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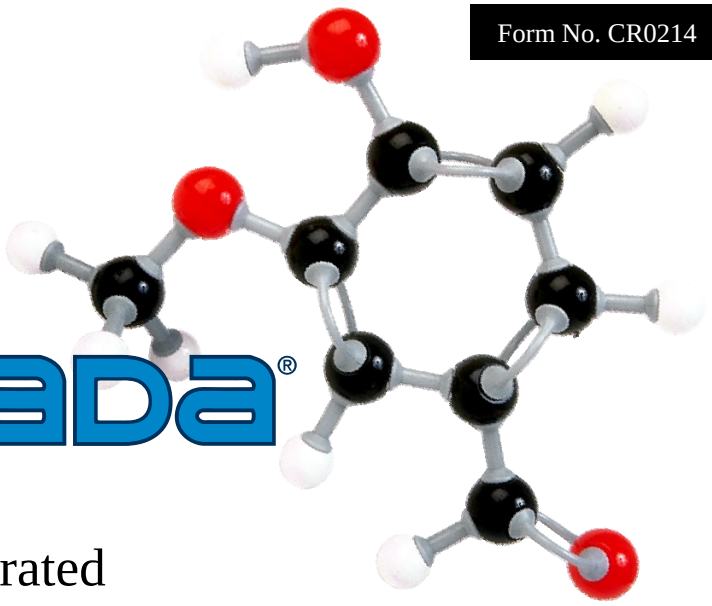
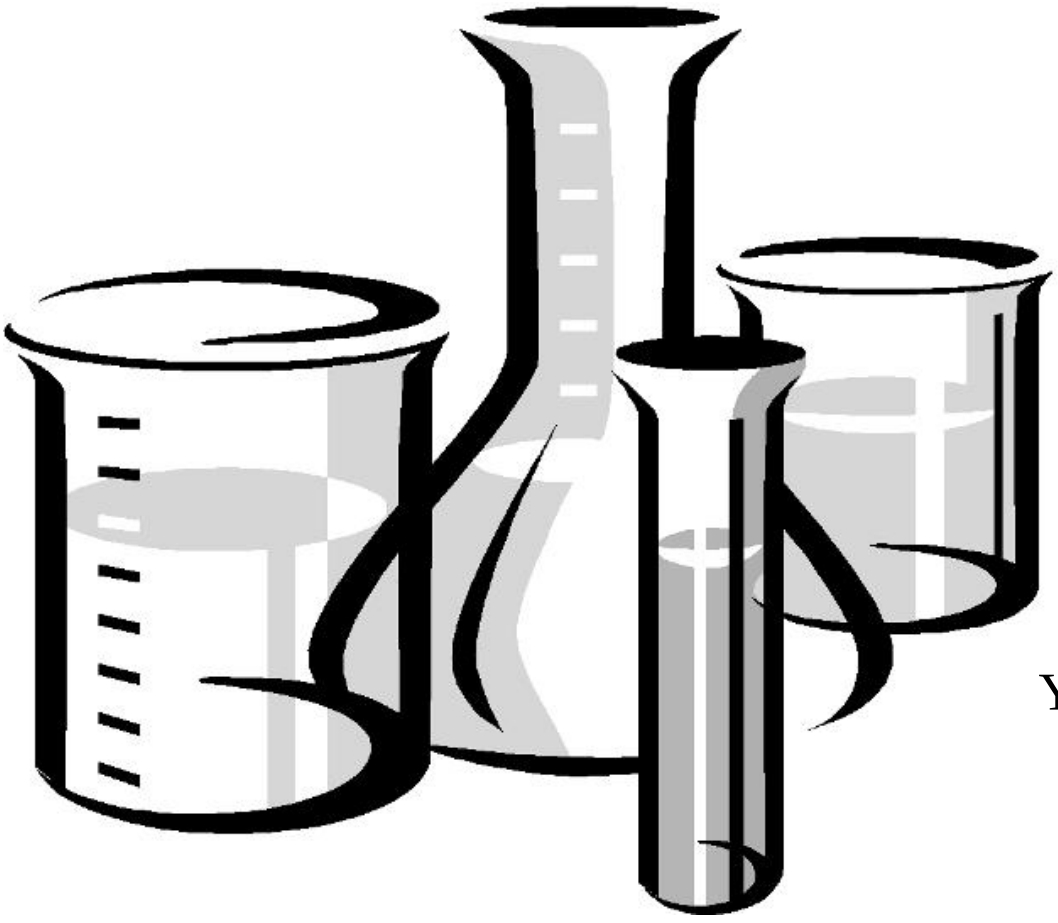


Air Operated Double-Diaphragm Pumps



Corrosion Resistance Guide

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Yamada America, Inc.
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CORROSION RESISTANCE GUIDE

This booklet is intended as a general guide in the selection of proper pump construction materials. This listing includes the most common liquids used in industrial and processing applications. In using this guide, please take note of the following:

1. The chart data has been compiled from many sources believed to be reliable. NO GUARANTEE IS IMPLIED OR EXPRESSLY STATED HEREIN.

2. Because of the extensive scope of this field the tabulation is not complete nor conclusive. Corrosion rates may vary widely with concentration, temperature and the presence of abrasives. Impurities or other trace elements common in industrial liquids may inhibit or accelerate the reaction of the material being pumped and the effect on pump materials.

3. Chemicals or liquids may independently be compatible with a type of pump construction, the combination of several liquids may change the chemical compatibility with a given metal/plastic and elastomer. It is important that this is remembered when selecting acceptable materials of construction for a pump.

4. In the case of uncertainty regarding corrosion resistance, testing the materials of construction under conditions as close to actual as possible is recommended.

KEY TO RATINGS: **A** = Excellent, **B** = Good, **C** = Fair to Poor,
X = Not Recommended, — = No Data Available.

Data limited to % concentration and/or temperature (°F) shown; where not shown, temperature is 70°F.

HALOGENATED SOLVENTS

WARNING!

HALOGENATED HYDROCARBON SOLVENTS, SUCH AS 1, 1, 1 TRICHLOROETHANE AND METHYLENE CHLORIDE, SHOULD NOT BE USED IN ALUMINUM EQUIPMENT. A VIOLENT EXPLOSION COULD RESULT.

- Carbon Tetrachloride
- Chloroform
- Dichlorethylene
- Methyl Chloride
- Methylene Chloride
- Trichlorethylene

WARNING:

Although materials may be chemically compatible, when pumping flammables it is important to ground the pump to prevent arcing that can be caused by a buildup of static electricity; which may ignite the volatile liquids of powders and cause an explosion and/or fire. Polypropylene is not a groundable material.

Rating Key: (A) Excellent (B) Good (C) Fair to Poor Data limited to % concentration and/or temperature (X) Not Recommended (-) No Data Available 0F shown. Where not shown, temperature is 70 F ambient.	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL - EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Acetaldehyde (Ethanal) CH3CHO	X	A	B	X	A	B	X	A	C	A	C	A	A/150°	A	A
Acetamide (Acetic Acid Amide) CH3COHN2	B	A	-	B	A	B	B	A	B	X	A	-	A/140°	A	A
Acetate Solvents CH3COOR	X	A	-	X	A	B	X	A	X	A	X	A	A	A	A
Acetic Acid - 20%	C	A	X	B	A	A	C	B	X	A	A	A	A	A	-
Acetic Acid - 30%	C	A	X	B	A	A	X	C	X	A	A	B	B	A	-
Acetic Acid - 50% CH3COOH	C	A	-	C	A	A	C	X	X	A	B	B	B	A	-
Acetic Acid - Glacial CH3COOH	C	B	X	X	A	A	X	X	X	A	C	B	A/120°	A	A
Acetic Andydride (CH3CO)2O (Acetic Oxide)	C	B	C	B	A	A	X	B	B/212° 90%	A	X	X	B/70°	A	A
Acetone (Dimethylketone) CH3COHO3	X	A	C	X	A	A	X	B	A	B	A	B	B	A	A
Acetone Cyanohydrin (CH3)2C(OH)CH	X	X	-	B	A	A	X	A	C	A	-	-	-	A	-
Acetonitrile (Methyl Cyanide) CH3CN	C	A	-	A	A	B	X	A	A	B	B/100°	A	A	A	-
Acetophenone (Phenyl Methyl Ketone) CH6H5COCH3	X	A	-	X	A	B	X	B	B	A	A/70°	-	A	A	A
Acetyl Acetone (2,4-Pentanedione) CH3COCH2COH2	X	A	-	X	A	B	X	B	X	B	-	-	-	A	-
Acetyl Chloride CH3COCI	X	C	X	X	A	B	B	X	X	B	X	-	A	A	A
Acetylene (Ethyne) HC = CH	A	A	A	C	A	C	A	A	A	A	X	A	A	A	A
Acetyl Salicyclic Acid (Aspirin) (CH3OCO) CH64COOH	-	B	-	X	A	A	-	A	X	B	-	-	-	A	-
Acetylene Tetrabromide (Tetra Bromoethane) (CHBr2)2	X	-	-	X	A	X	A	X	X	A	-	-	-	A	-
Acrolein (Acrylaldehyde) H2C=CHCHO	B	-	-	-	A	A	A	A	B	B	-	-	-	A	-
Acrylonitrile (Vinyl Cyanide) CH2=CHCN	X	X	-	X	A	A	X	A	B	A	B	-	A	A	-
Adipic Acid H00C(CH2)4 (1,4-Butanedicarboxylic Acid) COOH	B	-	-	X	A	B	B	B	B	B	A	A	A	A	-
ALCOHOLS															
Allyl Alcohol (2-Propen-1-ol) R-OH	A	A	-	A	A	-	A	C	A	A	A	B	A	A	-
Amyl (1-Penatol) C4H9CH2O	A	A	A	A	A	A	A	B	-	A	A	A	A	A	-
Benzyl (Phenylcarbinol) C6H5CH2OH	X	B	C	C	A	X	A	A	C	A	A	A	A	A	-
Butyl (Butanol) C3H7CH2OH	A	A	B	A	A	B	A	A	C	A	A	A	A	A	-
Decyl Alcohol (Decanol)	-	-	-	-	-	-	-	A	A	A	A	A	B	A	-
Denatured Alcohol	A	A	-	A	A	-	A	-	-	-	A	A	A	A	-
Diacetone (Tyranton) (CH3)2C(OH) CH2COCH3	X	B	C	X	A	B	X	A	A	A	X	A	A	A	-
Ethyl (Ethanol) CH3CH2OH	A	A	A	A	A	A	-	B	B	A	A	A	A	A	-
Ethyl Butyl Alcohol	A	B	-	B	A	B	B	A	A	A	A/70°	A	A	A	-
Hexyl (1-Hexanol) C5H11CH2OH	A	A	-	B	A	B	A	A	A	A	A	A	A	A	-
Isoamyl Alcohol	B	A	-	A	A	A	A	B	B	A	-	-	A	A	-
Isobutyl (Isobutanol)	B	A	-	B	A	A	B	B	B	A	A	-	A/150°	A	-
Isopropyl (Isopropanol)	A	A	A	B	A	A	A	A	A	A	A	-	A	A	-
Lauryl Alcohol (n-Dodecanol)	A	-	-	-	A	A	B	A	A	A	-	-	-	A	-
Methyl Amyl Alcohol	A	A	-	A	A	B	A	B	B	A	A/120°	-	A	A	-
Methyl (Methanol)	A	A	A	B	A	A	B	A	A	A	A	-	A	A	-
Octyl (Caprylic Alcohol)	B	A	A	B	A	B	A	A	A	A	A	-	A/120°	A	-
Propyl (Propanol) C2H5CH2OH	A	A	-	-	A	-	B	A	A	A	A	-	A	A	-
Tridecyl Alcohol	B	-	-	X	A	-	B	X	X	-	-	-	-	A	-
Allyl Bromide (3-Bromopropene) H2C=CHCH2Br	X	X	-	X	A	-	B	X	X	B	A/70°	-	A	A	-
Allyl Chloride (3-Chloropropene) CH2=CHCH2CI	X	-	-	X	A	X	A	X	-	B	A/70°	A	-	A	-
Alkazene (Chlorethyl or Polyisopropyl benzenes)	X	-	-	X	A	B	-	-	-	-	-	-	-	A	-
Alum (Aluminum Potassium Sulfate (Dodecahydrate) KAl(SO4)2 * 12H20	A	A	-	A	A	A	X	-	-	B	A	-	A	A	-
Aluminum Acetate (Burow's Solution)	C	A	-	C	A	A	X	B	C	A	A/100°	A	A	A	-
Aluminum Ammonium Sulfate AlNH4(SO4)2 (Alum)	B	-	-	B	A	A	A	-	-	-	A	-	A	A	-
Aluminum Bromide AlBr3	B	A	-	A	A	-	-	-	-	-	-	-	A	A	-
Aluminum Chloride AlCl3	A	A	B	A	A	A	A	X	C	B	A	B	A	A	-
Aluminum Fluoride AlF3	A	B	-	A	A	A	A	A/50%	C	C	A	X	A	A	-
Aluminum Hydroxide Al(OH)3 (Alumina Trihydrate)	B	A	-	A	A	A	C	B/10%	B/30%	B	A	-	A	A	-

Rating Key: (A) Excellent (B) Good (C) Fair to Poor Data limited to % concentration and/or temperature (X) Not Recommended (-) No Data Available 0F shown. Where not shown, temperature is 70 F ambient.

