

Chemical Compatibility

Reference Guide for pumps, valves, tubings and piping material selection

The following information is intended to be used as a general guideline for pumps, valves, tubings and piping material selection. The information accuracy of these ratings cannot be guaranteed, nor is it a complete list due to the extensive area of this field. Materials used in the pump and pumping systems must be chemically compatible. The data provided for the chemicals is at 70°F (21°C), unless otherwise noted. If your temperature differs from this, it may affect the compatibility of the fluid with the given pump materials by accelerating the reaction. If you are unsure of the compatibility of your chemical, we recommend testing a sample of the material in question with the chemical.

CHEMICALS	METALS						PLASTICS, ELASTOMERS & LEATHER																			
A: Excellent, B: Good, C: Fair to Poor, D: Not recommended - No Data	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPR, EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Viton)	Geolast (Buna & Polypropylene)	Hyrel (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Styrene (EPDM & Polypropylene)	UHMWPE	Urethane
Acetaldehyde	B	D	C	-	A	A	A	A	C	A	D	D	D	B	-	C	D	D	A	C	A	A	D	B	B	D
Acetamide	A	D	D	-	B	A	A	A	B	A	B	B	A	D	-	D	A	A	A	B	A	A	C	A	A	D
Acetate Solvents	A	D	D	-	A	A	A	A	C	A	D	D	D	D	-	C	C	D	A	D	B	A	A	B	B	D
Acetic Acid	B	D	D	-	D	B	A	D	C	A	-	B	-	D	-	B	C	C	D	C	B	A	C	B	A	C
Acetic Acid — 20%	B	D	D	-	B	A	C	A	C	B	A	C	B	D	-	B	B	-	D	A	A	A	B	A	-	-
Acetic Acid — 30%	D	-	A	-	A	-	C	B	-	A	D	-	-	-	-	-	C	-	-	B	B	A	B	B	A	-
Acetic Acid — 50%	D	-	A	-	A	-	C	B	-	A	C	-	-	-	-	-	C	-	-	C	B	A	B	B	A	-
Acetic Acid — 80%	B	D	D	-	D	B	A	D	C	A	-	B	D	-	-	C	C	-	D	C	A	A	C	-	-	-
Acetic Acid — Glacial	B	D	D	-	C	A	A	D	C	B	D	D	B	A	-	C	C	-	B	D	A	A	A	B	B	-
Acetic Anhydride	A	D	D	-	B	A	A	D	A	B	D	D	D	C	-	C	D	D	A	A	B	A	B	A	D	B
Acetone	A	A	A	-	A	A	A	C	A	D	D	D	D	B	-	C	D	D	A	C	A	A	D	B	A	D
Acetone Cyanohydrin	B	-	B	-	B	-	-	-	D	D	-	D	-	D	-	-	D	-	-	B	-	A	-	A	-	-
Acetonitrile (Methyl Cyanide)	A	-	A	-	A	-	B	A	-	A	D	D	D	-	-	-	D	D	A	D	B	A	A	A	-	B
Acetophenone	B	-	A	-	A	B	B	-	-	B	D	D	D	-	-	-	D	D	A	D	B	A	A	B	-	-
Acetyl Acetone	D	-	B	-	B	-	-	-	-	A	D	D	D	-	-	-	D	D	-	D	-	A	-	B	-	D
Acetyl Bromide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	D	-	-	A	-	-	-	-
Acetyl Chloride	D	B	B	-	A	A	D	D	D	B	A	D	D	D	-	D	D	D	B	D	D	A	A	B	-	D
Acetyl Salicylic Acid (Aspirin)	D	-	B	-	B	-	-	-	B	-	A	-	-	-	-	-	A	-	-	D	-	A	-	C	A	-
Acetylene	A	A	A	-	A	A	A	A	B	A	A	A	B	A	-	B	B	A	A	B	A	A	A	C	-	D
Acetylene Tetrabromide	D	-	A	-	-	-	-	-	-	-	A	-	D	-	-	-	D	-	-	D	-	A	-	D	-	-
Acrolein (Acryaldehyde)	B	-	B	-	B	-	-	-	-	A	A	B	B	D	-	-	C	-	-	D	-	A	-	A	-	D
Acrylonitrile	B	A	A	-	A	A	B	-	C	D	D	D	D	D	-	B	D	D	A	C	A	A	A	D	-	D
Adipic Acid	A	A	A	-	A	A	A	A	-	A	A	A	A	D	-	A	C	B	A	C	B	A	A	B	A	-
