	A	-		D	-	
METHYL BROMIDE	-	D	B	D	A	A	A	-	D	-	-	-		D	A	
METHYL BUTYL KETONE	D	D	D	D	B	D	A	-	A	-	A	-		D	-	
METHYL CELLOSOLVE	D	D	D	D	B	D	A	-	A	-	-	-		B	A	
METHYL CHLORIDE	D	D	D	D	C	A	A	-	D	-	A	-		D	A	
METHYL CYCLOPENTANE	D	C	B	D	D	A	A	-	-	-	-	-		-	-	
MENTHYL DICHLORIDE	D	D	D	D	-	A	-	-	D	-	-	-		D	-	
MENTHYL ETHYL KETONE	D	D	D	D	A	D	A	B	A	-	A	-		C	D	
METHYL FORMATE	D	B	D	B	A	D	A	-	A	B	B	-		-	-	
METHYL ISOBUTYL KETONE <sup>2</sup>	D	D	D	D	B	D	A	-	-	-	A	-		B	D	
METHYL ISOPROPYL KETONE	-	D	D	D	C	D	A	-	-	-	A	-		C	-	
METHYL METHACRYLATE	-	D	D	D	C	D	A	-	-	-	-	-		A	B	
METHYL OLEATE	-	D	D	D	C	B	A	-	-	-	-	-		-	-	
METHYL SALICYLATE	-	D	D	D	C	B	A	-	A	A	-	-		B	B	
METHYLACRYLIC ACID	-	B	-	-	B	B	A	-	-	-	-	-		-	-	
METHYLAMINE	-	-	B	-	A	-	A	-	-	-	A	-		-	-	
METHYLENE CHLORIDE	D	D	D	-	C	B	A	D	D	B	A	A		D	D	
MILK	-	A	A	-	A	A	A	-	A	D	A	-		A	A	
MOLASSES	D	A	A	-	A	A	A	-	A	A	A	-		A	A	
MONOCHLOROBENZENE	D	D	D	D	D	A	A	-	D	A	A	-		D	A/150	
MONOMENTHYL ANILINE	-	D	D	-	D	C	A	-	-	-	-	-		C	-	
MONOETHANOLAMINE	C	C	B	D	B	C	A	-	B	A	A	-		D	D	
MONOMETHYLERETHER	-	B	A	-	A	A	A	-	-	-	-	-		-	-	
MONOVINYL ACETYLENE	-	B	A	B	A	A	A	-	-	-	-	-		-	-	
MUSTARD	-	C	B	-	-	A	-	-	B	C	A	-		A	-	
MUSTARD GAS	-	A	-	A	A	A	A	-	-	-	-	-		-	-	
NAPHTHA	C	D	B	D	D	A	A	A	A	B	A	B		C	A	
NAPHTHALENE	B	D	D	D	D	A	A	B	B	B	B	-		A/70	A	
NAPHTHENIC ACID	-	-	B	D	D	A	A	-	B	B	A	A		-	-	
NATURAL GAS	B	A	A	A	C	A	A	-	A	A	A	-		A	-	
NEATSFOOT OIL	-	-	A	D	B	A	A	-	A	A	A	-		-	-	
NEVILLE ACID	-	C	C	D	B	A	A	-	-	-	-	-		-	-	
NICKEL ACETATE	-	B	B	D	A	A	A	-	D	-	-	-		-	-	
NICKEL CHLORIDE	-	A	A	A	A	A	A	-	D	D	A	-		A	A	
NICKEL SULFATE	A	A	A	A	A	A	A	-	D	D	A	B		A	A	
NITER CAKE	-	A	A	A	A	A	A	-	-	-	-	-		-	-	
NITRIC ACID (5-10% SOLUTION)	C	D	D	B	B	A	A	B	D	D	A	A		A/120	A/120	
NITRIC ACID (20% SOLUTION)	C	D	D	D	B	A	A	D	D	D	A	A		B/70	A	
NITRIC ACID (50% SOLUTION) <sup>2</sup>	C	D	D	D	D	A	A	D	D	D	A	A		B/70	A	
NITRIC ACID (CONCENTRATED SOLUTION)	D	D	D	D	D	A	A	D	D	D	A	B		D	D	
NITRIC ACID - RED FUMING	D	D	D	D	D	B	A	-	D	D	A	-		D	D	
NITROBENZENE <sup>2</sup>	-	D	D	D	C	B	A	D	C	-	B	B		A	A/70	
NITROBENZENE	-	D	-	D	C	A	A	-	-	-	-	-		-	-	
NITRO ETHANE	-	C	D	C	B	C	A	-	A	A	A	-		C	-	
NITROMETHANE	-	C	D	C	A	C	A	-	A	A	A	-		C	A/120	
NITROGEN (GAS)	A	A	A	A	A	A	A	-	A	A	A	A		A	A	
NITROGEN TETROXIDE	-	D	D	D	C	C	A	-	D	D	-	-		D	C	
OCTADECANE	A	B	A	B	D	A	A	-	-	-	-	-		-	-	
N-OCTANE	-	-	A	D	D	A	A	-	-	-	-	-		D	A	
OCTACHLOROTOLUENE	D	D	D	D	D	A	A	-	D	-	-	-		D	-	
OILS - ANILINE	C	D	D	D	B	A	A	-	C	A	A	B		A	A/70	
ANISE	-	D	-	-	-	-	A	-	-	-	A	-		-	-	
BAY	-	D	-	-	-	A	-	-	-	-	A	-		-	-	
BONE	-	D	A	-	-	A	A	-	-	-	A	-		-	-	
CASTOR	A	A	A	A	B	A	A	-	A	A	A	-		-	A	
CINNAMON	-	D	-	-	-	-	-	-	-	-	A	-		-	-	
CITRIC	-	D	A	-	B	A	A	-	-	D	A	-		A	-	
CLOVE	-	-	A	-	-	-	-	-	-	-	A	-		B	-	
COCONUT	A	A	A	C	A	A	A	-	B	A	A	-		A	A	
COD LIVER	A	B	A	B	A	A	A	-	B	-	A	-		A	-	
CORN	A	D	A	B	A	A	A	-	B	A	A	-		A	A	