	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Aluminum Nitrate Al(NO3)3 * 9H20	A	A	-	A	A	A	A	X	-	A/10%	A	-	A	A	-
Aluminum Phosphate AlPO4	A	A	-	A	A	A	A	-	-	-	-	-	-	A	A
Aluminum Potassium Sulfate (Potash Alum) KAl(SO4)2	A	A	-	A	A	A	A	A/10%	X	A	A	A	A	A	-
Aluminum Sodium Sulfate (Soda Alum) NaAl(SO4)2	A	A	-	A	A	A	A	-	-	A	-	-	-	A	A
Aluminum Sulfate (Cake Alum) Al2(SO4)3	A	A	B	A	A	A	A	B/30%	X	A 167° 50%	A	B	A	A	-
Amines R-NH2	X	A	A/70%	B	A	A	X	A	-	A	B	C	X	A	-
Ammonia Anhydrous, Liquid NH3	B	A	X	B	A	A	X	A	A	A	A	X	A	A	-
Ammonia Gas - Cold	A	-	-	A	A	A	A	-	-	-	-	-	-	A	-
Ammonia Gas - Hot	C	-	-	B	A	A	X	-	-	-	-	-	-	A	A
Ammonia Liquors	-	-	-	A	A	A	X	A	A	A	-	-	-	A	-
Ammonia Cupric Sulfate (NH4)2Cu(SO4)2	A	-	-	-	A	-	A	-	-	-	-	B	-	A	-
Ammonium Acetate CH3CO2NH4	-	-	-	A	A	A	A	A	B/50%	A/50%	-	-	-	A	-
Ammonium Bicarbonate NH4HCO	A	A	-	A	A	B	A	B	B	B/90%	-	-	-	A	-
Ammonium Bifluoride - 10% NH4HF2	B	A	-	X	A	A	A	C	X	B	A	-	A	A	-
Ammonium Carbonate (NH4)2CO3	X	A	-	B	A	A	A	B	B	B 212° 70%	A	-	A	A	A
Ammonium Casenite	-	-	-	A	-	A	-	-	-	B	-	-	-	-	-
Ammonium Chloride NH4Cl (Sal Ammoniac)	A	A	A	A	A	A	A	X	X	A/30%	A	-	A	A	-
Ammonium Dichromate (NH4)2Cr2O7	A	A	A	A	A	A	-	A	A	B	-	X	-	A	-
Ammonium Fluoride NF4F	B	A	-	B	A	-	A/20%	B/10%	B/20%	A/50%	B	-	A	A	-
Ammonium Hydroxide (Aqua Ammonia) NH4OH	B	A	-	B	A	A	B	B/30%	B/30%	B	A	-	A	A	-
Ammonium Metaphosphate	A	A	-	A	A	-	A	B/90%	B	A	A	B	A	A	A
Ammonium Nitrate	A	A	-	A	A	A	A	B	A	-	A	-	A	A	-
Ammonium Nitrite NH4NO2	A	-	-	A	A	A	-	-	-	A	A/70%	A	A	A	A
Ammonium Oxalate (NH4OOC)2	A	-	-	A	-	A	-	-	-	-	B	-	B	A	-
Ammonium Persulfate (NH4)2S2O8	B	A	-	A	A	A	A	C	X	A	A	-	A	A	-
Ammonium Phosphate, (NH4)H2PO4 Monobasic	A	A	B	A	A	A	A	X	X	B	A	A	A	A	-
Ammonium Phosphate, Di Basic (NH4)2HPO4	A	-	-	A	A	A	A	B	-	A	A	B	A	A	A
Ammonium Phosphate, Tri-Basic (NH4)2PO4 * 3H20	A	-	-	A	A	A	A	X	-	B	A	-	A	A	-
Ammonium Sulfate (NH4)2SO4	A	A	C	A	A	A	A	X	B	A/212° 80%	A	B	A	A	A
Ammonium Sulfide (NH4)2S	A	-	A	A	-	A	B	C	B	B	A	-	A	A	-
Ammonium Sulfite (NH4)2SO * 3H2O	A	-	-	-	A	-	A	C	X	B	A	X	A	A	-
Ammonium Thiocyanate NH4SCN	A	A	-	A	A	-	A	C	C	A/50%	B	-	A	-	A
Ammonium Thiosulfate (NH4)2S203	A	A	-	A	A	A	A	A/40%	X	A/10%	-	-	B	A	-
n-Amyl Amine (1-Aminopentane) CH3CO2C3H11	C	X	-	X	A	-	X	-	-	-	-	-	-	A	-
Amyl Borate C5H11B03	A	X	-	B	A	B	A	-	-	-	-	-	-	A	-
Amyl Chloride (Chloropentane) CH3(CH2)4Cl	C	X	-	X	A	C	A	X	A	A	X	A	A	A	-
Amyl Chloronaphthalene	X	-	-	X	A	C	A	-	-	-	-	-	-	A	-
Amyl Naphtalene C15H18	X	X	-	X	A	C	A	-	-	-	-	-	-	A	-
Amyl Phenol C6H4(OH)C5H11	X	-	-	-	A	-	A	A	A	A	-	A	-	A	-
Anilene (Anilene Oil) (Amino Benzene) C6H5NH2	X	C	X	X	A	A	B	B	A	A	A	B	A	A	A
Anilene Dyes	X	C	-	X	A	B	B	B	C	B	A	-	A	A	-
Anilene Hydrochloride C3H5NH2 * HCl	C	-	-	X	A	A	B	X	X	X	X	-	A	A	-
Animal Gelatin	A	A	-	A	A	A	A	-	-	A	A	-	A	A	-
Anisole (Methylphenyl Ether) C6H5OCH3	C	-	-	X	A	-	X	B	B	B	-	B	-	A	-
Ansul Ether	C	-	-	X	A	X	X	-	-	-	-	-	-	A	-
Anthraquinone C14H802	A	-	-	-	A	-	-	B	B	B	-	A	-	A	-
Anti-Freeze - Alcohol Base	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-
Anti-Freeze - Glycol Base	A	A	A	B	A	A	A	A	A	A	A	A	A	A	-
Antimony Pentachloride SbCl3	X	-	-	-	A	-	-	A	A	A	-	A	-	A	-
Antimony Trichloride SbCl5	B	A	-	-	A	-	A	B	A	A	A	B	A	A	-
Aqua Regia (Nitric & Hydrochloric Acid)	X	X	-	X	A	X	B	X	X	X	C	C	A	A	X

Rating Key: (A) Excellent (B) Good (C) Fair to Poor Data limited to % concentration and/or temperature (X) Not Recommended (-) No Data Available 0F show n. Where not show n, temperature is 70 F ambient.

	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Aroclor PCB Mixtures	C	X	-	X	A	-	A	A	B	A	-	-	-	A	-
Aromatic Hydrocarbons C6H5R	X	X	C	X	A	C	A	A	A	A	X	-	A	A	-
Aromatic Solvents (Benzene, etc.)	C	X	X	X	A	-	A	A	B	A	B	-	A	A	-
Arsenic Acid AsH3O4	B	A	-	A	A	A	A	A	X	B	A	B	A	A	A
Arsenic Trichloride (Arsenic Butter) AsCl3	C	X	-	A	A	B	X	B	B	X	-	-	-	A	-
Absorbic Acid C6H806	-	-	-	-	A	-	A	A	X	A	-	-	-	A	-
Askarel (Pyranol) PCB Mixtures	B	X	-	X	A	X	C	-	-	A	-	-	-	A	-
Asphalt Hydrocarbons	B	X	-	C	A	B	A	A	B	A	A	-	A	A	-
Asphalt Topping	B	-	-	A	A	-	B	-	A	A	-	B	A	A	-
ASTM - Ref Motor Fuel A (Aliphatic)	A	X	A/158°	B	A	C	A	A	A	A	-	-	-	A	-
ASTM - Ref Motor Fuel B (30% Aromatic)	A	X	A/158°	X	A	X	A	A	A	A	-	-	-	A	-
ASTM - Ref Motor Fuel C (50% Aromatic)	B	X	C	X	A	X	A	A	A	A	-	-	-	A	-
ASTM - Ref Oil #1 (High Anilene)	A	X	A/212°	B	A	B	A	A	A	A	-	-	-	A	-
ASTM - Ref Oil #2 (Medium Anilene)	A	X	A	B	A	-	A	A	A	A	-	-	-	A	-
ASTM - Ref Oil #3 (Low Anilene)	A	X	A/212°	C	A	-	A	A	A	A	-	-	-	A	-
ASTM - Ref Oil #4 (High Anilene)	B	X	-	X	A	-	A	A	A	A	-	-	-	A	-
Aviation Gasoline	A	X	-	C	A	X	A	A	A	A	-	-	-	A	-
Barbeque Sauce Water, oils, spices	A	-	-	A	A	B	-	-	X	A	A	-	A	A	-
Barium Carbonate BaCO5	A	A	-	A	A	A	A	X	B	B	A	-	A	A	A
Barium Chloloride Dihydrate BaCl2 * 2H2O	A	A	-	A	A	-	A	B/50%	B	B/212°	A	A	A	A	A
Barium Cyanide Ba(CN)2	C	-	X	A	-	A	A	-	-	A	X	-	-	A	-
Barium Hydroxide (Barium Hydrate) Ba(OH)2	A	A	B	A	A	A	A	X	B	B	A	A	A	A	-
Barium Nitrate Ba(NO3)2	A	-	-	A	A	A	-	B	A	A	A	B	A	A	A
Barium Sulfate (Blanc Fixed) BaSO4	A	A	X	A	A	A	A	B	B	B	A	B	A	A	A
Barium Sulfide BaS	A	A	-	A	A	A	A	X	-	B	A	-	A	A	-
Beef Extract	A	-	-	A	A	-	A	-	X	A	-	-	-	A	-
Beer Water, Carbonate	C	A	B	A	A	A	A	A	X	A	A/75°	A	A/175°	A	A
Beet Sugar Liquors (Sucrose)	A	A	-	A	A	A	A	A	B	A	A	B	A	A	-
Benzaldehyde C6H5CHO	X	B	B	X	A	B	X	A	A	A	X	-	A	A	A
Benzene (Benzol) C6H6	X	X	C/70°	X	A	C	B	B	B	A/167°	X	A	B	A	A
Benzene Sulfonic Acid C6H5DO3H	X	C	-	A	A	-	A	C	A	A	X	-	B/100°	A	A
Benzoic Acid (Benzene Carboxylic Acid) C6H5COOH	X	B	-	B	A	A	A	B	X	B	X	B	A	A	A
Benzoyl Chloride C6H2COCI	X	X	-	X	A	A	X	X	X	B	A	A	A	A	A
Benzyl Acetate CH3CO2 CH2C6H5	X	-	-	-	A	A	X	A	A	A	-	-	-	A	-
Benzyl Benzoate C6H5CO2CH2C6H5	X	B	-	X	A	C	A	A	B	B	-	-	-	A	-
Benzyl Chloride (Chlorotoluene) C6H5CH2CI	X	X	-	X	A	C	A	X	A	B	X	-	A	A	-
Benzyl Dichloride (Benzal Chloride) C6H5CHCI	X	X	-	X	A	-	A	X	B	A	B	-	A	A	-
Benzol (Benzene) C6H6	X	X	C/70°	X	A	B	B	B	B	-	X	A	B	A	A
Biphenyl (Diphenyl) C6H5C8H5	X	X	-	X	A	-	A	A	A	-	-	-	-	A	-
Bismuth Subcarbonate (Bismuth Carbonate) (Bi0)2CO3	A	A	-	A	A	-	A	-	-	B/10%	B	-	A	A	-
Black Sulfate Liquor	B	A	B	A	A	B	A	C	B	A	-	-	-	A	-
Blast Furnace Gas CO,H2,CH4,CO2,N2	C	-	B	A	A	-	A	-	-	-	-	-	-	A	-
Bleach Solutions Water, chlorine, oxygen	X	A	X	X	A	B	B	X	-	B	B/3%	-	A	A	-
Borax (Sodium Borate) B4Na202	B	A	A	A	A	A	A	B	B	A	A	B	A	A	A
Bordeaux Mixture Copper sulfate salts	A	A	B	A	A	A	-	-	-	A	-	-	-	A	-
Boric Acid (Boracic Acid) H3BO3	A	A	A	A	A	A	A	A	X	A/30%	A	C	A	A	A
Brake Fluid (non-petroleum base) Silcones or glycols	X	A	-	A	A	A	-	A	A	A	X	-	-	A	-
Brewery Slop	A	-	-	A	A	A	A	-	A	A	-	-	-	A	-
Brine (Sodium Chloride) Salt Water	A	A	B	A	A	A	A	-	X	A	A	-	A	A	-
Bromine - Anhydrous Br2	X	C	X	X	A	C	A	B	C	X	X	-	A/150°	A	-
Bromine Trifluoride BrF3	X	X	-	X	A	C	X	A	-	B	X	-	-	A	-