Aero Lubriplate	A	-	A	-	A	-	A	A	-	D	-	A	-	D	-	-	A	A	-	A	A	A	A	C	-	-
Aerosafe 2300	A	-	A	-	A	-	-	A	-	A	-	D	-	A	-	-	D	D	-	D	-	A	-	B	-	A
Aerosafe 2300W	A	-	A	-	A	-	-	A	-	A	-	D	-	A	-	-	D	D	-	D	-	A	-	B	-	D
Aeroshell 17 Grease	A	-	A	-	A	-	-	A	-	D	-	A	-	D	-	-	A	A	-	B	-	A	-	D	-	A
Aeroshell 1AC	A	-	A	-	A	-	A	A	-	D	-	A	-	D	-	-	A	A	-	B	A	A	B	D	-	B
Aeroshell 750	A	-	A	-	A	-	-	A	-	D	-	A	-	D	-	-	B	C	-	D	-	A	-	D	-	A
Aeroshell 7A Grease	A	-	A	-	A	-	-	A	-	D	-	A	-	D	-	-	A	A	-	B	-	A	-	D	-	D
Alcohol: Amyl	B	B	B	-	A	A	A	A	A	A	-	A	B	A	-	B	B	B	A	A	A	A	A	A	A	D

CHEMICALS	METALS										PLASTICS, ELASTOMERS & LEATHER															
	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPR, EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Viton)	Geolast (Buna & Polypropylene)	Hytrek (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Styrene (EPDM & Polypropylene)	UHMWPE	Urethane
Alcohol: Benzyl	B	B	B	-	B	B	A	A	C	B	-	A	-	D	-	D	D	D	B	C	A	A	A	A	A	C
Alcohol: Butyl	B	B	B	-	A	A	A	A	A	A	-	A	-	D	-	A	C	B	D	A	A	A	A	A	A	D
Alcohol: Diacetone	A	A	A	-	A	A	A	A	D	A	-	D	-	D	-	D	D	D	A	D	B	A	A	C	-	B
Alcohol: Ethyl	B	B	B	-	A	A	A	A	A	A	-	A	-	A	-	A	C	A	A	A	A	A	A	A	B	A
Alcohol: Hexyl	A	A	A	-	A	A	A	A	B	C	-	C	-	D	-	A	A	A	A	A	A	A	A	B	-	D
Alcohol: Isobutyl	B	C	C	-	A	A	A	A	A	A	-	A	-	B	-	A	B	C	A	A	A	A	A	A	-	D
Alcohol: Isopropyl	B	A	A	-	B	B	A	A	A	A	-	A	-	A	-	A	B	C	D	B	A	A	A	B	-	D
Alcohol: Methyl	A	A	A	-	A	A	A	A	A	A	-	C	-	B	-	A	A	A	B	A	A	A	A	A	A	D
Alcohol: Octyl	A	A	A	-	A	A	C	A	B	A	-	B	-	D	-	B	B	-	A	B	-	A	-	B	-	D
Alcohol: Propyl	A	A	A	-	A	A	A	A	A	A	-	A	-	D	-	A	A	A	A	A	A	A	A	A	C	D
Alcohols R-OH	-	-	-	-	-	-	A	A	-	-	-	-	-	-	-	-	-	-	-	A	-	A	-	A	-	A
Alkazene	-	-	-	-	-	-	-	-	-	-	A	A	-	D	-	-	D	D	-	D	-	A	-	D	B	D
Allyl Alcohol	B	-	A	-	A	-	A	-	-	A	B	B	-	D	-	-	A	A	-	A	A	A	A	B	A	B
Allyl Bromide	D	-	A	-	-	-	-	-	-	D	B	B	-	D	-	-	D	D	-	D	-	A	-	-	-	A
Allyl Chloride	D	-	C	-	B	-	-	-	-	D	B	B	D	D	-	-	D	C	-	D	A	A	A	-	B	D
Almond Oil (Artificial)	-	-	-	-	-	-	-	-	-	B	D	D	-	D	-	-	D	D	-	D	-	A	-	C	-	D
Alum (Aluminum Potassium Sulfate)	C	-	D	-	B	-	B	A	-	A	D	A	-	D	-	-	A	A	C	A	A	A	A	A	A	D
Aluminum Acetate (Buro's Solution)	A	-	D	-	C	B	B	A	-	A	D	D	D	-	-	-	C	-	A	C	A	A	-	A	A	D
Aluminum Ammonium Sulfate	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	A	-	A	A	A	A	B	-	-
Aluminum Bromide	-	-	-	-	-	-	-	-	-	A	-	A	A	D	-	-	A	B	-	A	-	A	A	B	-	-
Aluminum Chloride	D	D	D	-	B	B	A	B	B	A	A	A	C	-	-	A	A	A	B	A	A	A	A	A	A	B
Aluminum Chloride 20%	D	D	D	-	D	C	A	C	B	A	-	A	-	-	-	A	A	-	D	A	A	A	A	-	-	-
Aluminum Fluoride	B	D	D	-	D	D	B	C	A	A	A	A	A	-	-	B	A	B	A	A	A	A	A	A	A	C
Aluminum Hydroxide	B	A	A	-	A	C	B	A	A	A	C	A	A	D	-	D	A	A	A	A	A	A	A	A	A	B
Aluminum Nitrate	D	-	D	-	A	A	B	B	A	A	A	A	A	-	-	A	A	A	A	A	A	A	A	A	A	C
Aluminum Phosphate	-	-	-	-	A	A	-	A	-	A	A	A	-	-	-	-	A	A	-	A	A	A	A	A	-	D
Aluminum Potassium Sulfate	C	D	D	-	D	B	C	C	A	A	A	A	A	D	-	A	A	A	D	A	A	A	A	A	A	D