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# CHEMICAL RESISTANCE CHART

CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
OILS - COTTON SEED	A	D	A	B	A	A	A	-	B	A	A	-	A	A
CREOSOTE2	-	B	A	C	D	A	A	-	A	-	A	-	D	-
DIESEL FUEL (2D, 3D, 4D, 5D)	-	D	A	B	-	A	-	A	A	-	A	-	B/70	A
FUEL (1, 2, 3, 5A, 5B, 6)	-	D	B	D	D	A	A	-	A	-	A	-	B/70	A
OILS - GINGER	-	A	A	-	-	A	-	-	-	-	A	-	-	-
HYDRAULIC (SEE HYDRAULIC)														
LEMON	-	D	-	-	-	A	-	-	-	-	A	-	D	A
LINSEED	B	D	A	C	B	A	A	-	A	A	A	-	A	A
MINERAL	A	B	A	B	D	A	A	-	A	A	A	-	B	A
OLIVE	A	B	A	B	A	A	A	-	A	A	A	-	A	-
ORANGE	-	D	A	-	-	A	-	-	-	-	A	-	A	-
PALM	-	D	A	-	-	A	A	-	A	-	A	-	-	-
PEANUT <sup>3</sup>	B	D	A	B	C	A	A	-	A	A	A	-	D	-
PEPPERMINT <sup>2</sup>	-	D	D	-	-	A	-	-	-	-	A	-	D	-
PINE	-	D	A	D	D	A	A	-	A	C	A	-	-	-
RAPE SEED	B	D	B	D	A	A	A	-	-	-	A	-	-	-
ROSIN	-	-	A	-	-	A	A	-	A	-	A	-	A	-
SESAME SEED	-	D	A	-	-	A	-	-	A	A	A	-	-	-
SILICONE	A	A	A	A	A	A	A	-	-	A	A	-	A	-
SOYBEAN	B	D	A	C	B	A	A	-	A	A	A	-	A	-
SPERM	-	D	A	-	-	A	-	-	-	-	A	-	-	-
TANNING	-	D	A	-	-	A	-	-	-	-	A	-	-	-
TURBINE	-	D	A	D	D	A	A	-	A	A	A	-	B/70	-
OLEIC ACID	B	D	B	C	B	B	A	A	B	C	A	-	B	A
OLEUM	D	D	C	D	D	A	A	D	D	D	A	-	D	D
OLEUM SPIRITS	C	D	C	D	C	A	A	D	D	D	B	-	D	D
O-DICHLOROBENZENE	D	D	D	D	D	A	A	-	D	A	A	-	D	-
OXALIC ACID (COLD)	-	B	B	B	A	A	A	-	C	D	A	B	A/70	A/120
OXYGEN - COLD	A	A	C	B	B	A	A	-	A	A	A	-	C	A
OXYGEN - 200-400°F	D	D	D	D	D	B	A	-	A	A	A	-	D	A
OZONE	A	B	D	A	A	A	A	-	-	-	-	-	D	A
PAINT THINNER, DUCO	D	C	A	D	D	B	A	-	A	A	A	-	D	-
PALMITIC ACID	A	B	A	C	B	A	A	A	C	C	A	-	A	A
PARAFFIN	-	-	A	-	D	A	A	-	A	-	A	-	A	-
PENTANE	D	B	A	B	D	A	A	-	A	-	C	B	-	-
PERCHLORIC ACID	D	A	D	B	B	A	A	-	D	D	D	-	A	A/120
PERCHLOROETHYLENE <sup>2</sup>	D	D	C	D	D	A	A	D	D	B	A	-	D	A
PETROLATUM	-	B	A	-	-	A	-	-	B	-	A	-	A	A
PETROLUUM - BELOW 250	B	B	A	B	D	A	A	-	A	A	A	-	A/70	A/200
PETROLEUM - ABOVE 250	D	D	C	D	D	B	A	-	A	A	A	-	-	-
PHENOL (CARBOLIC ACID)	C	D	D	D	C	A	A	D	B	D	A	A	A	A/70
PHENYBENZENE	D	D	D	D	D	A	A	-	-	-	-	-	-	-
PHENYL ETHYL ETHER	D	D	D	D	D	C	A	-	-	-	-	-	-	-
PHENYL HYDRAZINE	D	D	D	D	C	A	A	-	-	-	-	-	D	A/120
PHORONE	D	D	D	D	C	A	A	-	-	-	-	-	-	-
PHOSPHORIC ACID - 20%	A	B	C	B	A	A	A	-	D	D	B	A	A/120	A
PHOSPHORIC ACID (TO 40% SOLUTION)	A	D	D	B	B	A	A	-	D	D	A	A	A/120	A
PHOSPHORIC ACID - 45%	A	B	D	C	B	A	A	-	D	D	B	-	A/120	A
PHOSPHORIC ACID (40% - 100% SOLUTION)	C	D	D	C	B	A	A	-	D	D	B	A	A/120	A
PHOSPHORIC ACID CRUDE	A	D	D	C	C	A	A	-	D	D	C	A	A/120	A
PHOSPHOROUS TRICHLORIDE ACID	-	D	D	D	A	A	A	-	D	B	A	-	D	A
PHOTOGRAPHIC (DEVELOPER)	-	A	A	A	-	A	-	-	C	D	A	A	A	-
PICKING SOLUTION	C	C	-	D	C	B	A	D	-	-	-	A	-	-
PICRIC ACID	B	B	B	B	B	A	A	-	D	D	D	D	B/70	A/70
PINENE	B	D	B	D	D	A	A	-	-	-	-	-	-	-
PIPERIDINE	D	D	D	D	D	C	A	-	-	-	-	-	-	-
PLATING SOLUTIONS:														
ANTIMONY	-	A	A	-	-	A	A	-	D	-	A	-	A	A/70
ARSENIC	-	A	A	-	-	A	A	-	C	-	A	-	A	-
BRASS	-	-	A	-	-	A	A	-	C	-	A	-	A	A
BRONZE	-	A	A	-	-	A	-	-	C	-	A	-	A	-
CADMIUM	-	A	A	-	-	A	A	-	C	-	-	-	A	A
CHROME	-	D	D	-	A	A	A	-	C	-	A	-	A	A
COPPER	-	-	A	-	-	A	A	-	C	-	-	-	A	A
GOLD	-	A	A	-	-	A	A	-	C	-	A	-	A	A