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Bromine Water	X	X	-	B	A	B	B	X	-	X	C	-	A	A	-
Bromobenzene C65H5Br	X	X	-	X	A	X	B	X	X	A	X	-	-	A	-
Bromochloromethane BrCH2Cl	X	B	-	X	A	-	C	X	B	B	-	-	-	A	-
Bromotoluene C6H4BrCH3	X	-	-	-	A	-	B	X	B	A	-	-	-	A	-
Bronzing Liquid	X	B	-	X	A	A	X	-	-	A	-	-	-	A	-
Butadiene C4H6	X	C	-	C	A	A	C	A	-	A	X	-	A	A	A
Butane (LPG) (Buty Hydride) C4H10	A	X	A	B	A	C	A	A	A	A	X	B	A	A	A
Butter Fats	A	A	B	C	A	A	A	A	X	A	A	-	-	A	-
Buttermilk Fats, water	A	-	-	A	-	A	A	A	X	A	A	-	A/100°	A	-
Butyl Acetate CH3CO2(CH2)3CH3	X	B	-	X	A	C	X	A	A	A	X	-	B	A	-
n-Butyl Acetate CH3CO2(CH2)3CH3	X	B	-	X	A	B	X	A	A	A	-	-	-	A	-
Butyl Acetyl Ricinoleate C24H4405	C	C	-	X	A	B	B	-	A	-	-	-	-	A	-
Butyl Acrylate CH2CHCO2C4H9	X	X	-	X	A	C	X	-	-	-	-	-	C	A	-
Butyl Amine (Aminobutane) CH3(CH2)CH2NH2	B	X	-	X	A	A	X	A	A	A	X	C	B/70°	A	A
Butyl Benzoate C6H5COO (CH2)3CH3	-	B	X	X	A	C	A	B	B	B	-	-	-	A	-
Butyl Butyrate CH3(CH2)2 CH2CO2C4H2	X	-	-	-	A	-	X	A	A	A	-	-	-	A	-
Butyl Carbitol CH3(CH2)3OCH CH2OCH2CH2OH	A	A	-	B	A	B	A	-	-	-	-	-	-	A	-
Butyl Cellosolve HOCH2CH2OC4H9	B	A	-	C	A	A	C	A	A	A	A	A	B	A	-
Butyl Chloride (Chlorobutane) CH3(CH2)3CL	X	-	-	-	A	-	A	X	B	B	X	-	A	A	-
Butyl Ether (Dibutyl Ether) (CH3(CH2)3CL	A	-	-	B	A	-	C	A	B	A	X	-	A/100°	A	A
Butyl Oleate C22H4202	-	C	-	X	A	C	A	-	-	-	-	-	-	A	-
Butyl Stearate CH3(CH2)16 CO2(CH2)3CH3	A	C	-	X	A	C	B	B	B	B	-	-	A	A	-
Butylene (Butene) C4H8	B	X	-	X	A	X	B	A	-	A	X	-	A	A	A
Butyraldehyde CH3(CH2)2CH0	X	C	-	X	A	C	X	A	A	A	-	-	B	A	-
Butyric Acid CH3(CH2)C02H	C	C	B	X	A	C	X	A	A	A	A	-	A	A	-
Butyric Anhydride (CH3CH2CH2CO)2O	C	C	B	X	A	A	C	A	X	B	-	X	A	A	A
Butyronitrile CH3CH2CH2CN	C	A	-	-	A	-	-	A	-	A	-	A	-	-	A
Calcium Acetate Hydrate Ca(CH3COO)2 * H20	X	A	X	C	X	A	X	C	-	B	-	-	-	-	A
Calcium Bisulfite Ca(HSO3)2	B	A	-	C	A	-	X	C	C	B	-	-	-	A	-
Calcium Carbonate (Chalk) CaCO3	A	A	-	A	A	-	A	C	B	A/90°	A	X	A	A	A
Calcium Chlorate Ca(ClO3)2	A	A	-	A	A	A	A	C	B	B	A	A	A	A	-
Calcium Chloride (Brine) CaCl2 * 6H20	A	A	-	A	A	-	A	B/30%	B	A/30%	A	-	A	A	-
Calcium Hydrosulfide (Calcium Sulfhydrate) Ca(HS)2 * 6H20	A	A	-	A	A	A	A	-	A	A	A	X	A	A	A
Calcium Hydroxide (Slaked Lime) Ca(OH)02	A	A	-	A	A	A	A	X	B	B	A	-	A	A	-
Calcium Hypochlorite 20% (Calcium Oxichloride) Ca(ClO)2	C	B	X	X	A	A	A	X	X	B	A	A	A	A	A
Calcium Nitrate Ca(NO3)2	A	A	-	A	A	A	A	B/212° 40%	B/212° 30%	B/212° 40%	A	X	A	A	A
Calcium Oxide (Unslaked Lime) CaO	A	A	B	A	A	B	A	A	A	A	B	-	A	A	-
Calcium Silicate Ca2SiO4	A	-	-	-	A	-	A	A	B	A	-	-	-	A	-
Calcium Sulfate (Gypsum) CaSO4	A	A	-	A	A	A	A	C	B/10%	A/10%	A	X	A	A	A
Calcium Sulfide CaS	A	A	-	B	A	A	A	A/20%	B	B	A/120°	-	A	A	-
Calcium Sulfite CaSO3 * 2H2O	A	A	-	A	A	A	A	B/10%	B	A/10%	B/70°	-	B/70°	A	-
Calgon (NaPO3)6	A	-	-	A	-	A	-	-	X	A	A	-	-	A	-
Cane Juice Sucrose, water	A	-	-	A	-	A	A	B	A	A	X	-	-	A	-
Cane Sugar Liquors	A	A	B	A	A	A	B	A	A	A	A	-	A	A	-
Capryl Alcohol (Octanol) CH3(CH2)6CH2OH	A	C	-	B	A	-	B	A	A	A	-	-	-	A	-
Caprylic Acid (Octanoic Acid) CH3(CH2)6 COOH	C	-	-	-	A	-	-	A	-	A	-	-	A	A	-
Carbamate H2NCO2R	C	C	-	C	A	A	A	-	-	-	-	-	-	A	-
Carbitol CH3CH2OCH2CH2 OCH2CH2OH	B	C	-	C	A	B	C	A	A	A	-	-	-	A	-
Carbolic Acid (see Phenol) C6H5OH	X	C	X	C	A	C	A	B	A	B	C	X	A/150°	A	-
Carbon Dioxide (Carbonic Acid Gas) CO2	A	B	A	A	A	B	A	A	A	A	A	A	A	A	A
Carbon Disulfide (Carbon Bisulfide) CS2	X	X	C	X	A	X	A	A	B	A/90°	X	B	A	A	A

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Carbon Monoxide CO	C	C	A	A	A	A	C	A	A	A	A	B	A	A	-
Carbon Tetrachloride R10 (Tetrachloromethane) CCL4	C	X	X	X	A	X	A	X	C	B	X	B	A	A	A
Carbonated Beverages C02/H20	B	B	A/50%	X	A	A	A	X	X	A	A	A	A	A	A
Carbonic Acid (liquid) H2CO3	B	-	C	A	A	A	A	A	X	B	A	A	A	A	A
Casein a phosphoprotein	A	A	-	A	A	-	A	B	-	B	-	-	-	A	-
Catsup (Ketchup)	A	A	-	C	A	A	A	B	X	A	A	-	-	A	-
Cellosolve (Glycol Ethers) HOCH2CH2OR	C	C	X	C	A	C	B	A	-	A	A/100°	A	A	A	A
Cellulose Acetate C8H12O5	B	-	-	B	A	-	C	B	B	A	C	-	A	A	-
Cellelube Hydraulic Fluids (Phosphate Esters)	X	A	C	X	A	X	B	A	A	A	-	-	-	A	-
Chlorinated Lime - 35% Bleach CA(ClO)2	C	A	X	X	A	X	A	-	X	A	-	-	-	A	-
Chlorinated Water	C	-	X	C	A	-	A	X	X	B	B	X	A	A	-
Chlorine - Dry CL2	C	-	X	C	A	-	A	X	-	B	X	-	A	A	-
Chlorine - Wet Cl2/H20	C	X	X	X	A	C	A	B	C	A	X	X	A	A	X
Chlorine - Anhydrous Liquid Cl2	X	-	-	X	A	C	A	X	X	X	-	A	A	-	-
Chlorine Dioxide ClO2	X	C	-	X	A	X	B	B	-	X	X	-	A	A	-
Chlorine Trifluoride ClF3	X	X	-	X	B	X	B	A	-	A	X	-	-	-	-
Chloroacetic Acid (Monochloroacetic Acid) ClCH2COOH	X	B	X	C	A	-	C	X	X	X	A	X	A	A	A
Chloroacetone (Monochloroacetone) ClCH2COCH3	X	A	-	C	A	C	C	X	B	B	X	-	-	A	-
Chlorobenzene (Monchlorobenzene) C6H5Cl	X	X	X	X	A	C	A	X	B	B	X	A	A/150°	A	A
Chlorobutadiene (Chloroprene) C4H5CL	X	X	-	X	A	C	A	X	B	B	X	-	-	A	-
Chlorobromomethane ClCH2Br	X	-	-	X	A	X	A	X	B	B	X	-	-	A	-
Chloroform CHCl3	X	X	X	X	A	X	A	X	A	A	X	A	A	A	A
1-Chloronaphthalene C10H7Cl	X	X	-	X	A	X	C	X	B	B	X	-	-	A	-
Chlorosulfonic Acid HSO3CL	X	X	X	X	A	X	X	B	B	B	X	-	X	A	X
o-Chlorophenol C6H5ClO	X	X	-	X	A	-	B	B	B	B	-	B	A	A	A
Chlorothene (Chlorinated Solvents) CH3CCL3	X	-	-	X	A	-	C	X	X	A	-	-	-	A	-
Chlorotrifluoroethylene C2H2ClF	X	-	-	-	A	-	-	B	B	B	-	-	-	A	-
Chlorox	C	A	X	B	A	B	A	-	X	A	B	-	A	A	-
Chocolate Syrup Corn Syrup, water, sugar	A	-	-	A	A	A	-	-	X	A	A	-	-	A	-
Chromic Acid - to 25% H2CrO	X	A	X	X	A	A	A	X	X	X	C	X	A/120%	A	A
Chromic Acid - Over 25% H2CrO4	X	C	X	X	A	A	A	X	X	X	C	X	A/120%	A	A
Cider (Apple Juice) Sucrose, water	A	B	B	A	A	A	A	B	X	A	-	-	-	A	-
Citric Acid C6H8O7 * H20	B	A	A	A	A	A	A	C	X	A/30%	A	B	A	A	A
Citrus Pectin Liquor	A	-	-	A	A	-	A	-	-	A	A	-	-	A	-
Cobalt Chloride CoCl2 * 6H20	A	C	-	A	A	A	A	X	-	-	A	-	-	A	-
Coffee Fatty oils, acids. cellulose, water	A	-	-	A	A	A	-	A	-	A	A	-	-	A	-
Coke Oven Gas H2(53%),CH4(26%)N2(11%),CO(7%)&hydrocarbons (3%)	C	-	-	C	A	B	A	-	-	-	-	-	A	A	-
Copper Acetate Cu(C2H2O2)2 * CuO * 6H20	B	A	-	C	A	A	A	X	A/90%	B/10%	A	-	A	A	-
Copper Chloride CuCl2 * 2H2O	A	A	A	A	A	A	A	X	X	X	A	-	A	A	-
Copper Cyanide CuCN	A	A	-	A	A	A	A	X	A	A/10%	A	-	A	A	A
Copper Fluoroborate	B	-	-	A	-	A	A	X	X	X	-	-	-	A	-
Copper Nitrate Hexahydrate Cu(NO3)2 * 6H20	A	A	-	A	A	A	A	X	X	A	A	A	A	A	A
Copper Sulfate (Blue Copperas) CuSO4 * 5H20	A	A	A	A	A	A	A	X	X	A/10%	A	A	A	A	A
Copper Sulfide CuS	A	-	-	-	A	-	A	-	-	-	-	-	-	A	-
Cream	A	-	-	C	A	A	A	-	X	A	A	-	-	A	-
Creosote, Wood-Tar Mixture of phenols	A	X	X	B	A	B	A	B	B	A	X	X	-	A	-
Cresylic Acid (cresol) C8H10O2	C	X	-	X	A	B	A	B	C	A	X	X	A/150°	A	-
Crotonaldehyde CH3CHCHCHO	X	-	-	A	A	-	A	A	A	A	-	-	-	A	-
Cumeme (Isopropylbenzene) C6H5CH(CH3)2	X	X	-	X	A	-	A	B	B	B	-	-	-	A	-
Cyclohexane C6H12	B	X	A	X	A	C	A	B	B	B	X	A	A	A	A
Cyclohexanol C6H11OH	B	X	-	A	A	B	A	C	B	A	B	A	A/150°	A	A

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Cyclohexanone C6H100	X	C	-	X	A	C	X	B	B	B	X	A	A	A	A
Cyclopentane C5H10	B	X	-	A	A	-	A	B	B	B	-	-	-	A	-
Cymene (Isopropyltoluene) C10H14	C	X	-	X	A	-	A	-	-	-	-	-	-	A	-
Decahdronaphthalene (Decalin) C10H18	X	X	-	X	A	-	A	-	-	-	-	-	-	A	-
Decanal CH3(CH2)8CHO	X	X	-	-	A	-	X	-	-	-	-	-	-	A	-
Decane CH3(CH2)8CH3	B	C	-	X	A	C	A	-	-	-	A/70%	-	A	A	-
Detergent Solutions	A	A	B	A	A	A	A	B	-	A	A	A	-	A	A
Developing Fluids & Solutions	A	C	X	A	A	B	A	-	X	A	-	-	-	A	-
Dextrose C6H12O6	B	A	B/140%	B	A	B	A	A	X	A	A	-	A	A	-
Dibenzyl Ether (C6H5CH2)2O	X	C	-	X	A	C	C	B	B	B	-	-	C	A	-
Dibenzyl Sebecate C24H304	X	C	A	X	A	C	B	-	-	-	-	-	-	A	-
Dibutyl Amine (C4H9)2NH	C	C	X	-	X	A	C	X	-	A	A	X	B/70%	A	-
Dibutyl Phthalate (DBP) C6H4(CO2C4H9)2	X	A	A	A	X	A	A	B	A	A	B	X	-	X	A
Dibutyl Sebecate (DBS) C18H34O4	X	C	-	X	A	B	C	-	A	A	C	-	-	A	-
Dichloroacetic Acid Cl2CHCOOH	X	-	-	X	A	B	X	-	-	-	-	-	-	A	-
o-Dichlorobenzene C6H4Cl2	X	X	X	X	A	X	A	X	B	B	B	-	A/150%	A	-
Dichlorobutane C4H8Cl2	X	-	-	-	A	-	A	X	B	B	-	-	-	A	-
Dichchloroethyl Ether [ClCH2CH2]2O	X	-	-	-	A	-	-	B	-	-	-	-	-	A	-
Dichloro Isopropyl Ether C6H12OCl2	X	X	-	X	A	X	X	-	-	-	X	-	-	A	-
Dichclohexylamine (C6H11)2NH	X	X	-	X	A	B	B	-	-	-	-	-	-	A	-
Diethanol Amine (HOCH2CH2)2NH	B	-	-	A	A	-	-	-	A	A	A	-	-	A	-
Diethyl Amine (CH3CH2)2NH	C	C	-	C	A	-	X	B	B	A	A	-	A	A	-
Diethyl Benzene C6H4(C2H5)2	X	X	-	X	A	C	A	-	-	-	-	-	-	A	-
Diethyl Carbonate (C2H5O)2CO	X	-	-	X	A	-	-	-	A	-	-	-	-	A	-
Diethyl Ether (Ether) (CH3CH2)2O	B	X	C	C	A	A	X	B	A	A	X	A	A	A	A
Diethyl Phthalate (DEP) C6H4(CO2C2H5)2	X	-	-	-	-	-	C	A	A	A	-	-	-	-	-
Diethyl Sebecate C14H2604	X	C	A	X	A	B	B	A	A	A	A/120°	-	A/120°	A	-
Diethylene Ether (Dioxane) C4H8O2	X	A	-	X	A	B	X	A	A	A	-	-	-	A	-
Diethylene Glycol (DEG) HOCH2CH2OCH2	A	A	A	A	A	A	A	A	A	A	A	-	-	A	-
Diethylene Triamine (NH2C2H4)2NH	B	-	-	-	A	-	-	A	A	A	-	-	-	A	-
Dilsobutyl Ketone C4H9COC4H9	X	B	-	X	A	-	X	A	A	A	B	-	-	A	-
Diisobutylene [HC=C(CH2)2]	B	-	-	C	A	C	C	-	-	-	A	-	A	A	A
Diisodecyl Adipate (DIDA) C26H50O4	X	-	-	-	A	-	C	-	-	-	-	-	-	A	-
Diisodecyl Phthalate (DIDP) C28H47O4	X	A	-	X	A	-	C	-	-	-	-	-	-	A	-
Diisooctyl Adipate (DIOA) C22H42O4	X	-	-	-	A	-	C	A	A	A	-	-	-	A	-
Diisooctyl Phthalate (DIOP) C24H39O4	X	-	-	-	A	-	C	-	-	-	-	-	-	A	-
Diisooctyl Sebecate (DIOS) C26H46O4	-	B	-	-	A	-	A	-	-	-	-	-	-	A	-
Diisopropyl Amine [(CH3)2CH]2NH	B	-	-	-	A	-	-	-	-	-	-	-	-	A	-
Diisopropyl Benzene C6H4 * [CH(CH3)2]2	X	X	-	X	A	C	A	-	-	-	-	-	-	A	-
Diisopropyl Ketone [(CH3)2CH]2CO	X	A	-	X	A	C	X	-	-	A	-	-	-	A	-
N, N-Dimethylaniline C6H5N(CH3)2	X	C	-	X	A	B	X	B	B	-	X	-	A	A	A
Dimethyl Ether CH3OCH3	A	-	-	B	A	-	A	B	B	B	-	-	-	A	-
N,N-Dimethyl Formamide (DMF) HCON(CH3)2	C	B	C	X	A	A	X	A	-	A	A/120°	B	A/120°	A	A
Dimethyl Phthalate C6H4(CO2CH3)2	X	B	B	X	A	A	B	A	-	A	X	-	A/70°	A	A
Dimethyl Sulfate (CH3)2SO4	X	-	-	-	A	-	X	-	A	-	-	-	-	A	-
Dimethyl Sulfide (CH3)2S	X	-	-	-	A	-	-	A	A	A	-	-	-	A	-
Dinitrotoluene (DNT) CH3C6H3(NO2)2	X	X	-	X	A	B	C	-	-	A	-	-	-	A	-
Dioctyl Phtahalate (DOP) C24H38O4	X	B	A	X	A	B	B	A	A	A	-	-	-	A	-
Dioctyl Sebecate C26H50O4	X	C	-	X	A	C	C	A	A	A	-	-	-	A	-
Dioxolanes (Dioxolans) Glycol ethers	X	B	-	X	A	C	C	-	-	-	-	-	-	A	-
Dipentene (Limonene) C10H16	B	X	-	X	A	C	A	A	A	A	-	-	-	A	-