Aluminum Potassium Sulfate 10%	C	D	D	-	A	A	C	C	A	A	-	A	-	-	-	A	A	-	D	A	A	A	B	-	-	-
Aluminum Sodium Sulfate (Soda Alum)	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-	-	A	-	-	A	-	A	-	-	-	-
Aluminum Sulfate	B	D	D	-	B	B	B	B	A	A	A	A	A	B	-	A	A	A	A	A	A	A	A	A	A	B
Alums	A	D	D	-	A	B	-	-	-	A	-	A	A	D	-	-	A	A	-	A	B	A	A	A	-	-
Amines	B	D	D	-	A	A	B	D	D	B	D	D	A	-	-	B	D	D	D	B	B	B	A	-	A	D
Ammonia 10%	A	A	A	-	A	A	A	D	D	A	-	D	A	-	-	D	A	-	A	A	A	A	A	-	-	-
Ammonia Gas — Cold	-	-	-	-	-	-	-	-	-	-	A	-	-	-	-	-	A	-	-	A	-	A	-	A	A	-

[illegible]

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Napththa Coal Tar (Benzol)	A	-	B	-	A	-	A	A	-	D	A	A	D	B	-	D	D	D	-	D	C	A	A	C	A	B	
Naphthalene	B	A	-	A	-	A	-	A	A	D	D	A	D	B	-	D	D	D	-	A	D	B	A	A	C	B	
Naphthoic Acid	B	-	B	-	A	-	B	-	-	D	A	-	B	-	-	-	B	-	-	-	-	-	-	-	-	-	
Napthenic Acid	B	-	B	-	A	A	B	A	-	D	-	A	-	D	-	-	B	B	-	D	-	A	-	B	-	-	
Natural Gas	A	A	A	-	A	A	-	B	-	D	-	A	A	B	-	-	A	A	-	A	A	A	-	C	-	C	
n-Butyl Acetate	A	-	A	-	A	-	A	-	-	D	D	-	D	-	-	-	D	-	-	D	-	A	-	A	-	-	
Neatsfoot Oil	A	-	A	-	A	A	-	B	-	C	A	A	B	D	-	-	A	A	-	D	-	A	-	B	-	A	
Neohexane	-	-	-	-	-	-	-	-	-	-	A	A	-	D	-	-	A	A	-	-	-	-	-	-	-	-	
Neosol	B	-	B	-	A	-	A	-	-	B	C	C	-	D	-	-	A	A	-	A	-	A	-	-	-	-	
Neville Acid	-	-	-	-	-	-	-	-	-	C	B	A	-	D	-	-	D	D	-	D	-	A	-	A	-	-	
N-Hexaldehyde	A	-	A	-	A	A	-	-	-	A	A	-	D	-	D	-	D	D	-	A	-	A	-	C	A	B	
N-Hexene-1	A	-	A	-	A	-	A	C	-	D	A	A	-	-	-	-	A	-	A	B	C	A	A	C	B	-	
Nickel Acetate	D	-	-	-	A	-	-	-	-	-	A	D	B	-	-	-	B	B	-	B	A	A	A	A	-	D	
Nickel Ammonium Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	A	-	A	-	A	-	-	
Nickel Chloride	D	D	C	-	D	C	B	A	A	A	A	A	A	D	-	-	A	A	C	B	A	A	A	A	A	A	
Nickel Nitrate	D	D	C	-	B	B	B	D	D	A	A	A	A	-	-	-	A	A	A	A	A	A	A	A	A	A	
Nickel Salts	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	A	-	B	-	A	-	A	-	A	
Nickel Sulfate	D	D	D	-	B	B	B	A	A	A	A	A	A	D	-	-	B	A	A	A	A	A	A	A	A	A	
Nicotine	-	-	-	-	-	-	-	-	-	-	-	A	-	B	-	-	-	A	-	C	-	A	-	-	-	A	
Nicotinic Acid	-	-	-	-	-	-	-	-	-	A	-	-	-	-	-	-	A	A	-	A	-	A	-	-	-	-	
Niter Cake	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	A	-	A	-	A	-	A	A	A	
Nitrana (Ammonia Fertilizer)	-	-	-	-	-	A	-	-	-	-	C	C	-	-	-	-	B	B	-	B	-	A	-	-	-	-	
Nitrating Acid (<15% HNO3)	D	C	C	-	C	D	A	-	-	-	-	-	-	-	-	-	C	-	-	A	C	A	-	-	-	-	
Nitrating Acid (>15% H2SO4)	D	C	C	-	C	C	A	D	-	A	-	-	-	-	-	-	C	D	-	-	A	C	A	-	-	-	
Nitrating Acid (S1% Acid)	D	-	-	-	C	A	A	-	-	-	-	-	-	-	-	-	C	-	-	A	C	A	-	-	-	-	
Nitrating Acid (S15% H2SO4)	D	A	A	-	C	C	A	-	-	-	-	-	-	-	-	-	C	-	-	A	C	A	-	-	-	-	
Nitric Acid - 10%	A	-	D	-	A	-	A	-	-	B	A	-	D	-	-	-	D	-	D	B	A	A	A	A	A	-	
Nitric Acid - 20%	D	D	D	-	A	A	A	D	D	A	-	A	D	D	-	-	D	D	B	D	D	A	A	B	A	C	
Nitric Acid - 25%	D	-	D	-	A	-	A	-	-	B	A	-	-	-	-	-	D	-	D	C	A	A	A	B	A	-	
Nitric Acid - 30%	-	-	-	-	-	-	-	-	-	-	-	-	D	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nitric Acid - 35%	D	-	D	-	A	-	A	-	-	C	A	-	-	-	-	-	D	-	D	D	B	A	A	-	C	-	