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# CHEMICAL RESISTANCE CHART


CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
INDIUM	-	-	A	-	-	A	-	-	C	-	A	-	A	-
IRON	-	A	A	-	-	A	A	-	C	-	A	-	A	A
LEAD	-	A	A	-	-	A	A	-	C	-	-	-	A	A
NICKEL	-	-	A	-	-	A	A	-	C	-	-	-	A	A
SILVER	-	A	A	-	-	A	A	-	C	-	A	-	A	A
TIN	-	A	A	-	-	A	A	-	C	-	A	-	A	A
ZINC	-	A	A	-	-	A	A	-	C	-	A	-	A	A
POLYVINYL ACETATE EMULSON	-	B	-	B	A	-	A	-	-	B	-	-	B/70	A
POTASH	B	B	A	-	B	A	A	-	C	B	A	B	A	-
POTASSIUM ACETATE	D	B	B	D	A	B	A	-	D	A	B	-	A	A
POTASSIUM BICARBONATE	-	A	A	-	-	A	A	-	C	-	B	-	A	A
POTASSIUM BROMIDE	-	A	A	-	A	A	A	-	C	-	A	A	A	A
POTASSIUM CARBONATE	-	B	A	-	A	A	A	-	C	B	A	B	A	A
POTASSIUM CHLORATE	-	A	A	-	A	A	A	-	B	-	A	-	A	A
POTASSIUM CHLORIDE	A	A	A	A	A	A	A	-	B	B	C	B	A	A
POTASSIUM CHROMATE	-	A	A	-	-	A	A	-	A	A	B	A	A	A
POTASSIUM CUPRO CYANIDE	A	A	A	A	A	A	A	-	-	-	-	-	-	-
POTASSIUM CYANIDE SOLUTIONS	A	A	A	A	A	A	A	-	D	B	A	-	A	A
POTASSIUM DICHROMATE	A	A	A	A	A	A	A	C	A	B	A	B	A	A
POTASSIUM HYDROXIDE	B	B	B	A	B	D	A	A	D	C	A	B	A	A/150
POTASSIUM NITRATE	A	A	A	A	A	A	A	-	B	-	A	B	A	A
POTASSIUM PERMANGANATE	-	A	A	-	A	A	A	-	B	B	B	A	B	A
POTASSIUM SULFATE	A	A	A	B	A	A	A	-	A	B	B	B	A	A
PRODUCER GAS	A	B	A	B	C	A	A	-	-	-	-	-	-	-
PROPANE (LIQUIFIED)12	B	B	A	B	D	A	A	-	A	-	A	-	B	A
PROPYL ACETATE	D	D	D	D	C	D	A	-	-	-	-	-	C	A/70
PROPYL NITRATE	-	-	-	D	B	C	A	-	A	D	-	-	-	-
PROPYLENE	D	D	D	D	D	A	A	-	A	A	A	-	-	-
PROPYLENE GLYCOL	-	C	A	-	A	A	A	-	A	B	A	-	A	A
PROPYLENE OXIDE	D	D	-	D	B	-	A	-	B	B	A	-	C	D
PYRANOL	B	D	A	D	D	A	A	-	-	-	-	-	-	-
PYDRAULS	D	D	D	D	B	A	A	A	-	-	-	-	-	-
PYRIDINE	-	D	D	D	B	D	A	D	B	-	B	A	C	D
PYROGALLIC ACID	-	-	-	-	-	A	-	-	-	-	A	B	-	-
PYROLIGNEOUS ACID	-	C	C	D	B	A	A	-	D	C	B	-	-	-
PYRROLE	B	D	D	D	C	C	A	-	-	-	-	-	-	-
RADIATION	A	B	B	C	C	B	A	-	-	-	-	-	-	-
RED OIL	B	C	A	B	B	A	A	-	-	-	-	-	-	-
ROSINS	-	-	A	-	-	-	A	-	A	-	A	-	A	-
RUM	D	-	A	-	A	A	A	-	-	-	A	-	A	-
RUST INHIBITORS	-	C	A	-	-	A	-	-	-	-	A	-	A	-
SALAD DRESSING	-	-	A	-	-	A	-	-	B	D	A	-	A	-
SAL AMMONIAC	A	A	A	A	A	A	A	-	D	D	A	-	-	-
SALT WATER	A	B	B	A	A	A	A	-	D	D	C	-	A	A
SEA WATER	A	B	A	A	A	A	A	A	D	-	C	-	A	A
SEWAGE	D	A	A	A	B	A	A	-	B	B	A	-	A	A
SHELLAC (BLEACHED)	-	-	A	-	-	-	-	-	A	-	A	-	A	-
SHELLAC (ORANGE)	-	-	A	-	-	-	-	-	A	-	A	-	A	-
SILICATE ESTERS	A	B	A	A	D	A	A	-	-	-	-	-	-	-
SILICONE	-	A	A	A	-	A	-	-	B	-	A	-	A	-
SILICONE GREASES	A	A	A	A	A	A	A	A	-	-	-	-	-	-
SILVER BROMIDE	-	-	-	-	-	-	-	-	D	-	B	A	-	-
SILVER NITRATE	A	A	C	-	A	A	A	-	D	D	A	-	A	A
SKYDROL 500	D	D	D	D	A	C	A	A	-	-	-	-	-	-
SKYDROL 7000	D	D	D	D	C	B	A	-	-	-	-	-	-	-
SOAP SOLUTIONS 1	A	B	A	A	A	A	A	A	C	B	A	-	A	A
SODA ASH (SEE SODIUM CARBONATE)														
SODIUM ACETATE	D	B	B	D	A	D	A	-	B	-	A	-	A	A
SODIUM ALUMINATE	-	A	A	-	-	A	A	-	C	-	A	-	A	A
SODIUM BICARBONATE	-	A	A	D	A	A	A	-	A	C	A	B	A	A
SODIUM BISULFATE	-	A	A	-	A	A	A	-	D	-	A	B	A	A
SODIUM BISULFITE	-	A	A	A	A	A	A	-	A	D	A	A	A	A
SODIUM BORATE	-	A	A	A	A	A	A	-	C	B	B	-	A	A
SODIUM CARBONATE	-	A	A	A	A	A	A	-	C	B	A	-	A/140	A
SODIUM CHLORATE	-	A	A	-	A	A	A	-	B	-	A	A	A	A