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CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T366	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Diphenyl Oxides (Phenyl Ether) C6H5OC6H5	X	C	-	X	A	C	A	B	A	A	-	-	A	A	-
Dipropylamine (CH3CH2CH2)2 NH	B	-	-	-	A	-	-	-	-	-	-	-	-	A	-
Dipropylene Glycol (C3H6OH)2O	A	-	-	-	A	A	A	-	-	-	A	-	A	A	-
Dipropyl Ketone (Butyrone) (C3H7)2CO	X	-	-	-	A	-	-	-	-	-	-	-	-	A	-
Divinyl Benzene (DVB) C6H4(CH=CH2)2	X	-	-	-	A	-	A	-	-	-	-	-	-	A	-
Dodecyl Benzene (Alkane) C6H5(CH2011CH3	X	-	-	-	A	-	A	A	A	A	-	-	-	A	-
Dow Corning (Silicones) [(CH3)2SiO]2	A	-	-	A	A	A	A	A	-	A	-	-	-	A	-
Dowtherm (Biphenyl & Phenyl Ether) (C6H5)2 AND (C6H5)2O	X	X	-	X	A	X	A	A	B	A	-	-	-	A	-
Dry Cleaning Fluids Chlorinated hydrocarbons	C	-	-	X	A	X	A	X	A	A	X	-	-	A	-
Dyes	-	-	-	C	-	B	A	B	-	A	-	-	-	A	-
Epichlorohydrin C3H5ClO	X	B	X	X	A	B	X	A	A	A	A	A	X	A	A
Epsom Salts (Magnesium Sulfate) MgSO4 * 7H20	A	A	-	A	A	A	A	A	-	A	A	-	A	A	-
Ethane C2H6	A	X	-	C	A	C	A	A	A	A	C	A	-	A	-
Ethanolamine (Aminoethanol) H2NCH2 CH2OH	B	B	-	C	A	A	X	B	A	A	X	X	C	A	A
Ethyl Acetate CH3COOC H2CH3	X	B	C	X	A	A	X	A	A	A	B	A	A	A	-
Ethyl Acetoacetate CH3COCH2 (Acetoacetic Ester) COOCH2CH3	X	C	-	X	A	C	X	A	A	A	-	-	A/70°	A	-
Ethyl Acrylate CH2CHCO CH2CH3	X	C	-	X	A	C	X	A	A	A	B	-	B/70°	A	-
Ethyl Aluminum Dichloride CH3CH2AlCl2	X	-	-	-	A	-	B	-	-	-	-	-	-	A	-
Ethyl Amine (Monoethylamine) CH3CH2NH	X	A	-	C	A	-	X	B	B	A	-	-	-	A	-
Ethyl Benzene CH3CH2C6H5	X	X	-	X	A	X	A	B	B	B	X	A	A	A	-
Ethyl Benzoate C6H5CO2CH2CH3	X	C	-	X	A	C	A	A	A	A	B	-	-	A	-
Ethyl Bromide (Bromoethane) CH3CH2Br	X	B	-	B	A	X	-	X	A	A	-	-	-	A	-
Ethyl Butyl Acetate CH3CO2CH2 CH(2H5)2	X	-	-	-	A	-	X	-	-	-	-	-	-	A	-
Ethyl Butyl Ketone CH3CH2COC4H9	X	-	-	-	A	-	X	-	-	-	-	-	-	A	-
Ethyl Butyraldehyde C6H12O	X	-	-	-	A	-	X	-	-	-	-	-	-	A	-
Ethyl Butyrate CH3CH2CH2 CO2C2H5	X	X	-	X	A	-	C	B	A	A	B	-	-	A	A
Ethyl Caprylate CH3(CH2)5 CO2C2H5	X	X	-	X	A	-	-	-	-	-	-	-	-	A	-
Ethyl Cellosolve C2H5O(CH2)2OH	C	B	-	C	A	B	X	-	-	-	-	-	-	A	-
Ethyl Cellulose (Ethocel)	B	B	B	B	A	A	C	B	A	B	C	-	-	A	B
Ethyl Chloride (Chloroethane) C2H5Cl	A	A	X	C	A	X	A	X	B	A	X	A	A	A	A
Ethyl Chlorocarbonate (Ethyl Chloroformate) ClCO2C2H5	-	-	-	C	A	A	A	-	-	-	-	-	-	A	-
Ethyl Cyanide (Propionitrile) C2H5CN	X	A	-	B	A	-	X	-	-	-	-	-	-	A	-
Ethyl Formate HCOOCH2 CH3	X	C	-	B	A	B	A	B	A	B	-	-	-	A	-
Ethylexyl Acetate CH3CO2CH2 CH(C2H5)C4H9	X	-	-	-	A	-	X	A	-	A	A	-	A/70°	A	-
Ethylhexyl Alcohol (Ethylhexanol) C8H17OH	A	-	-	-	A	-	B	A	A	A	-	-	-	A	-
Ethyl Iodide CH3CH2I	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-
Ethyl Isobutyrate (CH3)2	X	X	-	X	A	-	-	-	-	-	-	-	-	A	-
Ethyl Mercaptan (Ethanethiol) CH3CH2SH	X	X	-	C	A	C	B	B	A	B	-	-	-	A	-
Ethyl Oxalate C2H502C CO2C2H5	X	A	-	X	A	B	B	-	-	-	-	-	-	A	-
Ethyl Pentachlorobenzene C2H5C6Cl5	X	-	-	X	A	X	A	X	-	-	X	-	-	A	-
Ethyl Propionate CH3CH2 COOCH2CH3	X	X	-	X	A	-	-	A	A	A	-	-	-	A	-
Ethyl Silicate Si(OCH2CH3)4	A	A	-	A	A	B	A	B	A	A	-	-	-	A	-
Ethyl Sulfate C2H5OSO2OH	A	-	-	-	A	B	A	-	-	X	-	-	-	A	-
Ethylene (Ethene) C2H4	B	C	-	A	A	C	A	A	A	A	-	-	-	A	-
Ethylene Chlorohydrin ClCH2CH2OH	X	A	X	B	A	C	B	-	B	A	X	-	A/70°	A	-
Ethylene Diamine (CH2)2(NH2)2	B	A	-	A	A	A	X	C	A	A	A	A	B	A	A
Ethylene Dibromide (Ethylene Bromide) Br(CH2)Br	X	C	-	X	A	-	B	X	X	B	X	-	A	A	-
Ethylene Glycol (Ethylene Alcohol (Glycol) Cl(CH2)2Cl	A	A	B	A	A	A	A/70°	A	A	A	A/120°	A	A	A	A
Ethylene Glycol Monobutyl Ether (Butyl Cellosolve) C4H9OCH2CH2OH	B	B	-	X	A	A	C	A	A	A	B	B	A	A	-
Ethylene Glycol Monobutyl Ether Acetate (Cellosolve Acetate) C2H50(CH2)2 O2CCH3	C	B	-	X	A	-	C	A	A	A	-	A	-	A	-
Ethylene Glycol Monomethyl Ether (Methyl Cellosolve) CH3O(CH2)2OH	C	B	-	C	A	B	X	B	B	A	-	-	-	A	-

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Ethylene Oxide (CH2)2O	X	B	A	X	A	A	C	A	B	A	C	-	A	A	X
Ethylene Trichloride (Triclorothene) ClCHCCl2	X	X	-	X	A	X	A	X	A	A	X	-	-	A	-
Ethylidene Chloride CH3CHCl2	X	X	-	X	A	-	-	X	B	A	-	-	-	A	-
Fatty Acids C8H20+1COOH	B	X	B	C	A	B	A	A/90°	X	A	B	A	A	A	-
Ferric Chloride FeCl3	A	A	B	A	A	A	A	X	X	X	A	A	A	A	A
Ferric Hydroxide FeHO2	B	A	-	-	A	-	C	-	-	A	-	A	-	A	-
Ferric Nitrate Fe(NO3)3	A	A	-	A	A	A	A	X	X	B	A	A	A	A	A
Ferric Sulfate Fe2(SO4)3	A	A	-	A	A	A	A	C	X	B	A	A	A	A	A
Ferrous Chloride FeCl2	A	A	X	A	A	A	A	X	X	B/20%	A	A	A	A	A
Ferrous Sulfate FeSO4	A	A	A	A	A	A	A	A/10%	C	B	A	A	A	A	A
Fluoboric Acid (Flouroboric Acid) HBF4	A	A	X	B	A	A	C	X	X	A/30%	A	A	A	A	A
Fluorine (Liquid) F2	X	C	X	C	A	X	B	A	-	A	X	A	A/70°	A	-
Fluorobenzene FC6H5	X	X	-	X	A	C	A	-	-	-	X	A	-	A	-
Fluosilicic Acid (Sand Acid) H2SiF6	B	B	-	A	A	A	A	X	X	A/212°	A	A	A	A	A
Formaldehyde (Formalin) HCHO	B	A	C/40°	C	A	A	A	A	C	A/90%	A	A	A/120°	A	A
Formamide HCONH2	A	A	-	A	A	-	X	A	B	B	-	A	-	A	-
Formic Acid HCOOH	C	B	C	B	A	A	C	X	X	C	A/70%	A	A	A	A
Freon 11 (Trichlorofluoromethane) CCl3F	C	X	A	C	A	C	B	B	A	A	B	A	A	A	A
Freon 12 (Dichlorofluoromethane) Cl2CF4	B	B	B	B	A	X	B	A	A	A	-	A	A	A	-
Freon 13 (Chlororfluoromethane) ClCF3	A	A	C	A	A	X	A	A	A	A	-	A	-	A	-
Freon 13B1 (Bromotrifloromethane) BrCF3	A	A	-	A	A	-	A	-	-	-	-	A	-	A	-
Freon 14 (Tetrafluoromethane) CF4	X	B	-	X	A	-	-	-	-	-	-	A	-	A	-
Freon 21 (Dichlorofluoromethane) FCHCl2	X	X	-	B	A	X	X	A	-	-	-	A	A	A	-
Freon 22 (Chlorofluoromethane) HCClF2	X	C	X	B	A	X	X	A	A	A	-	A	A	A	-
Freon 113 (Trichlorotetrafluoroethane) Cl3CCF3	B	X	A/130°	A	A	X	B	B	-	A	-	A	A	A	-
Freon 114 (Dichlorotetrafluoroethane) C2Cl2F4	A	C	A	A	A	X	A	B	-	A	-	A	A	A	-
Freon 114B2 (Dibromotetrafluoroethane) C2Br2F4	B	X	-	A	A	X	B	-	-	-	-	A	-	A	-
Freon 115 (Chloropentafluoroethane) C2ClF5	A	A	-	A	A	X	B	A	-	-	-	A	-	A	-
Fruit Juices Water, sucrose	A	A	B	A	A	A	A	A/10%	X	A	A	A	A	A	A
Fumaric Acid (Boletic Acid) Hydrocarbons	C	-	-	B	A	A	A	-	-	-	-	A	-	A	-
Furan (Furfuran) C4H40	X	X	X	X	A	B	C	-	-	-	C	A	X	A	A
Furfuryl Alcohol C5H602	X	B	B	-	A	A	X	A	A	A	-	A	B/100%	A	-
Gallic Acid C6H2(OH)3 COOH	B	B	X	C	A	B	A	A/20%	X	B	A/700	A	A/70%	A	A
Gasoline (unleaded) C4 to C12 hydrocarbons	X	X	A/120°	X	A	X	A	A	A	A	C	A	A	A	A
Gasoline (Petrol) Hydrocarbons	A	X	A	C	A	X	A	A	A	A	C	A	A	A	A
Gelatin Water solube proteins	A	A	B	A	A	A	B	A	A	A	A	B	A	A	-
Glauber's Salt (Sodium Sulfate Decahydrate) Na2so4 * 10H20	A	B	B	A	A	-	A	-	-	-	-	-	-	A	-
Gluconic Acid C6H12O7	C	A	-	-	A	-	A	B	C	A/50%	A	-	-	A	-
Glucose (Corn Syrup) C6H12O6	A	A	B	A	A	A	A	A	A	A	A	A	A	A	-
Glue	A	B	B	A	A	A	A	A	A	B	A	B	-	A	-
Glycerol (Glycerine) C3H8O3	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Glycolic Acid HOCH2COOH	A	A	-	A	-	A	A	-	-	-	A	-	A	A	A
Glycols	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Gold Monocyanide AuCN	A	-	-	A	-	A	A	-	-	X	-	-	-	A	-
Grape Juice Water, sucrose	C	-	-	X	A	A	A	-	X	A	A	-	A	A	-
Grease	A	-	A	X	A	B	A	A	-	A	-	-	-	A	-
Green Sulfate Liquor	B	A	X	B	A	A	A	B	C	A	A	-	-	A	-
Halowax Chlorinated naphthalenes	X	X	X	-	-	X	A	X	-	-	-	-	-	-	-
Heptanal CH3(CH2)5CHO	A	-	-	-	-	-	A	A	A	A	A	C	-	A	A
Heptane C7H16	A	X	B	C	A	X	A	A	A	A	C/140°	A	A	A	A
Hexanal CH3(CH2)4CHO	B	B	-	B	A	-	C	A	B	A	-	-	-	A	-