Nitric Acid - 50%	D	D	D	-	A	A	A	D	D	D	A	A	D	D	-	-	D	D	C	D	D	B	A	A	C	D	C
Nitric Acid - 65%	D	-	D	-	A	-	D	D	-	D	-	A	-	D	-	-	D	D	-	D	D	A	A	C	D	C	
Nitric Acid - 70%	-	-	D	-	A	-	D	-	-	D	A	-	D	-	-	-	D	-	D	D	-	A	A	-	D	-	
Nitric Acid (5-10% Solution)	A	D	D	-	A	A	A	D	B	A	-	A	-	C	-	-	D	D	A	D	B	A	A	A	A	C	
Nitric Acid (Conc.)	D	D	D	-	A	A	B	D	D	D	B	A	D	D	-	-	D	D	D	D	D	A	A	C	D	D	
Nitric Acid (Red Fuming)	D	-	D	-	A	A	B	C	-	D	B	B	D	D	-	-	D	-	D	D	D	A	D	D	D	D	
Nitro Ethane	A	-	A	-	-	A	-	-	-	-	-	C	-	-	-	-	D	-	-	C	C	A	-	-	-	-	
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	Nitrobenzene	B	C	C	-	B	B	D	C	D	B	B	D	D	D	-	D	D	D	B	C	B	A	A	B	D	D
Nitroethane	A	-	A	-	A	-	A	B	-	C	D	D	D	-	-	-	D	D	-	C	C	A	A	A	A	A	D
Nitrogen	A	-	A	-	A	A	A	A	-	A	-	A	-	B	-	-	A	A	-	A	A	A	A	A	-	A	
Nitrogen Fertilizer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	-	-	A	-	-	-	-	
Nitrogen Tetroxide	D	-	D	-	A	-	A	-	-	D	C	D	D	B	-	-	D	D	-	D	D	A	C	D	A	D	
Nitroglycerine	-	-	-	-	-	-	-	-	-	A	-	A	-	D	-	-	A	-	-	A	-	A	-	A	-	A	-
Nitromethane	A	-	A	-	A	A	A	A	-	B	D	D	D	C	-	-	B	D	D	B	D	B	A	A	A	A	D
Nitropropane	A	-	A	-	A	-	A	-	-	B	D	D	D	-	-	-	D	-	-	D	-	A	-	B	A	D	
Nitrous Acid	D	-	D	-	B	B	D	-	-	A	-	B	-	-	-	-	C	D	D	-	D	A	B	-	-	-	
Nitrous Oxide	B	-	B	-	B	B	B	-	-	A	-	B	-	-	-	-	A	A	C	A	D	A	D	-	-	B	
N-Methyl Aniline	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	D	-	-	D	C	A	-	-	-	-	
N-Octane	-	-	-	-	-	-	-	-	-	D	A	A	-	-	-	-	B	D	A	D	D	A	A	B	-	D	
n-Propyl Acetate	A	-	-	-	A	-	A	-	-	A	D	-	D	-	-	-	D	-	-	D	C	A	A	B	-	-	
n-Propyl Nitrate (NPN)	A	-	D	-	-	-	-	-	-	B	C	-	A	-	-	-	D	-	-	-	-	A	-	B	-	-	
o-Chlorophenol	B	-	B	-	B	-	B	B	-	D	B	-	A	-	-	-	D	-	D	D	-	A	-	-	-	-	
Octachlorotoluene	D	-	-	-	-	-	-	-	-	D	A	A	-	-	-	-	D	D	-	D	D	A	-	-	-	D	
Octadecane	-	-	-	-	-	-	-	-	-	D	A	A	-	-	-	-	A	-	-	B	-	A	-	B	-	A	
Octyl Acetate	A	-	-	-	A	-	-	-	-	-	D	D	B	-	-	-	D	D	-	-	-	A	-	-	-	-	
Octyl Alcohol	A	-	-	-	A	-	A	-	-	B	A	B	-	-	-	-	B	B	-	B	-	A	-	B	-	D	
O-Dichlorobenzene	D	-	B	-	B	B	A	-	-	D	A	A	D	-	-	-	D	-	-	D	B	A	A	D	-	-	
Oils: Aniline	D	A	A	-	A	A	B	D	D	B	-	C	D	D	-	-	D	D	A	D	A	A	A	C	-	D	
Oils: Anise	-	A	A	-	-	A	-	D	-	-	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	
Oils: Bay	-	A	A	-	-	A	-	D	-	-	-	A	-	-	-	-	-	-	-	D	-	-	A	-	-	-	
Oils: Bone	-	A	A	-	-	A	-	D	-	-	-	A	A	-	-	-	A	-	-	D	A	A	A	-	-	-	
Oils: Castor	A	A	A	-	A	A	A	A	A	B	A	A	A	B	-	-	A	B	B	A	A	A	A	B	A	A	
Oils: Cinnamon	-	-	D	-	A	A	-	D	-	-	-	A	-	-	-	-	-	-	-	C	D	A	-	C	D	-	
Oils: Citric	C	D	D	-	A	A	-	B	-	B	A	A	D	-	-	-	A	B	-	D	A	A	-	C	-	-	
Oils: Clove	B	-	D	-	A	A	A	-	-	-	-	A	A	-	-	-	A	-	-	C	B	A	-	C	A	-	
Oils: Coconut	A	A	A	-	A	A	A	A	C	D	A	A	A	-	-	-	D	A	B	-	C	A	A	B	A	C	
Oils: Cod Liver	A	-	D	-	A	A	A	B	B	A	A	A	A	-	-	-	D	A	-	-	B	A	A	C	A	A	
Oils: Corn	A	A	A	-	A	A	A	A	B	C	A	B	A	A	-	-	D	D	B	A	A	A	A	D	A	A	
Oils: Cottonseed	A	A	A	-	A	A	A	A	B	D	A	A	B	A	-	-	D	A	B	B	C	A	A	B	A	A	
Oils: Creosote	B	-	-	-	B	B	B	D	D	D	-	A	A	D	-	-	D	D	-	D	C	C	A	-	-	-	