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CHEMICALS	ELASTOMERS							METALS					PLASTICS	
 <b>益成</b> Eik Seng Machinery Sdn. Bhd. 010-880-0100 ESM Machinery (IPOH) Sdn. Bhd. 05281-0101 ESM Machinery (KL) Sdn. Bhd. 03-8961-0601 ESM Machinery (JB) Sdn. Bhd. 07-328-0100 HQ : PMT5119, Lrg. Sg. Nyior Indah, Jln. Sg. Nyior, 12100 Butterworth, Penang. Tel : 60-4-332 6363 (Hunting), 332 6969, 332 6361 Fax : 60-4-332 1827 E-mail : sales@eikseng.com IPOH : No. 27, Jalan Leong Boon Swee, 31650 Ipoh, Perak. Tel : 60-5-249 4885, 249 4886 Fax : 60-5-249 4887 E-mail : esmipoh@eikseng.com KL : No. 1, Jln. Toras 2, Kws. Perindustrian Toras, 43300 Balakong, Selangor. Tel : 60-3-8961 0601 (Hunting), 8964 1900 Fax : 60-3-8961 0517 E-mail : esmkl@eikseng.com JB : 33, Jalan Satra, JB Perdana Business Park, Taman Tan Sri Yaacob, 81300 Skudai, Johor. Tel : 60-7-512 2230, 512 2231, 512 2232 Fax : 60-7-512 6233 E-mail : esmj@eikseng.com	POLYURETHANE	NEOPRENE	BUNA N	HYPALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
	SODIUM CHLORIDE	A	A	A	A	A	A	A	A	C	B	C	A	A
SODIUM CHROMATE	-	A	A	-	-	A	A	-	D	B	-	-	A	A
SODIUM CYANIDE	-	A	A	A	A	A	A	-	D	B	A	-	A	A
SODIUM HYFROXIDE (20%)	B	B	A	A	A	A	A	A	D	B	A	-	A	A
SODIUM HYDROXIDE (50% SOLUTION)	B	C	D	A	A	A	A	B	D	C	B	A	A	C
SODIUM HYDROXIDE (80% SOLUTION)	B	C	D	A	A	B	A	-	D	C	D	B	A	C
SODIUM HYPOCHLORITE <sup>3</sup> (TO 20%)	D	D	C	B	C	A	A	A	D	D	C	A	B	A
SODIUM METAPHOSPHATE <sup>2</sup>	-	B	A	B	A	A	A	-	A	-	A	-	D	-
SODIUM METASILICATE	-	A	A	-	-	A	-	-	B	-	A	A	-	-
SODIUM NITRATE	-	B	C	A	A	A	A	-	A	A	A	-	A	A
SODIUM PERBORATE	-	B	B	B	A	A	A	-	B	-	C	-	A	A
SODIUM PEROXIDE	D	B	C	B	B	A	A	-	D	D	A	B	B/120	A
SODIUM PHOSPHATE	A	B	B	A	A	A	A	-	D	B	B	-	A	A
SODIUM POLYPHOSPHATE (MONO, DI, TRIBASIC)	A	D	A	-	-	A	-	-	D	-	A	-	A	A
SODIUM SILICATE	-	A	A	A	A	A	A	-	C	-	A	-	A	A
SODIUM SULPHATE	A	A	A	A	A	A	A	-	B	A	A	B	A	A
SODIUM SULFIDE	A	A	A	A	A	A	A	-	D	A	A	-	A	A
SODIUM TERTRABORATE	-	-	A	-	A	A	A	-	-	-	A	-	-	-
SODIUM THIOSULPHATE ("HYPO")	A	A	B	A	A	A	A	-	B	C	A	-	A	A
SORGHUM	-	A	A	-	-	A	-	-	-	A	A	-	-	-