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CHEMICAL / FORMULA	ELASTOMERS							METAL			PLASTIC				
	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Hexalin (Cyclohexanol) C6H11OH	B	C	-	A	A	-	A	-	-	-	-	-	-	A	-
n-Hexane C6H14	A	X	A	B	A	B	A	A	A	A	C/140°	A	A	A	A
n-Hexane 1 (Hexylene) H2CCH(CH2)2CH3	A	X	-	B	A	X	A	-	-	-	X	A	A	A	-
Hexylene Glycol (Brake fluid) C6H12(OH)2	X	C	-	A	A	-	A	A	A	A	-	-	-	A	-
Honey	-	-	-	A	A	A	-	A	A	A	A	-	-	A	-
Hydrazine (Diamine) H2NNH2	C	A	X	C	A	A	X	A	X	A	X	B	X	A	-
Hydrobromic Acid HBr	X	A	-	C	A	A	A	X	X	X	B	X	A	A	A
Hydrochloric Acid 10% HCl	B	A	-	B	A	A	A	X	C	X	A	X	A	A	A
Hydrochloric Acid 20% HCl	C	A	X	B	A	A	A	X	C	X	A	X	A	A	A
Hydrochloric Acid 37% (Conc.) HCl	C	A	X	C	A	A	B	X	X	X	A	X	A	A	A
Hydrocyanic Acid (Formonitrile) HCN	B	A	X	C	A	A	A	A/10%	X	A	A	X	A	A	-
Hydrofluoric Acid (Conc.) Cold HF 49%	X	B	X	X	A	X	B	X	X	X	X	X	A	A	A
Hydrogen Fluoride (Anhydrous) HF	X	C	X	C	A	-	A	X	X	X	A	-	A	A	-
Hydrogen Peroxide 3% H2O2	B	A	X	B	A	A	A	A	-	-	A	-	A/120°	A	X
Hydrogen Peroxide 10% H2O2	C	A	X	C	A	A	A	A	B	A	A	-	A/120°	A	X
Hydrogen Peroxide 30% H2O2	C	A	X	X	A	A	A	A	X	B	A	-	A/120°	A	X
Hydrogen Peroxide 90% H2O2	X	B	X	B	A	X	A	A	X	A	-	-	A/120°	A	X
Hydrogen Sulfide (Wet) H2S	X	A	A	C	A	A	X	A/90%	X	A/167°	A	C	A	A	A
Hydroquinone C6H4(OH)2	C	-	-	X	A	A	C	A/90%	B	A/10%	-	-	A	A	-
Hydroxyacetic Acid - 10% HOCH2COOH	X	A	-	X	A	A	-	B	-	B	-	-	-	A	-
Hypochlorous Acid HClO	X	B	-	X	A	A	A	X	X	X	A	-	A	A	-
Ink	A	-	-	A	A	A	A	C	X	A	B	-	A	A	-
Iodine I2	B	B	B	B	A	A	A	A	X	X	A	-	A/150%	A	X
Idoform CHI3	-	A	-	-	A	B	-	A	A	A	-	-	A	A	-
Isoamyl Acetate CH3CO2CH2CH2CH (CH3)2	X	B	-	X	A	-	X	A	A	A	-	-	-	A	-
Isoamyl Butyrate C9H18O2	X	-	-	-	A	-	X	A	A	A	-	-	-	A	-
Isoamyl Chloride (CH3)2 CHCH2CH2CI	X	X	-	X	A	-	A	X	-	-	-	-	-	A	-
Isobutyl Acetate CH3CO2CH2 CH(CH)	X	C	-	X	A	-	X	A	A	A	-	-	-	A	-
Isobutyl Amine (CH3)2 CHCOOH	X	-	-	-	A	-	X	-	-	-	-	-	-	A	-
Isobutyl Chloride (CH3)2 CHCH2CI	X	-	-	-	A	-	B	X	B	B	-	-	-	A	-
Isobutyric Acid (CH3)2 CHCOOH	X	A	-	B	A	-	-	A	-	-	-	-	-	A	-
Isododecane (CH3)2 CH(CH2)8CH3	B	X	-	A	A	-	A	B	B	B	-	-	-	A	-
Isooctane (Trimethylpentane) C8H18	A	X	A	B	A	C	A	A	A	A	A	-	A	A	A
Isopentane (CH3)2 CHCH2CH3	A	-	-	-	A	-	A	-	-	-	-	-	-	A	-
Isophorone C9H140	X	C	-	X	A	B	X	A	A	A	-	-	-	A	-
Isopropyl Acetate CH3COOCH (CH3)2	X	B	-	X	A	B	X	A	A	A	B	-	-	A	-
Isopropyl Amine C3H7NH2	X	-	-	-	A	-	X	-	A	A	-	-	-	A	-
Isopropyl Chloride (CH3)2CHCI	X	X	-	X	A	C	B	X	A	A	X	-	-	A	-
Isopropyl Ether (CH3)2CHOCH	C	X	-	C	A	B	C	B	-	A	X	-	A/70%	A	-
Jet Fuels (JP1 to JP6) (ASTM-A, A1 & B)	A	X	X	C	A	X	A	A	A	A	X	A	A	A	A
Kerosine (Kerosene) Hydrocarbons	A	X	A	C	A	X	A	A	A	A	X	A	A	A	A
Lacquers	X	X	X	X	A	C	X	A	B	A	-	B	-	A	-
Lacquer Solvents	X	X	C	X	A	C	X	A	B	A	C	B	X	A	-
Lactic Acid CH3CHOH COOH	B	A	X	B	A	A	A	A	X	A	A	C	A	A	A
Lactol (Aliphatic Naptha Solvent) CH3CHOH CO3C10H7	C	-	-	X	A	-	A	A	A	A	-	-	-	A	-
Latex Rubber emulsion	A	A	A	A	A	A	A	A	-	A	A	B	-	A	-
Lead Acetate (Sugar of Lead) Pb(CH3CO2)2	B	A	-	A	A	A	X	X	-	B	A	-	A	A	A
Lead Chloride PbCI2	-	-	-	B	A	-	-	X	-	B	A	-	A	A	-
Lead Nitrate Pb(NO3)2	B	A	-	A	A	-	A	X	B	B	A	A	A	A	-
Lead Sulfamate	B	-	-	A	A	A	A	-	-	-	A	-	-	A	-
Ligroin (Ligroine (Benzene) Petroleum fraction	A	X	-	B	A	B	A	-	A	A	X	-	-	A	-

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-C/R	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Lignin Liquor Blend of natural aromatic oils	A	-	-	A	A	-	A	-	-	A	-	-	-	A	-
Lime Bleach	A	A	-	C	A	A	A	X	-	-	B	-	-	A	-
Lime Slurries	B	-	C	A	A	B	B	B	-	B	-	-	-	A	-
Lime, Soda (Slaked lime & soda ash) CaO	B	A	-	B	A	A	B	-	-	-	-	-	-	A	-
Lime Sulfur CaS + CaSO4	A	A	-	A	A	B	A	X	-	A	A	-	-	A	-
d-Limonene C10H16	C	X	-	X	A	-	A	A	-	A	-	-	A	A	-
Linoleic Acid C18H3202	B	X	-	X	A	B	B	A	-	A	A	-	A	A	-
Lindol (Tritolyl Phosphate) C21H21O4P4	X	-	-	C	A	A	B	-	-	-	-	-	-	A	-
Lithum Bromide LiBrH20	A	-	-	X	A	-	A	-	A	-	-	A	A	A	A
Lye (Potassium Hydroxide) KOH	C	A	X	B	A	A	B	-	-	A	A	X	A/150°	A	A
Magnesium Carbonate MgCO3	A	C	A	A	A	A	A	A	B	B	A	A	A	A	-
Magnesium Chloride MgCO2O	A	A	A	A	A	A	A	A/20%	B/30%	B/40%	A	B	A	A	A
Magnesium Hydroxide (Milk of Magnesia) Mg(OH)2	B	A	C	B	A	A	A	A/10%	A	A	A	A	A	A	A
Magnesium Nitrate Mg(NO3)2 * 6H20	A	A	-	A	A	A	A	B/50%	B	A	A	-	A	A	A
Magnesium Oxide MgO	A	-	-	A	A	A	B	A/10%	A	A	-	-	-	A	-
Magnesium Sulfate (Epsom Salts) MgSO4 * 7H2O	A	A	B	A	A	A	A	A/70%	A	A/40%	A	A	A	A	A
Maleic Acid (CHCOOH)2	X	X	-	A	A	A	A	A/20%	B/60%	B	A	-	A	A	-
Maleix Anydride C4H2O3	-	X	-	-	A	-	A	A/20%	B	A	-	-	-	A	-
Malic Acid (Apple acid) C4H6O5	B	X	-	C	A	A	A	B	-	A	-	-	-	A	-
Maple Sugar Liquors (Sucrose) Water, sucrose	A	A	-	A	A	B	A	-	-	A	-	-	-	A	-
Mayonnaise Water, fats, oils	A	-	-	A	A	A	-	X	X	A	A	-	-	A	-
Mercuric Chloride HgCl2	A	A	-	B	A	A	A	X	X	X	A	B	A	A	-
Mercuric Cyanide Hg(CN)2	B	A	-	B	A	A	A	X	B	B	A	-	A	A	-
Mercurous Nitrate Hg2(NO3)2 * 2H2O	B	A	-	B	A	-	A	X	B	B/212°	A	-	A	A	-
Mercury Hg	A	A	A	A	A	A	A	X	A	A	X	X	X	X	-
Mesityl Oxide (CH3)2c = CHCOCH3	X	B	-	X	A	C	X	A	A	A	-	-	-	A	-
Methane CH4	A	X	B	B	A	X	A	A	A	A	B	A	A	A	-
Methyl Acetate	X	C	C	C	A	B	X	A	A	A	C	B	-	A	-
Methyl Acetoacetate CH3COCH2 COOCH3	X	-	-	-	A	-	X	-	A	A	-	-	-	A	-
Methyl Acrylate CH2CHCO2CH3	-	C	-	C	A	B	X	-	A	A	-	-	A/70°	A	-
Methyl Acrylic Acid (Crotonic Acid) CH3(CH)2COOH	-	C	-	C	A	-	X	-	-	-	-		-	A	-
Methyl Amine (Monomethylamine) CH3NH2	B	A	-	A	A	B	A/90%	B	B	A	X	-	C	A	-
Methyl Amyl Acetate C8H16O2	A	-	-	-	A	-	X	A	A	A	-	-	-	A	-
Methyl Aniline C6H5NH(CH3)	A	A	-	A	A	-	-	-	-	-	-	-	-	A	-
Methyl Bromide (Bromo Methane) CH3Br	C	A	X	X	A	X	A	X	A	A	X	-	A	A	-
Methyl Butyl Ketone (2-hexanone) CH3COC4H9	X	B	-	X	A	C	X	-	-	A	X	-	-	A	-
Methyl Butyrate CH3(CH2)2 CO2CH3	X	X	-	X	A	-	-	A	A	A	-	-	-	A	-
Methyl Cellosolve CH3OCH2 CH2O	X	-	-	X	A	A/70°	X	A	-	-	A	-	A	A	-
Methyl Chloride CH3CI	X	C	X	X	A	X	B	X	A	A	X	B	A	A	A
Methyl Cyclopentane C6H12	B	X	-	X	A	C	A	-	-	A	-	-	-	A	-
Methyl Dichloride CH2CI2	X	-	-	X	-	X	A	X	-	-	X	-	-	A	-
Methyl Ethyl Ketone (Butanone) CH3C0 * CH2CH3	X	A	C	X	A	A	X	A	A	A	A	B	X	A	A
Methyl Formate HCOOCH3	X	C	-	B	A	B	X	A	A	A	-	-	-	A	-
Methyl Hexane C7H16	A	X	-	A	A	-	A	-	-	-	-	-	-	A	-
Methyl Iodide CH3I	X	A	-	X	A	A/70%	-	X	A	A	-	-	-	A	-
Methyl Isobutyl Ketone (Hexone) CH3COCH2CH (CH3)2	X	B	X	X	A	C	X	A	B	B	C/70%	A	A/70%	A	A
Methyl Isopropyl Ketone CH3COCH(CH3)2	X	C	X	X	A	C	X	-	-	A	C	-	A/70%	A	-
Methyl Methacrylate CH2C(CH3) CO2CH3	X	X	-	X	A	B	C	B	-	A	A	-	A/70%	A	-
Methyl Oleate C19H36O2	X	C	-	X	A	C	B	-	-	-	-	-	-	A	-
Methyl Propyl Ketone CH3CH2 CH2COCH3	X	B	-	X	A	-	X	-	-	-	-	-	-	A	-