Oils: Crude	A	-	A	-	A	-	B	D	-	D	-	A	A	B	-	-	B	C	-	B	B	A	A	C	A	D	
Oils: Diesel Fuel (20,30,40,50)	A	A	A	-	A	A	B	D	B	D	-	A	B	A	-	-	D	A	-	A	B	A	A	-	-	-	
Oils: Fish	-	-	-	-	-	-	-	-	-	D	A	A	B	B	-	-	A	-	-	B	-	A	-	B	A	B	
Oils: Fuel (1,2,3,5A,5B,6)	C	A	A	-	A	A	A	D	D	D	-	B	D	A	-	-	D	B	-	A	D	B	A	B	-	-	
Oils: Ginger	-	-	D	-	D	D	-	A	-	A	A	A	A	-	-	-	A	-	-	A	-	A	C	-	-	-	
CHEMICALS	METALS								PLASTICS, ELASTOMERS & LEATHER																		

A: Excellent, B: Good, C: Fair to Poor, D: Not recommended - No Data																											
	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Vlon)	Geolast (Buna & Polypropylene)	Hyrel (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Santoprene (EPDM & Polypropylene)	UHMWPE	Urethane	
Oil: Lavender	-	-	-	-	-	-	-	-	-	D	D	B	B	-	-	-	C	D	-	D	-	A	A	B	-	-	
Oil: Lemon	A	-	A	-	A	A	A	D	-	D	-	A	A	-	-	-	B	-	-	D	D	A	A	C	-	-	
Oil: Linseed	B	-	A	-	A	A	B	A	C	D	A	A	A	B	-	-	A	A	A	D	A	A	B	A	B		
Oil: Mineral	A	-	A	-	A	A	A	A	B	D	A	A	A	A	-	D	A	A	A	B	A	A	A	D	A	A	
Oil: Neatsfoot	A	-	A	-	A	A	-	B	-	C	A	A	B	D	-	-	A	A	-	D	-	A	-	B	-	A	
Oil: Olive	A	-	A	-	A	A	A	A	B	D	A	A	A	-	-	D	D	D	A	B	A	A	B	B	A	A	
Oil: Orange	A	-	-	-	A	A	A	D	-	-	-	A	A	-	-	-	A	-	-	C	A	-	A	-	-	-	
Oil: Palm	B	A	A	-	A	A	A	A	-	-	A	B	A	A	-	-	A	-	C	D	A	A	A	B	A	A	
Oil: Peanut	A	A	A	-	A	A	A	A	B	D	A	A	A	-	-	D	A	A	-	B	D	A	A	B	A	B	
Oil: Peppermint	D	-	-	-	A	A	-	D	-	-	A	A	D	-	-	D	-	-	D	B	A	A	C	C	-	-	
Oil: Pine	A	C	C	-	A	A	-	A	D	D	A	A	B	D	-	D	D	B	A	D	B	A	A	C	C	D	
Oil: Rapeseed	-	A	A	-	A	A	A	A	D	A	A	A	A	-	-	D	D	-	-	B	D	A	A	B	D	B	
Oil: Rosin	B	-	-	-	A	A	A	-	-	A	A	A	A	-	-	-	A	-	A	A	A	A	A	-	-	-	
Oil: Sesame Seed	A	A	A	-	A	A	-	D	-	-	A	A	A	-	-	-	A	A	-	D	A	A	A	B	-	-	
Oil: Silicone	A	A	A	-	A	A	A	A	A	A	A	A	A	A	-	D	A	A	A	D	A	A	A	C	A	A	
Oil: Soybean	A	A	A	-	A	A	A	A	C	C	A	A	A	B	-	D	A	A	A	C	A	A	A	C	A	B	
Oil: Sperm (whale)	-	A	A	-	A	A	A	D	-	D	A	A	A	-	-	-	A	-	-	D	A	A	A	B	-	-	
Oil: Tanning	-	A	-	-	A	A	-	D	-	-	-	A	A	-	-	-	A	-	-	D	-	-	A	-	-	-	
Oil: Transformer	A	-	A	-	A	A	A	A	-	D	A	A	B	-	-	D	A	B	A	B	B	A	A	D	A	A	
Oil: Tung (Wood Oil)	A	-	B	-	A	B	A	A	-	D	A	B	A	B	-	-	A	B	-	C	A	A	A	B	A	C	
Oil: Turbine	A	A	A	-	A	A	-	A	D	A	-	A	B	-	-	D	B	-	A	D	B	A	A	-	-	A	
Oil: Vegetable	A	-	B	-	A	-	A	A	-	A	A	A	B	-	-	-	B	A	A	C	D	A	A	B	D	A	
Oleic Acid	A	-	C	-	A	A	A	A	C	B	B	B	B	A	-	D	B	D	A	C	B	A	A	B	A	B	
Olein (Triolein)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	-	-	C	-	A	-	D	-	-	
Oleum 100% (Fuming Sulfuric)	B	-	D	-	A	A	D	D	D	D	A	A	D	D	-	D	D	D	D	D	D	A	D	D	D	D	
Oleum 25%	B	-	-	-	B	B	A	D	D	D	-	A	-	C	-	D	D	-	D	D	D	A	C	-	-	-	
Oleum Spirits	D	-	D	-	B	B	-	-	D	D	-	A	-	B	-	-	C	D	-	D	D	A	D	D	A	C	
Olive Oil	A	-	A	-	A	A	A	A	B	D	A	A	A	-	-	D	D	D	A	B	A	A	B	B	A	A	
Oronite 8200	-	-	-	-	-	-	-	-	-	D	-	A	-	B	-	-	B	-	-	A	-	A	-	-	-	A	
Oronite 9515	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	-	-	-	-	A	-	-	-	-	