SOY SAUCE	B	A	A	-	B	A	A	-	A	D	A	-	-	-
STANNIC CHLORIDE	B	D	A	D	B	A	A	C	D	D	D	-	A	A
STANNIC FLUOBORATE	-	A	A	-	-	A	-	-	D	D	-	-	-	-
STARCH	A	A	A	-	A	A	A	-	A	C	A	-	-	-
STEAM TO 225°F	C	C	C	D	A	D	D	B	A	A	A	-	-	-
STEAM 225-300°F	D	D	D	D	A	D	A	B	A	A	A	-	-	-
STEARIC ACID <sup>2</sup>	A	B	C	B	B	A	A	C	B	-	A	A	A	A
STODDARDSOLVENT	A	B	B	D	D	A	A	-	-	A	A	-	B/120	A
STYRENE	C	D	D	D	D	B	A	D	A	-	A	-	-	-
SUCROSOLUTION	D	A	A	B	A	A	A	-	-	B	-	A	-	-
SUGAR (LIQUIDS)	-	B	A	B	-	A	-	-	A	-	A	A	A	-
SULFATE LIQUORS	-	C	-	-	-	-	-	-	B	D	C	A	A	-
SULFITE LIQUORS	-	A	A	B	B	A	A	-	D	B	B	-	-	-
SULFUR	B	B	B	A	A	A	A	C	D	D	A	-	A	A
SULFUR CHLORIDE	-	D	D	D	D	A	A	C	D	D	D	-	C	A/70
SULFUR DIOXIDE <sup>2</sup>	-	B	D	D	A	D	A	-	D	D	A	B	A/70	A
SULFUR HEXAFLUORIDE	-	B	B	B	A	A	A	-	D	D	-	-	-	-
SULFUR TRIOXIDE	B	C	C	D	C	A	A	-	D	D	B	-	-	-
SULFUR TRIOXIDE (DRY)	B	D	D	D	C	A	A	-	A	-	C	-	D	D
SULFURIC ACID (DILUTE)	C	B	D	C	-	A	A	-	D	D	B	-	A	A
SULFURIC ACID (TO 10%)	B	D	C	C	A	A	A	A	D	D	B	A	A	A
SULFURIC ACID (10% - 75%) <sup>2</sup>	D	D	D	C	C	A	A	B	D	D	B	B	A	A/150
SULFURIC ACID (CONCENTRATED TO 98%)	D	D	D	B	C	A	A	C	D	D	B	-	B/70	A/120
SULFURIC ACID (20% OLEUM)	D	D	D	D	D	B	A	-	D	D	-	-	D	-
SULFUROUS ACID	D	B	C	A	-	A	A	-	D	D	B	B	A	A
SYRUP	-	B	A	-	-	A	-	A	A	-	A	-	A	-
TALLOW	A	-	A	-	A	A	A	A	A	-	A	-	B/70	-
TANNIC ACID	A	B	A	B	C	A	A	A	C	-	A	-	A	A
TANNING LIQUORS	-	-	C	-	-	A	A	-	C	-	A	A	A	-
TAR, BITUMINOUS	-	C	B	D	D	A	A	-	-	B	B	-	-	-
TARTARIC ACID	A	B	A	A	B	A	A	C	C	-	A	B	A	A
TERPINEOL	B	D	C	D	B	A	A	-	A	A	A	-	D	B/120
TERTIARY BUTYL ALCOHOL	D	A	A	B	A	B	A	-	-	-	-	-	B	-
TERTIARY BUTYL CATECHOL	D	B	D	B	B	A	A	-	C	B	B	-	-	-
TERTIARY BUTYL MERCAPTAN	D	D	D	D	D	A	A	-	-	-	-	-	-	-
TETRA BROMOMETHANE	-	D	D	D	D	A	A	-	D	-	-	-	D	-
TETRABUTYL TITANATE	-	A	B	A	B	A	A	-	-	-	-	-	-	-
TETRACHLOROETHYLENE	B	D	D	D	D	A	A	-	D	A	A	-	D	-
TETRACHLOROETHANE	-	-	D	-	D	A	A	-	D	-	A	-	D	-
TETRAETHYL LEAD	-	D	B	D	D	A	A	-	-	-	-	-	A/70	A
TETRAHYDROFURAN	C	D	D	D	C	B	A	B	-	-	A	-	C	B/70
TETRALIN	-	D	D	D	D	A	A	-	A	A	-	-	D	-
THIONYL CHLORIDE	-	D	D	-	D	A	A	-	D	D	-	-	D	D
TITANIUM TETRACHLORIDE	D	D	C	D	D	A	A	-	D	A	B	-	D	A