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-C/R	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM - T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Methyacrylic Acid CH3CHCHCO2H	-	-	-	B	A	A	B	-	-	-	-	-	-	A	-
Methylamine CH3NH2	B	A	-	A	A	A	A/90%	B	B	A	A	-	-	A	-
Methyl Bromide CH2Br2	X	-	-	X	A	-	B	X	A	A	-	-	A	A	-
Methylene Chloride CH2Cl2	X	X	X	X	A	X	B	X	B	A/90%	X	-	B/100°	A	A
Milk	B	A	B	A	A	A	A	A	X	A	A	A	A	A	-
Mine Water	A	-	-	-	A	B	-	B	-	B	-	-	-	A	-
Mixed Acids (Sulfuric & Nitric) H2SO4, HNO3	X	B	-	X	A	-	A	X	X	B	X	A	A	A	-
Molasses	A	A	B	A	A	A	A	A	A	A	A	-	A	A	A
Monochlorobenzene C6H5CI	X	-	C	X	A	X	A	X	A	A	X	B	A/100%	A	A
N-Methyl Aniline C6H5NHCH3	X	-	-	X	A	-	C	-	-	-	C	A	-	A	-
Monoethanolamine NH2C2H4OH	B	-	-	C	A	A	C	B	A	A	A	-	X	A	A
Monomethylether	A	-	-	B	A	-	A	-	-	-		X	-	A	-
Monovinyl Acetylene	A	-	-	B	A	-	A	-	-	-	-	-	-	A	-
Mustard	C	-	B	A	A	A	X	B	X	A	A	A	-	A	-
Naptha (Petroleum spirits) (Thinner) Petroleum fractions	A	X	A	X	A	X	A	A	B	A	X	A	A	A	A
Naphtha Coal Tar (Benzol) Hydrocarbons	X	X	-	X	A	-	A	A	B	A	-	-	-	A	-
Naphthalene (Tar Camphor) C10H8	X	X	C	X	A	C	A	B	A	A	A	A	A	A	A
Naphthoic Acid C11H8O2	B	X	-	-	A	-	A	B	B	A	-	-	-	A	-
Neohexane (2, 2-dimethylbuane) C6H14	A	-	-	-	A	-	A	-	-	-	-	-	-	A	-
Neosol	A	B	-	A	A	-	C	B	B	A	-	-	-	A	-
Neville Acid	C	C	-	C	A	A	B	-	-	-	-	-	-	A	-
Nickel Acetate Ni(CH3CO2)2	B	A	-	B	A	A	X	B/10%	-	A	A	-	A	A	-
Nickel Chloride NiCl2	A	A	X	A	A	A	A	X	X	B	A	B	A	A	A
Nickel Nitrate Ni(NO3)2 * 6H20	A	A	-	A	A	-	A	X	-	A	A	-	A	A	A
Nickel Sulfate NiSO4	A	A	-	A	A	A	A	X	X	A/40%	A	A	A	A	A
Nitrana (Ammonia Fertilizer)	B	-	-	B	A	-	C	-	-	A	-	-	-	A	-
Nitric Acid 10% HNO3	X	B	C	B	A	A	A	A	X	A	A	-	A	A	X
Nitric Acid 25% HNO3	X	B	X	C	A	B	A	X	X	A	A	-	A	A	X
Nitric Acid 35% HNO3	X	C	X	X	A	B	A	X	X	A	A	-	A	A	X
Nitric Acid 50% HNO3	X	X	X	X	A	X	A	X	X	A	A	-	A	A	X
Nitric Acid 70% HNO3	X	X	X	X	A	X	A	-	X	A	X	-	A	A	X
Nitric Acid Concentrated HNO3	X	X	X	X	A	X	B	A	X	A	X	-	A/120°	A	X
Nitric Acid Red Fuming	X	X	X	X	A	X	B	A	X	A	X	-	C	A	-
Nitrobenzene C6H5NO2	X	X	X	X	A	A	B	A	A	A	B	B	A/70°	A	-
Nitroethane C2H5NO2	X	C	-	C	A	A	X	A	A	A	C	-	A/70%	A	-
Nitrogen Tetroxide N2O4	X	X	B/50%	X	A	-	C	A	B	A	X	-	C	A	-
Nitromethane CH3N02	X	C	X	C	A	A	X	A	A	A	C	-	A/120°	A	A
1-Nitropropane CH3(CJ2)2NO2	X	A	-	C	A	-	X	A	A	A	-	-	-	A	-
Octadecane CH3(CH2)16CH3	A	X	-	B	A	B	A	-	-	-	-	-	-	A	-
n-Octane C8H18	A	X	-	-	A	B/70%	A	-	-	-	X	-	A	A	-
Octyl Acetate CH3COO (CH2)7CH3	X	-	-	-	A	-	X	A	-	A	-	-	-	A	-
Octachlorotoulene C7Cl8	X	-	-	X	A	-	A	X	-	-	X	-	-	A	-
OILS (A thru D)															
Almond Oil (artificial)	X	B	-	X	A	X	X	-	-	-	-	-	-	A	-
Amyl Acetate (Banana Oil)	X	A	C	X	A	B	X	A	B	A	B	X	A/120°	A	A
Animal Fats & Oil	A	B	B	X	A	C	A	A	B	A	-	-	A	A	-
Bunker Oil (fuel #5, #6, #7)	A	X	-	B	A	B	A	A	A	A	-	-	-	A	-
Castor Oil	A	B	B	A	B	A	A	A	B	A	-	-	-	A	-
Cinnamon Oil	-	-	-	X	A	C	-	-	X	A	-	-	-	A	-
Citric Oils	C	B	-	X	A	A	A	-	X	A	A	-	-	A	-

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Clove Oil (eugenol)	-	-	-	B	A	-	-	-	X	A	-	-	-	A	-
Coconut Oil (Coconut Butter)	B	A	-	B	A	B	A	B	A	A	-	-	-	A	-
Cod Liver Oil (Fish Oil)	B	A	-	X	A	C	A	A	X	A	-	-	-	A	-
Corn Oil (Maize Oil)	A	C	A	X	A	A	A	B	C	B	A	-	A	A	-
Cotton Seed Oil	A	A	A	X	A	B	A	A	C	A	A	B	A	A	A
Creosote, Coal-Tar (Tar Oil)	A	X	X	X	A	X	A	B	B	B	X	X	-	A	-
Cutting Oil (water soluble)	B	-	-	X	A	B	A	A	A	A	-	-	-	A	-
Cutting Oil (Sulfer Base)	A	-	-	C	A	B	-	A	A	A	-	-	-	A	-
Diesel Oil (Fuel ASTM #2)	A	X	A	X	A	B	A	A	A	A	B	-	A	A	-
Diester Synthetic Oils	B	X	-	X	A	-	A	A	A	A	-	-	-	A	-
Dispersing Oil # 10	X	X	-	X	A	-	C	A	A	A	-	-	-	A	-
OILS (E thru H)															
Ethylene Dichloride (Dutch Oil)	X	X	X	X	A	X	B	X	B	B	X	B	A	A	A
Fish Oil	A	-	-	-	A	B	A	-	C	A	A	B	-	A	A
Fluorolube (Flourocarbon Oils)	C	A	-	A	A	X	B	A	A	A	X	-	-	A	-
Fuel Oils (ASTM #1 thru #9)	A	X	B	C	A	B	A	A	A	A	C	C	A	A	A
Furfual (Ant Oil)	X	B	-	B	A	C	C	A	B	A/20%	X	B	B/120°	A	A
Fusel Oil (Grain Oil)	A	A	-	A	A	-	A	-	-	-	-	-	-	A	-
Ginger Oil	-	-	-	A	A	C	A	-	X	A	-	-	-	A	-
Grapefruit Oil	X	-	-	X	A	-	-	-	X	A	-	-	-	A	-
Halowax Oil	X	X	-	X	A	X	A	X	-	-	-	-	-	A	-
Hydraulic Oil (Petroleum Base)	A	X	X	B	A	X	A	A	A	A	X	C	-	A	-
OILS (L thru N)															
Lard (lard Oil)	A	X	B	C	A	B	A	A	A	B	A	B	A	A	A
Lavender Oil	B	X	-	X	A	B	B	-	-	-	-	-	-	A	-
Lemon Oil (Cedro Oil)	-	-	-	C	A	C	A	A	-	A	-	-	-	A	-
Linseed Oil (Flaxseed Oil)	A	C	B	A	A	B	A	A	A	A	A	A	A	A	A
Lubricating Oils (petroleum)	A	X	A	B/150°	A	B	A	A	A	A	A	A	A	A	A
Methyl Salicylate (Betula Oil)	X	C	-	X	A	B	B	A	A	-	-	-	-	A	-
Mineral Oil (petroleum)	A	X	A	B	A	B	A	A	A	A	B	A	A	A	A
Neatsfoot Oil	A	C	-	-	A	B	A	-	-	A	-	-	-	A	-
OILS (O thru Q)															
Oleicf Acid (Red Oil)	C	C	A	X	A	-	B	A	C	B	B	B	A	A	A
Olive Oil	A	C	-	C	A	B	A	A	A	A	A	A	A	A	A
Palm Oil	A	-	-	C	A	B	A	-	A	A	-	-	-	A	-
Peanut Oil	A	X	-	B	A	B	A	-	A	A	A/70°	-	A	A	-
Peppermint Oil	X	-	-	X	A	C	A	-	-	A	-	-	-	A	-
Petroleum (Crude Oil) (Sour)	B	X	C	C	A	X	A	B	B	A	X	A	A	A	-
OILS (R thru S)															
Rape Seed Oil (Colza Oil)	B	A	-	C	A	B	A	-	A	A	-	-	-	A	-
Rose Oil	-	-	-	C	A	A	A	-	-	A	-	-	-	A	-
Rosin Oil (Rosinol)	A	-	-	A	A	-	A	-	-	-	-	-	-	A	-
Sesame Seed Oil	A	-	-	C	A	B	A	-	A	A	-	-	-	A	-
Silicone Oils (Versilube, etc.)	A	X	A	C	A	C	A	B	B	A	A	-	A	A	A
Soybean Oil	A	C	A	A	A	B	A	A	A	A	B	B	-	A	A
Sperm Oil (Whale Oil)	A	-	-	X	A	B	A	-	A	A	-	-	-	A	-
OILS (T thru Z)															
Transformer Oil (Petroleum)	B	X	-	C	A	X	A	A	A	A	B	C	-	A	-
Tung Oil (Wood Oil)	A	X	B	C	A	B	A	A	-	A	A	-	-	A	-
Vegetable Oils	B	C	A	C	A	A	A	A	B	A	X	-	-	A	A

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CHEMICAL / FORMULA	ELASTOMERS							METAL			PLASTIC				
	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Walnut Oil	A	-	-	B	A	-	A	-	-	-	-	-	-	A	-
White Oil (Mineral) (Petroleum)	A	X	-	C	A	C	A	-	-	A	-	-	-	A	-
Oleum (Fuming sulfuric acid) H2SO4/SO3	C	-	X	X	A	X	A	X	X	A	X	-	X	A	-
Olein (Triolene) C57H104O6	B	-	-	C	A	X	-	-	-	-	-	-	-	A	-
0-Dicholobenzene C6H4Cl2	X	-	-	X	A	X	A	X	A	A	X	-	-	A	-
Oxalic Acid (COOH)2	C	A	X	B	A	A	C	B	X	B/90%	A	B	A/120°	A	A
Ozone O3	X	A	C	B	A	X	A	A/10%	A/10%	A	X	A	A	A	-
Paints & Solvents	X	-	-	X	A	-	-	A	-	A	-	A	-	A	-
Paint Thinner, DUCO Hydrocarbons	A	X	-	C	A	C	B	A	-	A	X	A	-	A	-
Palmitic Acid CH3(CH2)4 COOH	B	B	A	C	A	A	B	B	B	A	A	-	A	A	-
Paraffins (Paraffin Oil) Hydrocarbons	A	-	-	-	A	A	-	A	-	A	A	A	-	A	-
Paraformaldehyde (CH20)8	B	-	-	B	A	-	C	A/10%	A	A	-	A	-	A	-
Paraldehyde C6H12O3	C	A	-	B	A	-	X	A	A	A	-	A	-	A	-
Pentachlorethane (Pentalin) Cl2 CHCCl3	X	-	-	X	A	-	A	X	A	A	-	A	-	A	-
Pentachlorophenol (PCP) C6Cl5OH	X	X	-	X	A	-	A	A	A	A	-	A	-	A	-
Pentane (Amyl Hydride) C5H12	A	X	B	B	A	B	A	A	B	B	-	-	-	A	-
Perchloric Acid HClO4	X	B	X	B	A/70%	X	A	X	X	B	-	C	A	A	A
Perchloroethylene (Tetrachloroethylene) C2Cl4	X	X	X	X	A	X	A	X	B	A/90%	X	A	A	A	A
Phenethyl Alcohol (Benzyl Carbinol) C6H5(CH2)OH	X	B	-	X	A	-	X	A	A	A	-	-	-	A	-
Phenol (Carbolic Acid) C6H5OH	X	C	X	C	A	C	A	B	A	B	C	X	A/100%	A	A
Phenol Sulfonic Acid C6H4(OH)SO3H	X	-	-	-	A	-	X	B	B	B	-	-	-	A	-
Phenyl Acetate CH3COOC6H5	X	B	-	X	A	-	X	-	-	-	-	-	-	A	-
Phenylbenzene C6H5	X	-	-	X	A	C	A	-	-	-	-	-	-	A	-
Phenyl Ethyl Ether (Phenetole) C6H5OC2H5	X	X	-	X	A	C	C	-	-	-	-	-	-	A	-
Phenyl Hydrazine C6H5NHNH2	X	X	-	X	A	B	A	A	X	-	X	-	A/120°	A	-
Phorone (Diisopropylidene Acetone) C9H14O	X	C	-	X	A	B	A	-	-	-	-	-	-	A	-
Phosphoric Acid 10% H3PO4	A	A	-	B	A	A	A	X	X	A	A/120°	-	A	A	A
Phosphoric Acid 20% H3PO4	C	A	-	B	A	A	A	X	X	A/212°	A/120°	-	A	A	A
Phosphoric Acid 50% H3PO4	X	A	-	B	A	A	A	X	X	A	A/120°	-	A	A	A
Phosphoric Concentrated H3PO4	X	B	X	C	A	C	A	X	X	A/212°	A/120°	-	A	A	A
Phosphorus Oxychloride POCl3	-	-	-	X	A	-	-	B	B	B	-	-	-	A	-
Phosphorus Trichloride PCl3	X	A	-	X	A	A	A	C	B	A	X	-	A	A	A
Photographic Developer	A	-	X	A	-	A	A	C	X	A	A	C	A	A	A
Pickling Solution	-	X	X	X	A	A	B	-	-	-	-	-	-	A	-
Picric Acid (Carbazotic Acid) (NO2)3 C6H2OH	B	B	X	B	A	X	A	A	C	A	B	-	A	A	-
Pinene C10H16	B	X	-	X	A	C	A	-	-	-	-	-	-	A	-
Piperidine C5H11N	X	X	-	X	A	B	X	-	-	-	-	-	-	A	-
PLATING SOLUTIONS															
Cadmium	B	-	-	B	A	A	-	-	-	A	X	-	B	A	-
Chrome	X	C	-	X	A	A	A	-	-	-	X	X	B	A	X
Lead	B	-	-	B	A	A	-	-	-	-	A	A	B	A	X
Others	A	A	-	C	A	A	B	-	-	A	-	-	-	A	-
Polyol	X	A	X	X	A	X	A	A	A	A	-	-	-	-	-
Polyvinyl Acetate Emulsion PVac = H20	-	A	-	C	A	A	-	-	B	B	A	-	A	A	-
Potassium Acetate CH3CO2K	B	A	-	B	A	A	X	B/10%	A	B	A	-	A	A	-
Potassium Bicarbonate KHCO3	A	-	-	A	A	A	A	B	B/40%	A/30%	A	-	A	A	A
Potassium Bisulfate KHSO4	A	-	-	A	A	-	A	A/10%	X	A/10%	A	-	A	A	-
Potassium Bisulfite KHSO3	A	-	-	A	A	-	A	B/10%	-	B/10%	-	-	-	A	-
Potassium Bromide KBr	A	A	-	A	A	A	A	A	B/80% 212°	B/90% 212°	A	-	A	A	A
Potassium Carbonate (Potash) K2CO3	A	A	-	A	A	A	A	X	B	B	A	B	A	A	A