Orthochloro Ethyl Benzene	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	D	-	-	D	-	A	-	-	-	D	
Ortho-Dichlorobenzene	-	-	-	-	-	-	-	-	D	D	-	A	-	D	-	-	D	-	-	D	-	A	-	D	-	D	
OS 45 Type 111 (OS45)	-	-	-	-	-	-	-	-	-	D	-	B	-	C	-	-	B	-	-	A	-	A	-	-	-	D	
OS 45 Type IV (OS45-1)	-	-	-	-	-	-	-	-	-	D	-	B	-	-	-	-	B	-	-	A	-	A	-	-	-	D	
OS 70	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	B	-	-	A	-	A	-	-	-	D	
Oxalic Acid - 5% (Hot and Cold)	B	-	D	-	B	-	B	D	-	A	-	A	-	D	-	-	B	C	-	B	A	A	A	A	A	A	
Oxalic Acid (cold)	A	C	C	-	B	A	B	B	B	A	C	A	D	D	-	B	D	-	B	D	A	A	B	A	A	-	
Oxygen	A	-	A	-	A	-	-	-	-	-	-	A	-	-	-	-	C	-	B	A	C	A	A	-	-	-	
CHEMICALS	METALS							PLASTICS, ELASTOMERS & LEATHER																			
A: Excellent, B: Good, C: Fair to Poor, D: Not recommended - No Data	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Vlon)	Geolast (Buna & Polypropylene)	Hyrel (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Santoprene (EPDM & Polypropylene)	UHMWPE	Urethane	
	Oxygen - 200°-400°F	A	-	A	-	A	-	A	-	-	-	B	B	-	-	-	D	D	-	D	D	D	A	A	A	B	A
Ozone	B	-	A	-	B	A	A	C	A	A	A	A	D	C	-	D	D	-	D	C	B	A	A	-	A	B	A
Paint Thinner, Duco	D	-	A	-	A	A	A	A	-	D	B	B	-	-	-	-	D	D	-	D	D	A	-	C	-	D	
Paints & Solvents	D	-	-	-	A	A	A	-	-	-	-	-	-	-	-	-	D	-	-	D	-	A	-	-	-	-	
Palm Oil	B	A	A	-	A	A	A	A	-	A	B	A	A	-	-	-	A	-	C	D	A	A	A	B	A	A	
Palmitic Acid	B	-	C	-	B	A	B	A	D	B	-	A	A	A	-	B	A	A	A	D	B	A	A	B	-	A	
Para-Dichlorobenzene	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	D	-	-	D	-	A	-	-	-	D	
Paraffin	A	-	A	-	A	A	B	A	-	D	-	B	A	-	-	B	B	A	A	B	A	A	A	A	A	A	
Paraformaldehyde	A	-	A	-	A	-	A	A	-	A	C	C	B	-	-	-	B	-	-	B	-	A	-	-	-	-	
Paraldehyde	A	-	A	-	A	-	A	-	-	A	D	D	-	-	-	-	D	-	-	D	-	A	-	-	-	-	
P-Cymene	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	D	D	-	D	-	A	-	B	A	D	
P-Dichlorobenzene	D	-	B	-	B	-	A	B	-	D	-	A	-	D	-	-	D	D	-	D	B	A	A	D	-	D	
Peanut Oil	A	A	A	-	A	A	A	A	B	D	A	A	A	-	-	D	A	A	-	B	D	A	A	B	A	B	
Pentachloroethane (Pentalin)	D	-	A	-	A	-	A	A	-	-	A	A	D	-	-	-	D	D	-	D	D	A	A	-	-	-	
Pentachlorophenol (PCP)	A	-	A	-	A	-	A	-	-	D	A	A	D	-	-	-	D	-	-	D	-	A	-	-	-	D	
Pentane	B	-	B	-	C	C	A	B	B	D	A	A	A	-	-	D	A	-	A	B	D	A	A	A	A	D	
Peppermint Oil	D	-	-	-	A	C	-	D	-	-	A	A	D	-	-	-	D	-	-	D	B	A	A	C	C	-	
Perchloric Acid	D	-	D	-	C	C	B	C	-	B	A	A	D	D	-	-	D	D	D	A	C	A	A	D	A	D	
Perchloroethylene	C	A	A	-	B	A	B	B	D	D	A	A	D	C	-	D	C	D	C	D	D	A	A	D	B	D	
Permachlor (Degreasing Fluid)	-	A	-	-	-	-	-	-	-	D	-	C	-	-	-	-	D	-	-	-	-	A	-	-	-	-	
Petrolatum	B	-	-	-	A	A	A	B	-	A	-	A	A	-	-	C	A	A	D	A	D	C	A	-	-	D	
Petroleum	D	-	-	-	A	A	-	B	D	D	-	A	-	B	-	D	A	-	A	B	B	A	A	-	-	-	
Petroleum - Above 250 degF	A	-	A	-	A	-	-	-	-	-	-	B	-	-	-	-	C	-	D	D	-	A	-	-	-	-	
Petroleum - Below 250 degF	A	-	A	-	A	-	-	-	-	-	-	A	-	-	-	-	A	-	A	B	A	A	A	-	-	-	
Petroleum Ether	B	-	B	-	A	-	D	A	-	D	-	A	-	-	-	-	A	A	-	D	A	A	B	-	A	B	
Petroleum Oil, Crude	B	-	B	-	A	-	A	A	-	D	A	A	-	A	-	-	B	C	A	C	D	A	A	C	A	A	