**Ratings:** A. Recommended; B. Minor to moderate effect; C. Moderate to severe effect; D. Not recommended - insufficient information. Footnotes : 1. Kynar - satisfactory to 200°F; 2. Polypropylene - satisfactory to 72°F; 3. Polypropylene - satisfactory to 175°F; PVDF to 225°F.

\*\*\*Product's specification subject to change without further notice.

\*\*\*Actual product may slightly differ from pictures shown.

# CHEMICAL RESISTANCE CHART

CHEMICALS	ELASTOMERS								METALS				PLASTICS	
	POLYURETHANE	NEOPRENE	BUNA N	HYALON	NORDEL	VITON	TEFLON	SANIFLEX HITEMP POLYESTER TPE	ALUMINIUM	CAST IRON	STAINLESS STEEL (316)	HASTELLOY	POLYPROPYLENE	PVDF
TOLUENE	C	D	C	D	D	A	A	B	A	A	A	-	D	A
TOLUENE DIISOCYANATE	-	D	-	D	A	-	A	-	-	-	A	-	-	-
TOLUENE, TOLUOL <sup>3</sup>	C	D	D	D	D	A	A	B	A	A	-	-	D	A
TOMATO JUICE	-	A	A	-	-	-	-	A	A	-	-	-	A	A
TRANSFORMER OIL	D	C	B	D	D	A	A	-	A	A	A	-	B/70	-
TRANSMISSION FLUID TYPE A	A	C	A	B	D	A	A	-	A	A	A	-	-	-
TRIACETIN	D	A	A	B	A	C	A	-	B	-	A	-	-	-
TRIBUTOXY ETHYL PHOSPHATE	D	D	D	D	A	B	A	-	-	-	-	-	-	-
TRIBUTYL PHOSPHATE	D	D	D	D	C	D	A	-	-	A	A	B	A/70	A/70
TRIBUTYL MERCAPTAN	-	D	D	D	D	A	A	-	-	-	B	-	-	-
TRICHLOROACETIC ACID	D	B	C	D	B	B	A	-	D	D	D	B	B/70	A/70
TRICHLORETHANE	D	D	D	D	D	A	A	-	D	-	A	-	D	A/120
TRICHLORETHYLENE <sup>2</sup>	D	D	D	D	D	A	A	D	D	C	A	-	D	A
TRICHLOROPROPANE	-	A	A	-	-	A	A	-	D	-	A	-	D	-
TRICRESYLPHOSPHATE	C	D	D	D	A	B	A	-	-	-	A	A	B/70	-
TRIETHYLAMINE	-	B	A	-	-	A	A	-	-	-	-	-	C	A/120
TRIETHANOL AMINE	D	B	B	A	B	B	A	D	B	A	A	-	A/70	A/70
TRIETHYL ALUMINIUM	-	D	D	-	-	B	A	-	-	-	-	-	-	-
TRIETHYL BORANE	-	D	D	-	-	A	A	-	-	-	-	-	-	-
TRINITROTOLUENE	-	A	D	D	D	C	A	-	-	-	-	-	-	-
TRIOCTYL PHOSPHATE	-	D	D	D	A	B	A	-	-	-	-	-	-	-
TRIARYL PHOSPHATE	B	C	D	D	A	A	A	-	-	-	-	-	-	-
TUNG OIL	B	B	A	C	C	B	A	C	A	B	B	-	-	-
TURPENTINE <sup>3</sup>	D	D	A	D	D	A	A	-	A	B	A	-	D	A
UNSYMMETRICAL DIMETHYL HYDRAZINE (UDMH)	-	B	C	A	A	D	A	-	B	A	A	-	-	A/70
URINE	-	D	A	-	-	A	-	-	B	B	A	-	A	A
VEGETABLE JUICE	A	D	A	-	A	A	A	-	A	D	A	-	-	-
VEGETABLE OILS	A	B	A	B	A	A	A	-	A	B	A	-	A/120	A
VERSILUBE F44 & F50	-	C	A	A	A	A	A	-	-	-	-	-	-	-
VINEGAR	B	B	C	A	A	A	A	-	D	C	A	-	A	A
VARNISH	C	D	B	D	D	A	A	-	A	-	A	-	A	-
VINYL CHLORIDE	-	D	D	D	C	A	A	-	D	-	-	A	D	A
WAGNER 21 B FLUID	-	A	C	B	A	D	A	-	-	-	-	-	-	-
WATER, ACID, MINE	A	B	A	-	A	A	A	-	D	D	A	-	A	A
WATER, DISTILLED, LAB GRADE 7	A	B	A	-	A	A	A	-	B	D	A	-	A	A
WATER, FRESH	A	B	A	-	A	A	A	-	A	B	A	-	A	A
WATER, SALT	A	B	A	-	A	A	A	-	D	D	C	-	A	A
WEED KILLERS	-	C	B	-	-	A	-	-	D	-	A	-	-	-
WHEY	-	-	A	-	-	A	-	-	B	-	A	-	-	-
WHISKEY AND WINES	D	A	A	A	A	A	A	-	D	D	A	-	A	A
WHITE LIQUOR (PULP MILL)	-	A	-	-	A	A	A	-	-	C	A	-	A	A
WHITE PIPE OIL	-	D	B	D	D	A	A	-	-	-	-	-	-	-
WHITE OIL	-	B	A	D	D	A	A	-	-	-	-	-	-	-
WHITE WATER (PAPER MILL)	-	A	-	-	-	A	-	-	-	-	A	-	A	-
WOOD OIL	B	B	A	C	C	B	A	-	A	A	A	-	-	-
XYLENE 2	C	D	D	D	D	A	A	D	A	A	A	A	D	A
XYLIDENES	D	D	D	D	-	C	A	-	-	-	-	-	-	-
ZEOLITES	-	C	C	A	A	A	A	-	-	-	-	-	-	-
ZINC ACETATE	D	C	C	D	A	C	A	-	-	-	A	-	-	-
ZINC CHLORIDE	A	A	A	A	A	A	A	A	D	D	C	C	A	A
ZINC HYDROSULPHITE	-	A	A	-	-	-	-	-	D	D	A	-	-	A
ZINC SULFATE	-	A	A	A	A	A	A	-	D	D	A	-	A	A