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Potassium Chlorate KClO3	A	A	-	A	A	A	A	X	B	A/60%	A	B	A	A	A
Potassium Chloride KCl	A	A	-	A	A	A	A	X	B	A	A	B	A	A	A
Potassium Chromate K2CrO4	A	-	-	A	A/40%	A	A	A	A	A	A	-	A	A	-
Potassium Copper Cyanide K3[Cu(CN)4]	A	A	-	A	A	-	A	-	-	-	A	-	-	A	-
Potassium Cyanide KCN	A	A	-	A	A	A	A	C	B	B/90% 212°	A	C	A	A	A
Potassium Dichromate K2Cr2O	A	A	-	A	A	A	A	A	A	A	A	C	A	A	A
Potassium Hydroxide (Caustic Potash) (Lye) KOH	B	A	X	B	A	A	B	X	B	A	A	C	A/150%	A	A
Potassium Iodide KI	A	A	-	A	A	A	A	B/10%	-	B	A	-	A	A	-
Potassium Nitrate (Saltpeter) KNO3	A	A	-	A	A	A	A	A/80%	B	B/80% 212°	A	B	A	A	A
Potassium Nitrite KNO2	A	A	B	A	A	A	A	B	B	B	A/70°	-	-	A	-
Potassium Permanganate (Purple Salt) KMnO4	C	A	X	C	A	A	B	A/10%	B	B/30% 212°	B	A	A	A	A
Potassium Phosphate KH2PO4	A	A	-	A	A	-	A	X	X	B/30%	-	-	-	A	-
Potassium Silicate K2Sii2O5	A	A	-	A	A	-	A	B	B	B	A	-	-	A	-
Potassium Sulfate K2SO4	A	A	B	A	A	A	A	B	B	A	A	B	A	A	A
Potassium Sulfide K2S	A	A	-	A	A	-	A	X	B	B	A	-	A	A	A
Potassium Sulfite K2SO32H2O	A	A	-	A	A	-	A	A	X	B/50%	A	-	A	A	-
Propane (LPG) C3H8	A	X	B	B	A	X	A	A	A	A	X	A	A	A	-
Propionaldehyde (Propanal) C2H5CHO	X	-	-	-	A	-	X	A	A	A	-	-	-	A	-
Propionic Acid (Methylacetic Acid) CH3CH2CO2H	X	A	-	X	A	A	X	A	X	B	B	-	-	A	-
n-Proply Acetate CH3COO (CH2)2CH3	X	A	-	X	A	B	X	A	-	A	C	-	A	A	-
Propyl Alcohol (1-Propanol) CH3CH2CH2OH	B	A	-	B	A	A	A	A	A	A	A	A	A	A	A
n-Propyl Nitrate (NPN) CH3(CH2)2NO3	A	B	-	-	A	B	C	A	X	-	-	-	-	A	-
Propylene C3H6	X	X	-	X	A	B	A	A	A	A	-	-	-	A	-
Propylene Dichloride CH3CH(CI)CH2CI	X	X	-	X	A	-	B	X	A	A	-	-	-	A	-
Propylene Glycol (Methyl Glycol) C3H6(OH)2	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A
Propylene Oxide C3H6O	-	C	-	X	A	A	X	B	B	A	X	-	X	A	-
Pydraul (Phosphate Ester Base Fluid)	X	B	A	X	A	B	A	-	A	A	-	-	-	A	-
Pyranol	A	-	-	X	A	-	A	-	-	-	-	-	-	A	-
Pyridine N(CH)4CH	X	C	X	X	A	A	X	A	B	A	C	X	X	A	A
Pyroligneous Acid (Wood Vinegar)	C	C	-	C	A	-	A	B	X	A/10%	A	-	A	A	-
Pyrrole (Azole)	X	X	-	X	A	B	C	B	-	-	-	-	-	A	-
Quaternary Ammonium Salts	A	-	-	A	A	-	A	-	X	A	-	-	-	A	-
Rosin C20H302	A	-	-	C	A	A	-	A	-	A	A	-	-	A	-
Rotenone C23H220	A	A	-	A	A	-	A	-	-	-	-	-	-	A	-
Rubber Latex Emulsions (C5H8)n/H20	-	-	-	-	A	-	A	A	-	A	-	-	-	A	-
Rubber Solvents (Petroleum Distillate) Hydrocarbons	X	-	-	C	A	-	X	A	-	A	-	-	-	A	-
Rum Alcoholic liquor from molasses	A	A	-	A	A	A	B	-	-	A	-	-	-	A	-
Rust Inhibitors	A	-	-	C	-	B	A	-	-	A	A	-	-	A	-
Salad Dressing Fats, oils, water	A	-	-	-	-	A	A	B	X	A	A	-	-	A	-
Sal Ammonian (Ammonium Chloride) NH4CI	A	-	A	A	A	A	A	X	X	A	-	X	-	A	A
Sal Soda (Sodium Carbonate) NaCO3	A	A	-	A	A	B	A	X	A	A	-	-	-	A	-
Salicyclic Acid HOC6 H4COOH	B	A	-	B	A	-	B	A	X	B	A	-	A	A	-
Salt Water (Brine) NaCl/H20	A	A	A	B	A	A	A	B	X	A	A	-	A	A	-
Sea Water (Brine)	A	A	A	B	A	A	A	A	C	A	A	A	A	A	A
Sewage	A	C	B	B	A	A	A	B	B	A	A	-	A	A	-
Silicate Esters Si(OR)4	B	X	C	A	A	B	A	-	-	-	-	-	-	A	-
Silver Cyanide AgCN	-	-	-	A	A	-	-	X	A	A	A	-	A	A	-
Silver Nitrate AgNO3	B	A	-	A	A	A	A	X	X	A/60%	A	A	A	A	A
Skydrol Hydraulic Fluid (Phosphate Ester Base)	X	A	A	X	A	A	C	A	A	A	-	-	-	A	-
Soap Solutions Salt of fatty acid in H2O	A	A	A	B	A	A	A	C	X	A	A	A	A	A	A
Soda Ash (Sodium Carbonate) Na 2CO3	A	A	B	A	A	A	A	X	A	A	A	-	-	A	-

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CHEMICAL / FORMULA	ELASTOMERS							METAL			PLASTIC				
	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
Sodium Acetate CH 3COONa	C	A	-	C	A	A	X	A	A	A	A	A	A	A	A
Sodium Aluminate Na 2AL2O4	A	-	-	A	A	A	A	-	A/40%	A/40%	A	-	A	A	-
Sodium Bicarbonate (Baking Soda) NaHCO 3	A	A	B	A	A	A	A	B	C	A/20%	A	X	A	A	A
Sodium Bisulfite (Niter Cake) NaHSO 4	A	A	B	A	A	A	A	B/50%	C	B/50%	A	C	A	A	A
Sodium Bisulfate NaHSO3	C	A	B	A	A	A	A	B	B/20%	A/50%	A	X	A	A	-
Sodium Borate Na 2B4O7	A	A	B	A	A	A	A	B	-	A	A/140%	C	A	A	A
Sodium Bromide NaBr	-	B	-	B	A	-	A	C	C	B/30%	A	-	A	A	-
Sodium Chlorate NaClO 3	A	A	-	B	A	A	A	B/70% 212°	B	B	A	B	A	A	A
Sodium Chloride (Table Salt) NaCl	A	A	A	A	A	A	A	B	B/30%	A	A	A	A	A	A
Sodium Chromate Na 2CrO4	A	-	A	A	A	A	A	A/80% 212°	A/60%	A/60%	A	-	A	A	-
Sodium Cyanide NaCN	A	A	A	A	A	A	A	X	A	A	A	C	A	A	A
Sodium Dichromate (Sodium Bichromate) Na 2Cr2O7 * 2H2O	-	A	X	B	A	-	A	-	-	-	A	-	A	A	A
Sodium Fluoride NaF	A	A	-	A	A	-	A	B/30%	-	B/10%	A	-	A	A	-
Sodium Hexametaphosphate (Calgon) (NaPO 3)	B	B	-	B	A	-	A	C	B	B	A	-	A	A	-
Sodium Hydroxide (Caustic Soda) (Lye) NaOH	B	A	X	B	A	A	X	X	B/50%	A/50%	A	X	C	A	X
Sodium Hypochlorite NaOCL	X	B	X	B	A	A	B	X	X	X	X	X	A	A	X
Sodium Metaphosphate (Kurrol's Salt) Na(PO3)H	B	A	-	C	A	A	A	X	-	B	A/70%	B	-	A	-
Sodium Metasilicate Na2SiO3	A	A	-	A	-	A	A	B	-	A	A	B	A	A	-
Sodium Nitrate (Chile Saltpeter) NaNO3	C	A	B	B	A	A	A	A/90%	A/90%	A/90%	A	A	A	A	A
Sodium Nitrite NaN02	A	-	-	X	A	-	A	A	A	A	A	-	A	A	-
Sodium Perborate NaBO3	C	A	B	B	A	A	A	X	B/10%	A	A	B	A	A	-
Sodium Peroxide (Sodium Dioxide) Na2O2	B	B	B	B	A	B	A	B/10%	A/90%	B/10%	B	X	A	A	-
Sodium Phosphate (Tribasic (TSP) Na3PO4	B	A	B	B	A	A	A	X	B/167%	B	A	-	A	A	-
Sodium Silicates (Water Glass) Na2O * SiO2	A	A	A	A	A	A	A	A	A	A	A	-	A	A	A
Sodium Sulfate (Salt Cake) (Thenardite) Na3SO4	A	A	A	B	A	A	A	B/30%	B	A	A	-	A	A	A
Sodium Sulfide (Pentahydrate) Na2S * 5H2O	A	A	A	A	A	A	A	A/30% 212°	B	A/30% 167°	A	A	A	A	A
Sodium Sulfite Na2SO3	A	A	A	A	A	-	A	A/30%	X	A/30%	A	A	A	A	A
Sodium Tetraborate Na2B4O710H2O	A	-	B	-	A	A	A	-	-	A	C	-	A	A	A
Sodium Thiosulfate (Antichlor) Na2s2O3	A	A	-	A	A	-	A	A	C	A/1220	A	B	A	A	A
Sorgum	A	-	-	A	A	A	-	-	A	A	-	-	-	A	-
Soy Sauce Fermented soya bean/wheat	A	-	-	A	A	A	-	-	X	A	-	-	-	A	-
Stannic Chloride (Tin Chloride) SnCl4	A	B	B	B	A	A	A	X	C	A/10%	A	-	A	A	-
Stannous Chloride (Tin Salt) SnCl4	A	B	B/15%	A	A	-	A	X	B	A/10%	A	-	A	A	A
Starch C6H10O5	A	B	B	A	A	A	C	A	C	A	A	B	-	A	A
Stearic Acid CH3(CH2)16 CO2H	B	B	B	B/158°	A	A	A	C	C	A	A	C	A	A	-
Stoddard Solvent Petroleum distillate	A	X	A	C	A	X	-	A	A	A	A	A	X	A	-
Styrene (Vinylbenzene) C6H5CHCH2	X	X	X	X	A	C	A	A	A	A	-	-	A	A	-
Sucrose Solution (Sugar) C12H22O11/H20	A	A	A	A	A	A	A	A	A	A	-	-	-	A	-
Sulfamic Acid H2NSO3H	B	-	A	A	A	-	-	A/10%	X	X	A	-	B	A	-
Sulfite Liquors	A	C	B	B	A	A	A	-	-	-	-	-	-	A	-
Sulfur S	X	A	A	B	A	A	A	A	A	A	A	A	A	A	A
Sulfur Chloride S2Cl2	C	X	C	X	A	X	A	B	X	B	X	-	A	A	-
Sulfur Dioxide SO2	X	B	X	A	A	A	A	A	B	A/10%	A	B	A	A	A
Sulfur Hexafluoride SF6	B	A	A	A	A	B	A	-	-	-	-	-	-	A	-
Sulfur Trioxide SO3	C	C	X	C	A	C	A	B	B	B	X	-	X	A	-
SULFURIC ACID															
10% H2SO4	B	A	X	A	A	A	A	X	X	A	A	-	A	A	-
25% H2SO4	C	B	X	B	A	A	A	X	X	B	A	-	A/150°	A	X
50% H2SO4	X	B	X	B	A	A	A	X	X	X	A	-	A/150°	A	X
60% H2SO4	X	B	X	C	A	A	A	X	X	X	A	-	A/150°	A	X