Petroleum Oils (Refined)	-	-	-	-	-	-	-	A	-	D	-	A	-	A	-	-	A	B	-	B	B	A	A	C	A	B	
Petroleum Oils (Sour)	B	-	B	-	A	-	A	A	-	D	-	A	-	B	-	-	B	C	-	B	B	A	A	C	A	B	
Phenethyl Alcohol	A	-	A	-	A	-	A	-	-	B	D	-	-	-	-	-	D	-	-	D	-	A	-	-	-	-	
Phenol	B	-	D	-	A	-	A	A	-	-	-	A	-	D	-	-	D	D	-	D	C	A	A	A	C	D	
Phenol (10%)	A	D	D	-	B	B	B	B	D	B	-	A	-	-	-	-	A	D	-	D	D	B	A	A	-	-	
Phenol (Carbolic Acid)	A	D	D	-	B	B	A	D	D	B	A	A	-	D	-	-	D	D	-	D	D	B	A	A	C	-	
Phenol Sulfonic Acid	B	-	B	-	B	-	A	-	-	-	-	D	-	-	-	-	D	-	-	-	-	A	B	-	-	-	
Phenyl Acetate	-	-	-	-	-	-	-	-	-	B	D	D	-	-	-	-	D	-	-	D	-	A	-	-	-	D	
Phenyl Ethyl Ether	-	-	-	-	-	-	-	-	-	D	C	C	-	-	-	-	D	-	-	D	-	A	-	C	-	-	
Phenyl Hydrazine	A	-	D	-	-	-	-	-	-	D	A	A	D	-	-	-	D	-	-	D	D	A	D	B	-	-	
Phenyl Sulfonic Acid	B	-	B	-	B	-	-	-	-	-	D	-	D	-	-	-	D	-	-	-	-	A	-	-	-	-	
Phenylbenzene	-	-	-	-	-	-	-	-	-	D	A	A	-	-	-	-	D	-	-	D	-	A	-	C	-	D	
CHEMICALS	METALS							PLASTICS, ELASTOMERS & LEATHER																			

[illegible]

[illegible]

	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPR, EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Viton)	Geolast (Buna & Polypropylene)	Hytral (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Santoprene (EPDM & Polypropylene)	UHMWPE	Urethane
A: Excellent, B: Good, C: Fair to Poor, D: Not recommended - No Data																										
Tung Oil	A	-	B	-	A	B	A	A	-	D	A	B	A	B	-	-	A	B	-	C	A	A	A	B	A	C
Turbine Oil	A	A	A	-	A	A	-	A	D	A	-	A	B	-	-	D	B	-	A	D	B	A	A	-	-	A
Turbine Oil #15 (Mil-L-7808A)	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	B	-	-	D	-	A	-	-	-	D
Turbo Oil #35	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	A	-	-	B	-	-	-	-	-	A
Turpentine	A	-	B	-	A	A	B	A	D	D	A	A	A	B	-	D	A	B	B	D	D	A	A	D	C	D
Type 1 Fuel (Mil-S-3136)	-	-	-	-	-	-	-	-	-	D	-	A	-	A	-	-	A	-	-	A	-	A	-	D	-	B
Type 111 Fuel (Mil-S-3136)	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	B	-	-	D	-	A	-	D	-	B
Type 111 (Fuel Mil-S-3136)	-	-	-	-	-	-	-	-	-	D	-	A	-	A	-	-	B	-	-	D	-	A	-	D	-	B
Univis 40 (Hydr. Fluid)	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	A	-	-	B	-	A	-	D	-	A
Univolt #35 (Mineral Oil)	-	-	-	-	-	-	-	-	-	D	-	A	-	-	-	-	A	-	-	B	-	A	-	C	-	A
Unsymmetrical Dimethyl Hydrazine	B	-	A	-	A	-	-	-	-	A	D	D	-	-	-	-	C	-	-	C	-	A	A	B	-	D
Urea	B	-	-	-	B	B	B	A	-	A	A	A	B	B	-	-	B	B	A	B	A	A	A	A	A	B
Uric Acid	D	D	D	-	B	B	B	D	-	-	-	-	-	D	-	-	-	-	-	A	A	D	A	-	-	D
Urine	B	A	A	-	A	A	A	A	-	A	A	A	A	-	-	D	A	A	B	D	A	A	A	A	A	-
Valeric Acid	A	-	-	-	-	-	-	-	-	A	-	-	D	-	-	-	D	-	-	D	-	A	-	-	-	-
Vanilla Extract	-	-	-	-	A	-	-	-	-	-	D	-	A	-	-	-	A	-	-	D	-	A	-	A	A	-
Varnish	A	C	C	-	A	A	A	A	D	D	A	A	B	-	-	D	B	B	A	D	A	A	A	D	A	B
Vegetable Juice	D	D	D	-	A	A	-	A	-	A	-	A	A	-	-	-	A	-	A	C	-	A	-	A	-	B
Vegetable Oil	A	-	B	-	A	-	A	A	-	A	A	A	B	-	-	-	B	A	A	C	D	A	A	B	D	A
Versilube	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	-	-	A	-	A	-	-	A	A
Versilube F-50	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	-	-	A	-	A	-	-	A	A