**Ratings:** A. Recommended; B. Minor to moderate effect; C. Moderate to severe effect; D. Not recommended - insufficient information. Footnotes : 1. Kynar - satisfactory to 200°F; 2. Polypropylene - satisfactory to 72°F; 3. Polypropylene - satisfactory to 175°F; PVDF to 225°F.



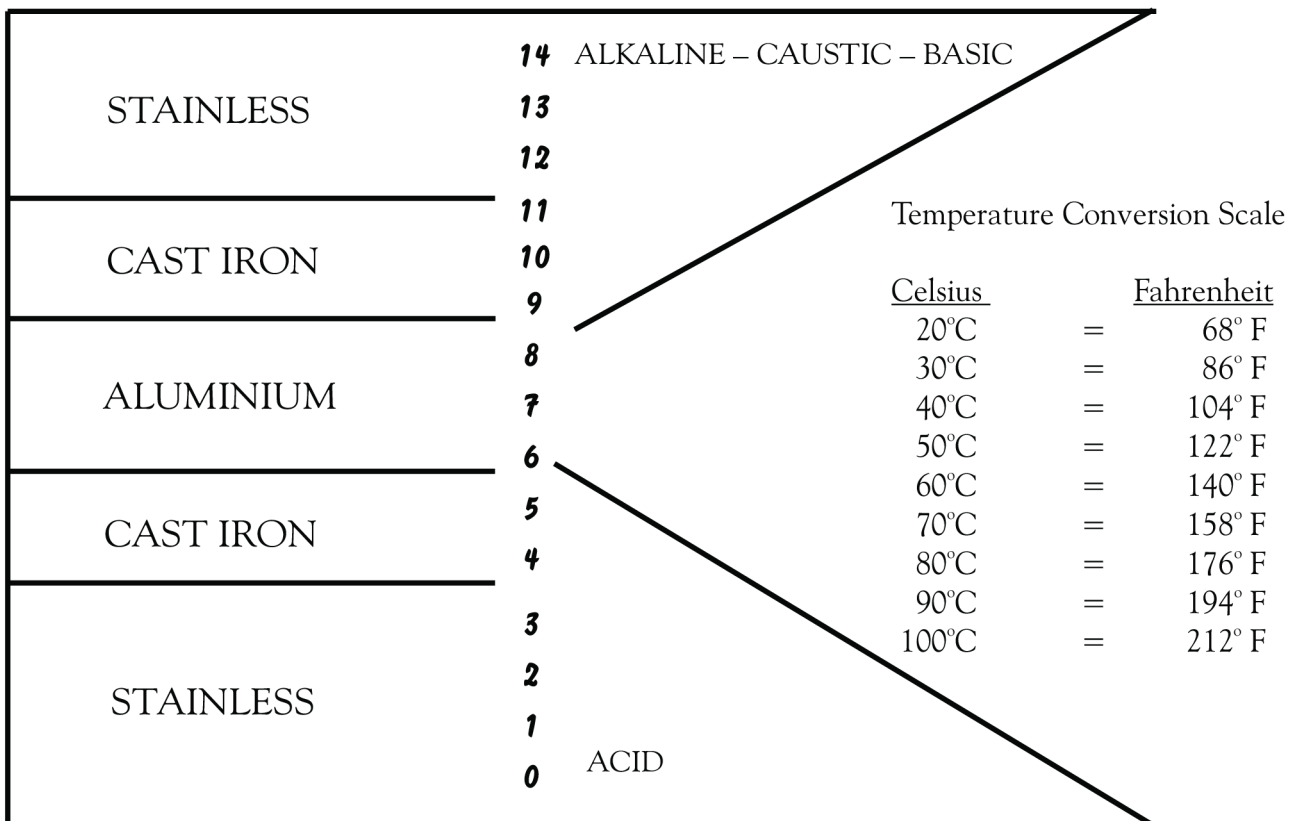
**Eik Seng Machinery Sdn. Bhd.** (61589-H)  
**ESM Machinery (IPOH) Sdn. Bhd.** (902351-U)  
**ESM Machinery (KL) Sdn. Bhd.** (947883-X)  
**ESM Machinery (JB) Sdn. Bhd.** (453384-D)

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# CHOOSING CORRECT CONSTRUCTION

Determine the pH value :

PH is a measure of hydrogen-ion concentration. PH of 7 is neutral – below 7, acid above 7, alkaline.