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	ELASTOMERS							METAL			PLASTIC				
CHEMICAL / FORMULA	BUNA N - NBR	NORDEL -EPDM	HYTREL - TPE	NEOPRENE-CR	PTFE	SANTOPRENE	VITON - FPM	ALUMINUM -T356	CAST IRON -FC	316 SS	POLYPROPYLENE	DELRIN(ACETAL)	KYNAR - PVDF	PTFE	RYTON
75% H2SO4	X	C	X	X	A	A	A	X	C	C	A	-	A/150°	A	X
95% H2SO4	X	C	X	X	A	A	A	X	B	A	X	-	A/120°	A	X
Concentrated H2SO4	X	C	X	X	A	B	A	X	B	B	X	-	A/120°	A	-
Fuming H2SO4/YSO3	X	X	X	X	A	-	B	C	X	B	X	-	X	A	-
Sulfurous Acid H2SO3	B	A	C	X	A	A	A	B	X	B	A	X	A	A	A
Tall Oil (Liquid Rosin) Rosin acids	A	X	-	B	A	A	A	X	B/212°	B	A	-	A	A	-
Tallow Fat from cattle, sheep	A	-	-	-	A	B	A	A	-	A	B	C	-	A	-
Tannic Acid C76H52O46	C	C	A/10%	B	A	A	A	A	A	A	A	X	A	A	A
Tanning Liquors Tannic acid	A	-	-	B	A	A	-	A	-	A	A	X	-	A	-
Tar, Bituminous Mixture of aromatic (Coal Tar) (Pitch) & phenolic hydrocarbons	B	X	B	C	A	B	A	A	-	A	A	A	-	A	-
Tartaric Acid C4H6O6	B	B	B	A	A	A	A	A/20%	X	A	A	X	A	A	A
Terpenes C10 hydrocarbons	C	X	-	X	A	-	A	A	X	-	-	-	-	A	-
Terpineol (Terpilenol) C10H18O	C	C	-	X	A	B	A	A	A	A	X	-	B/120°	A	-
Teritary Butyl Alcohol (CH3)3COH	A	A	-	A	A	B	B	A	-	-	B	-	-	A	-
Teritary Butyl Catechol C9H14O2	X	A	-	B	A	B	A	C	B	B	-	-	-	A	-
Teritary Butyl Mercaptan C4H10S	X	-	-	X	A	B	A	B	-	-	-	-	-	A	-
Tetra Bromomethane CBr4	X	-	-	X	A	X	A	X	-	-	X	-	-	A	-
Tetrabutyl Titanate Ti(C4H9)	B	B	-	A	A	B	A	-	-	-	-	-	-	A	-
Tetrachloroethylene Cl2C = CCl2	-	-	-	-	A	X	A	B	-	A	X	-	A	A	-
Tetrachlorodifluoroethane (Cl2FC)2	X	-	-	X	A	-	-	-	-	-	-	-	-	A	-
Tetrachloroethane (Acetylene Tetrachloride) (Cl2HC)2	X	X	-	X	A	X	A	X	A	C	X	A	A	A	-
Tetraethyl Lead Pb(C2H5)4	B	X	-	X	A	C	B	B	A	A	A	-	A	A	-
Tetraethylene Glycol (TEG) HOCH2 (CH2OCH2)3CH2OH	A	-	X	-	A	-	A	-	-	-	-	-	-	A	-
Tetrahdrofuran (THF) C4H8O	X	C	C	X	A	X	X	-	-	A	C/100°	A	B/70°	A	A
Tetrahydronaphthalene (Tetralin) C10H12	X	X	-	X	A	-	A	A	A	A	C	-	-	A	A
Thionyl Chloride SOCl2	X	X	-	X	A	B	B	X	X	X	B	B	X	A	-
Thiopene C4H4S	X	X	-	X	A	-	C	-	-	-	-	-	-	A	-
Titanium Tetrachloride TiCl4	C	X	-	X	A	X	A	X	A	B	B	-	B	A	-
Toluene (Toluol) C7H8	C	X	C	X	A	X	B	A	A	A	X	B	A	A	A
Toluene Diisocyanate CH3C6H3 (NCO)2	-	A	B	X	A	B	A	A	-	-	-	-	-	A	-
Toluidine CH3C6 H4NH2	X	-	-	-	A	-	B	A	A	A	-	-	-	A	-
Tomato Pulp & Juice	A	-	-	-	A	A	-	B	-	A	A	-	A	A	A
Toothpaste	A	A	-	C	A	-	A	-	X	A	A	-	-	A	-
Transmission Fluid (Type A)	A	X	B	C	A	C	A	A	A	A	-	-	-	A	-
Triacetin C3H5 (OCOCH3)3	A	A	-	B	A	A	X	B	-	-	-	-	-	A	-
Triallyl Phosphate P(OC3H5)3	X	A	-	C	A	-	A	-	-	-	B	-	A	A	-
Triaryl Phosphate (C6H50)3PO	X	-	-	C	A	-	A	-	-	-	-	-	-	A	-
Tributoxyl Ethyl Phosphate (C4H9O)3P(C2H5)	X	A	-	X	A	B	B	-	-	-	-	-	-	A	-
Tributyl Phosphate (TBP) (C4H9)3PO4	X	C	C	X	A	B	X	A	A	A	B/100°	-	A/100°	A	-
Tributyl Mercaptan (C4H9)2S	X	-	-	X	A	-	A	-	-	-	-	-	-	A	-
Trichloracetic Acid (TCA) CCl3COOH	C	C	X	B	A	B	B	X	X	X	B	-	B	A	A
Trichlorobenzences C6H3Cl3	X	-	-	X	A	-	B	X	A	A	-	-	-	A	-
Tricloroethane C2H3Cl3	X	X	-	X	A	X	B	X	A	A	X	-	A	A	A
Trichloroethylene (Ex-Tri) (Hi-Tri) C2HCl3	X	X	X	X	A	X	C	X	B	A/90% 167°	X	B	A	A	A
Trichloropropane CH2ClCH ClCH2Cl	X	-	-	X	A	X	B	X	X	A	X	-	-	A	-
Tricesyl Phosphate (Lindol) (TCP) (CH3C6H4O)3 PO	X	A	C	C	A	B	C	-	A	B	B	-	X	A	-
Triethanol Amine (TEA) C12H25 CH2OH	X	B	X	A	A	A	C	A	A	A	A	B	X	A	A
Trethyl Aluminum (ATE) N(C2H4OH)3	X	-	-	X	A	B	B	-	-	-	-	-	-	A	-
Triethyl Amine (CH3CH2)3N	A	-	-	B	A	-	-	-	A	A	C	-	A/120°	A	-
Triethyl Borane (C2h5)3B	X	-	-	X	A	B	A	-	-	-	-	-	-	A	-
Triethylene Glycol (TEG) (CH2OCH2CHOH)2	A	-	X	-	A	-	A	A	-	A	A	-	-	A	-

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Trimethylene Glycol HO(CH2)3OH	A	A	-	-	A	-	A	A	-	A	-	-	-	A	-
Trinitrotoluene (TNT) CH3C6H2(NO2)3	X	X	-	B	A	A	B	-	-	-	-	-	-	A	-
Trioctyl Phosphate (C8H170)3PO	X	A	-	X	A	B	B	-	-	-	-	-	-	A	-
Turpentine C10H16	A	X	B	X	A	X	A	A	A	A	X	A	A	A	A
Unsymmetrical Dimethyl Hydrazine (UDMH) H2NN(CH3)2	C	A	-	C	A	B	X	-	-	-	-	A	A	A	-
Urea (Carbamide) CO(NH2)2	B	A	B	B	A	A	A	B	-	B/50%	A	-	A	A	A
Urine	A	-	-	X	A	A	A	A	A	A	A	A	A	A	-
Valeric Acid CH3(CH2)COOH	X	A	-	X	A	-	-	A	-	-	-	-	-	A	-
Vanilla Extract (Vanillin) C6H3(CH0) (OCH3)(OH)	A	-	-	X	A	-	X	-	-	A	-	-	-	A	-
Varnish Oil,gum resins, oil of turpentine	B	X	-	C	A	-	A	A	-	A	A	A	A	A	-
Vegetable Juices	A	-	-	C	A	A	-	C	-	A	A	-	-	A	-
Vinegar Dilute acetic acid	C	A	C	B	A	A	A	C	X	A	A	A	A	A	A
Vinyl Acetate CH2C00C HCH2	X	A	-	B	A	-	X	B	A	A	B	-	A	A	-
Vinyl Chloride (Chlorethylene) CH2CHCI	X	C	-	X	A	X	A	X	A	A	X	-	B	A	-
Water Distilled H2O	A	A	A	B	A	A	A/70°	A	C	A	A	A	A	A	A
Water Fresh H2O	A	A	A	B	A	A	A/70°	A	A	A	A	A	A	A	A
Waxes Hydrocarbons	A	X	-	A	A	-	-	A	-	A	-	A	-	A	-
Weed Killers	B	-	-	C	-	B	A	X	-	A	-	-	-	A	-
Whiskey Ethanol, esters, acids	B	A	B	A	A	A	A	A	X	A	A	B	A	A	-
White Sulfate Liquor	B	A	-	A	A	-	B	B	C	A	A	-	A	A	-
Wines	A	A	A	A	A	A	B	C	X	A	A	-	A	A	-
Wort, Distillery Sugar solution from malt	-	-	-	A	A	-	A	A	A	A	A	B	B	A	-
Xylene (Xylol) C6H4(CH3)2	X	X	C	X	A	X	A	A	B	B	X	-	A	A	A
Xylidines (Xylidin) (CH3)2C6H3NH2	-	X	-	X	A	C	X	B	B	-	-	-	-	A	-
Zeolite Hydrated alkali aluminum silciates	C	A	-	C	A	A	A	-	-	A	-	-	-	A	-
Zinc Acetate Zn(C2H3O)2	C	A	-	B	A	A	X	C	-	-	A	-	A	A	-
Zinc Carbonate ZnCO3	A	-	-	-	A	-	A	B	B	B	-	-	-	A	-
Zinc Chloride ZnCl2	B	A	A	B	A	A	A	A/10%	B	A/10%	A	B	A	A	A
Zinc Hydrosulfite ZnHSO3	A	-	-	A	A	A	A	X	-	A	-	-	-	A	-
Zinc Sulfate ZnSO4	A	A	X	A	A	A	B	B/20%	X	B	A	B	A	A	A

Rating Key: (A) Excellent (B) Good (C) Fair to Poor Data limited to % concentration and/or temperature (X) Not Recommended (-) No Data Available 0F shown. Where not shown, temperature is 70 0F ambient.

Proper Pump Material Selection

One of the more difficult tasks in selecting a pump for long, trouble free service is the proper choice of both wetted and non-wetted pump components. Pump components wear, and the objective is to get the longest life from the wearing parts. Knowing how to handle abrasive and corrosive fluids will lead to proper wetted materials selection.

When selecting a pump for corrosive service most use chemical compatibility charts and graphs for selecting and recommending pump materials of construction. These charts; at best, are meant as ever so general guidelines. Practical experience, and past history will dictate the use of certain materials with various fluids.

On slightly aggressive fluids it may be more beneficial from a service life/dollar view point to use a material which; while not the optimal material, has been determined capable of offering satisfactory results. When discussing diaphragm pumps, Teflon®; for example, while the preferred material when handling Amyl-Alcohol has a lower flex life rating than Neoprene® which has a “B” vs. “A” chemical compatibility rating but, offers the higher flex life of the two. The “B” rating indicates the Neoprene will perform, however; shorten flex life will be a result. When lesser rated materials offer the same life expectancy as the preferred materials, they may be the viable alternative for the investment, as with the case of Amyl-Alcohol where the replacement price of PTFE is quadruple that of the Neoprene.

When discussing pump components which see corrosive fluids at high velocities erosion will occur faster than the lower velocity areas of a pump. Erosion is accelerated by corrosion. When faced with choosing a “B” rated material versus an “A” rated material the affects of erosion as related to specific pump components should be considered.

A common misconception when handling abrasives and solids in suspension is their sharpness; ability to cut. When selecting diaphragms and valve balls for a diaphragm pump, sharp particulate will have a tendency to cut a PTFE diaphragm and embed in a Teflon valve ball. Should the diaphragm pump incorporate metallic valve seats the Teflon valve ball with embedded solids will accelerate valve seat wear. Elastomeric balls and seats being resilient will permit sharp particulate to “bounce” or reflect off their surface. While cutting and embedding can occur it will be reduced.

For diaphragm and plunger pumps using ball and valve seat arrangements the hardness of the ball and seat materials will affect their ability to pull a vacuum. A hard valve ball checking on a hard metallic valve seat is noisy and does not offer the sealing ability of hard to soft; PTFE or metal, to elastomeric combination.

The application itself will dictate the choice of materials on occasion. Should high static lifts and vacuums be experienced the chances of cavitation exist. A progressive cavity pump when addressed with cavitation will result in pitting and removal of material from the elastomeric stator. Operated dry for a short period of time the rotor, stator combination will be completely destroyed. The same is true with coatings and linings of pump components. When encountering the implosions created during cavitation expensive coatings are cratered and linings a pulled from their base.

A statement commonly made in the positive displacement pump circle is “oversize, operate slower”. While there is some merit to the verbiage, it must be made with a degree of knowledge of the application and the equipment. There is no doubt a larger pump operating at lower speeds; providing it meets all the application criteria, will out service a smaller pump running faster.

Recognizing the competitive marketplace both user and manufacturer are faced with, it is not practical, nor financially beneficial to merely substitute large for small. However; when the service life versus investment ratio becomes to high, the decision can now be justified. Unfortunately; faced with the risk of losing business, or exceeding a budget, many of those recommending and supplying positive displacement pumps recognize only the investment portion of the equation.

These scenarios are typical when selecting materials of construction. Decisions should be based on a materials estimated life expectancy, down-time, complexity of repair, and costs; not necessarily in this order.

NOTES

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