Vinegar	D	D	D	-	A	A	A	B	A	A	A	A	D	C	-	B	B	B	A	B	A	A	B	A	A	B
Vinyl Acetate	A	B	B	-	B	B	A	-	A	B	D	A	D	-	-	D	D	D	-	D	B	A	A	B	D	D
Vinyl Chloride	B	B	B	-	B	A	A	-	-	C	A	A	D	-	-	C	D	-	A	D	D	A	B	D	-	-
Walnut Oil	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-	A	-	-	B	-	A	-	-	-	-
Water, Acid Mine	D	D	D	-	B	B	A	A	-	A	-	A	A	-	-	B	A	A	A	C	A	A	A	A	A	C
Water, Deionized	A	D	D	-	A	A	A	-	A	-	A	-	A	-	-	A	A	-	A	A	A	A	A	-	-	-
Water, Distilled	A	D	D	-	A	A	A	B	-	A	A	A	A	-	-	A	A	-	A	A	A	A	A	A	A	A
Water, Fresh	B	D	D	-	A	A	A	A	-	A	A	A	A	A	-	A	A	A	A	A	A	A	A	A	A	A
Water, Salt	B	D	D	-	B	B	A	A	-	A	-	A	-	A	-	A	A	A	A	A	A	A	A	A	A	B
Water-Brine, Process, Beverage	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	-	-	A	-	D	-	A	A	D
Waxes	D	-	D	-	D	-	A	A	-	D	-	A	-	-	-	-	A	D	A	A	D	A	D	-	A	A
Weed Killers	D	-	-	-	A	A	-	A	-	-	A	A	B	-	-	-	A	-	A	C	-	-	-	B	-	-
Wemco C	-	-	-	-	A	-	-	A	-	D	-	A	-	-	-	-	A	-	-	B	-	A	-	-	-	A
Whey	B	-	-	-	A	A	-	A	-	-	-	A	A	-	-	-	A	A	-	-	-	A	-	A	-	-
Whiskey & Wines	C	D	D	-	A	A	A	A	A	A	A	A	B	-	-	A	A	A	A	C	A	A	A	A	A	D
White Liquor (Pulp Mill)	B	C	C	-	A	A	A	D	-	A	-	A	-	-	-	-	A	A	A	A	A	A	A	A	-	D
White Pine Oil	-	-	-	-	A	-	A	A	-	D	A	A	-	-	-	-	A	-	-	C	-	A	-	C	A	A
CHEMICALS	METALS								PLASTICS, ELASTOMERS & LEATHER																	
A: Excellent, B: Good, C: Fair to Poor, D: Not recommended - No Data	Aluminum	Carbon Steel	Cast/Ductile Iron	17-4 Stainless	304 Stainless	316 Stainless	Hastelloy C	Acetal	CSM (Hypalon)	EPR, EPDM	FKM (Fluorocarbon)	Fluoroelastomer (Viton)	Geolast (Buna & Polypropylene)	Hytral (TPE)	Leather	Natural Rubber	Nitrile (TS) / Buna-N	Nitrile (TPE)	Nylon	Polychloroprene (Neoprene)	Polypropylene	PTFE	PVDF (Kynar)	Santoprene (EPDM & Polypropylene)	UHMWPE	Urethane
White Sulfate Liquor	B	-	C	-	A	-	B	-	-	A	B	A	-	-	-	-	B	-	-	A	A	A	A	-	-	-
White Water (Paper Mill)	-	A	A	-	A	A	-	B	-	-	-	A	-	-	-	-	-	-	-	A	A	-	-	-	-	-
Wine	C	-	D	-	A	-	A	B	-	-	A	B	-	-	-	-	A	-	A	A	A	A	A	A	A	-
Wolmar Salt	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	-	-	B	-	A	-	-	-	A
Wood Alcohol	-	-	-	-	-	-	-	-	-	-	A	-	D	-	-	-	A	-	-	A	-	A	-	-	A	D
Wood Oil	A	-	A	-	A	-	-	-	-	D	-	A	-	A	-	-	A	-	-	B	-	A	-	-	A	C
Wort, Distillery	A	-	B	-	A	-	A	-	-	A	A	A	-	-	-	-	A	-	-	B	-	A	-	-	-	B
Xylene	A	B	B	-	B	B	A	A	D	D	A	B	D	B	-	D	D	C	A	D	B	A	A	D	D	D
Xylidines (Xylidin)	B	-	B	-	-	-	-	-	-	D	D	-	-	-	-	-	-	-	-	D	-	A	-	C	-	-
Zeolite	-	-	-	-	A	-	A	-	-	A	A	A	-	-	-	-	C	-	-	C	-	A	-	A	-	-
Zinc Acetate	C	-	-	-	A	-	-	-	-	A	D	B	A	-	-	-	C	B	-	B	A	A	A	A	A	D
Zinc Carbonate	B	-	B	-	B	-	B	-	-	A	A	A	A	-	-	-	A	A	-	A	-	A	-	A	A	A
Zinc Chloride	D	D	D	-	B	B	B	C	A	A	A	A	A	A	-	A	A	A	A	A	A	A	A	A	A	A
Zinc Hydrosulfite	D	D	D	-	A	A	-	C	-	A	A	-	A	-	-	-	A	A	A	A	-	A	A	A	-	-
Zinc Salts	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-	-	A	A	-	A	A	A	A	A	-	A
Zinc Sulfate	D	D	D	-	B	A	A	C	A	A	B	A	A	C	-	B	A	A	A	A	A	A	A	A	A	A