See other side for elastomer selection guide.





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## CHEMICAL RESISTANCE CHART

This information is compiled from numerous sources and believed to be reliable to this date. It is intended as guideline to be used *with all available information* to determine suitability of elastomers and metallic wetted portion of pumps for various applications. We suggest through research which should include known applications when determining pump construction. This chart is to be used at your discretion and risk. The accuracy of these ratings cannot be guaranteed. **Warning** : See caution on inside back cover regarding metal selection and/or solvent pumping.

### SELECTING THE BEST DIAPHRAGM FOR A AIR OPERATED DIAPHRAGM PUMP

In the absence of previous experience (which is always the best guide) diaphragm material must be selected from the resistance charts available. The chart is compiled from numerous reliable sources and cross-checked, however, it is only intended as an additional source of information. Unfortunately the charts do not tell the whole story. Since a diaphragm must flex to do its work, the ability to flex many times often becomes the deciding factor in the best diaphragm selection. We have a large motor driven machine which mechanically strokes our various diaphragms against a high head at a rate of 200 strokes per minute. We continually run our various diaphragms in this machine to destruction, keeping exact count of the strokes until failure. This test simulates fatigue without regard to corrosive effects or abrasion. Since we are flexing (MECHANICALLY) against a constant 50 psi head in the test machine, the number of stroke obtained in field service could be significantly greater because the diaphragms would be pushed by a cushion of air over the entire surface when the pump is air driven.

Neoprene diaphragms in the testing machine stroke from a low of 8,000,000 to as many as 20,000,000 strokes prior of failure. Polyurethane diaphragms have a flex life equal to neoprene. Hypalon® has excellent abrasion resistance and flex life approaching that of neoprene. Nordel fatigue life is approximately one-half that of neoprene. Buna "N" and Viton® fatigue life is approximately one-third that of neoprene. Teflon® diaphragms have approximately three-fourths that of neoprene. Saniflex® hitemp diaphragms have flex life equal to Teflon® and are FDA approved. These test figures are telling us that:

1. Neoprene diaphragms should generally be used unless the chart shows neoprene to be unsatisfactory. Even though Buna, Nordel and Viton may show "A" ratings, if neoprene has at least a "C" rating, it will probably be the most economical choice on a "cost of diaphragms per gallon pumped basis."
2. This is especially true when considering the use of Viton diaphragms due to their replacement cost being over six times that of neoprene. Viton should only be considered if it shows an "A" rating and neoprene, Buna and Nordel show an unsatisfactory rating.

These guides for best diaphragm selection do not hold for the valve ball material. Because the diaphragms are securely gripped by their inner and outer beads, they can stand up to 20% swell without causing any trouble. If the valve balls swell even a very small amount, they cannot function properly. Therefore, there will be cases where neoprene diaphragms will be the best selection but Teflon, Buna, Nordel or polyurethane balls will be required. Safe temperature for Neoprene is 200°F, Polyurethane is 170°F, Buna-N is 180°F, Nordel 280°F, Viton 350°F, Saniflex® TPE 300°F; and recommended temperature range for Teflon® TPE of +400°F to 220°F. When considering Hastelloy C, polypropylene, or PVDF, specific manufactures' sources should be reviewed. **Temperature Limits:** Polypropylene, 32°F to 175°F; PVDF, 10°F to 225°F. Teflon® PFA-20°F to 200°F @ 100psi, 300°F @ 30psi discharge. Head. **Caution:** Temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult engineering guides for chemical compatibility and temperature limits.

It must be emphasized that none of these figures are meant to be "iron clad" and are only general guidelines of what to expect.

### SELECTION OF PLASTIC MATERIALS

Many factors can effect the chemical resistance of plastics. These include, but are not limited to, extremes of temperature and pressure, frequency to temperature and /or pressure cycling, attrition due to abrasive particles, and the type of mechanical stress imposed. The fact that certain combinations of chemicals and mechanical load can induce stress cracking in many otherwise chemically resistant materials, is of particular significance. The chemical / temperature ratings presented are based on well-processed or well-fabricated test specimens being essentially resistant to either chemical attack and /or severe swelling which would normally impair their performance under moderate mechanical stresses.

Operating parameters are dependent upon the particular application of polypropylene or PVDF and may differ from those experienced in either laboratory testing or apparently similar field service. Because corrosive fluids or vapors are often mixtures of various individual chemicals, it is strongly recommended that trial installations be evaluated under actual service conditions. For example, immersion testing in individual chemical at a specific operating temperature doesn't predict the performance of polypropylene or PVDF should an exothermic reaction take place when mixtures of chemicals are involved.

The ratings given on the following pages are a guide and do not constitute a warranty of any kind, expressed or implied, with respect to the performance of polypropylene or PVDF in any specific application.