Fisher Scientific

CHEMICAL COMPATIBILITY CHART

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Inorganic Acids																								
2	Organic acids	●																							
3	Caustics	●	●																						
4	Amines & Alkanolamines	●	●																						
5	Halogenated Compounds	●		●	●																				
6	Alcohols, Glycols & Glycol Ethers	●																							
7	Aldehydes	●	●	●	●		●																		
8	Ketone	●		●	●			●																	
9	Saturated Hydrocarbons																								
10	Aromatic Hydrocarbons	●																							
11	Olefins	●				●																			
12	Petrolum Oils																								
13	Esters	●		●	●																				
14	Monomers & Polymerizable Esters	●	●	●	●	●	●																		
15	Phenols			●	●			●							●										
16	Alkylene Oxides	●	●	●	●		●	●							●	●									
17	Cyanohydrins	●	●	●	●	●		●									●								
18	Nitriles	●	●	●	●												●								
19	Ammonia	●	●					●	●					●	●	●	●	●							
20	Halogens			●			●	●	●	●	●	●	●	●	●	●				●					
21	Ethers	●													●						●				
22	Phosphorus, Elemental	●	●	●																	●				
23	Sulphur, Molten								●	●	●	●					●						●		
24	Acid Anhydrides	●		●	●		●	●							●		●	●	●	●					

● Represents Unsafe Combinations

Represents Safe Combinations

Group 1: Inorganic Acids

Chlorosulphonic acid
Hydrochloric acid (aqueous)
Hydrofluoric acid (aqueous)
Hydrogen chloride (anhydrous)
Hydrogen fluoride (anhydrous)
Nitric acid
Oleum
Phosphoric acid
Sulfuric acid

Group 2: Organic Acids

Acetic acid
Butyric acid (n-)
Formic acid
Propionic acid
Rosin Oil
Tall oil

Group 3: Caustics

Caustic potash solution
Caustic soda solution

Group 4: Amines and Alkanolamines

Aminoethylethanolamine
Aniline
Diethanolamine
Diethylenetriamine
Diisopropanolamine
Dimethylamine
Ethylenediamine
Hexamethylenediamine
2-Methyl-5-ethylpyridine
Monoethanolamine
Monoisopropanolamine
Morpholine
Pyridine
Triethanolamine
Triethlamine
Triethylenetetramine
Trimethylamine

Group 5: Halogenated Compounds

Allyl chloride
Carbon tetrachloride
Chlorobenzene
Chloroform
Chlorohydrines, crude
Dichlorobenzene (o-)
Dichlorobenzene (p-)
Dichlorodifluoromethane
Dichloroethyl ether
Dichloropropane
Dichloropropene
Ethyl chloride
Ethylene dibromide
Ethylene dichloride
Methyl bromide
Methyl chloride
Methylene chloride
Monochlorodifluoromethane
Perchloroethylene
Propylene dichloride
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
Trichloroethylene
Trichlorofluoromethane

Group 6: Alcohols, Glycols and Glycol Ethers

Allyl alcohol
Amyl alcohol
1,4-Butanediol
Butyl alcohol (iso, n, sec, tert)
Butylene glycol
Corn syrup
Cyclohexyl alcohol
Decyl alcohol (n, iso)
Dextrose solution
Diacetone alcohol
Diethylene glycol
Diethylene glycol dimethyl ether
Diethylene glycol monobutyl ether
Diethylene glycol monoethyl ether
Diethylene glycol monomethyl ether
Diisobutyl carbitol
Dipropylene glycol
Dodecanol
Ethoxylated dodecanol
Ethoxylated pentadecanol
Ethoxylated tetradecanol
Ethoxylated tridecanol
Ethoxytriglycol
Ethyl alcohol
Ethyl butanol
2-Ethylbutyl alcohol
2-Ethylhexyl alcohol
Ethylene glycol
Ethyleneglycol monobutyl ether
Ethylene glycol monoethyl ether
Ethylene glycol monomethyl ether
Furfuryl alcohol
Glycerine
Heptanol
Hexanol
Hexylene glycol
Isoamyl alcohol
Isooctyl alcohol
Methyoxytriglycol
Methyl alcohol
Methylamyl alcohol
Molasses, all
Nonanol
Octanol
Pentadecanol
Polypropylene glycol methyl ether
Propyl alcohols (n, iso)
Propylene glycol
Sorbitol
Tetradecanol
Tetraethylene glycol
Tridecyl alcohol
Triethylene glycol
Undecanol

Group 7: Aldehydes

Acetaldehyde
Acrolein (inhibited)
Butyraldehyde (n, iso)
Crotonaldehyde
Decaldehyde (n, iso)
2-Ethyl-3-propylacrolein
Formaldehyde solutions
Furfural
Hexamethylenetetramine
Isooctyl aldehyde
Methyl butyraldehyde
Methyl formal
Paraformaldehyde
Valeraldehyde

Group 8: Ketones

Acetone
Acetophenone
Camphor oil
Cyclohexanone
Diisobutyl ketone
Isophorone
Mesityl oxide
Methyl ethyl ketone
Methyl isobutyl ketone

Group 9: Saturated Hydrocarbons

Butane
Cyclohexane
Ethane
Heptane
Hexane
Iso-butane
Liquified natural gas
Liquified petroleum gas
Methane
Nonane
n- Paraffins
Pentane
Petrolatum
Petroleum ethers
Petroleum naphtha
Polybutene
Propane
Propylene butylene polymer

Group 10: Aromatic Hydrocarbons

Benzene
Cumene
p-Cymene
Coal tar oil
Diethylbenzene
Dodecyl benzene
Dowtherm
Ethylbenzene
Naphtha, coal tar
Naphthalene (includes molten)
Tetrahdyronaphthalene
Toluene
Triethyl benzene
Xylene (m-, o-, p-)

Group 11: Olefins

Butylene
1-Decene
Dicyclopentadiene
Diisobutylene
Dipentene
Dodecene
1-Dodecene
Ethylene
Liquified petroleum gas
1-Heptene
1-Hexane
Isobutylene
Nonene
1-Octene
1-Pentene
Polybutene
Propylene
Propylene butylene polymer
Propylene tetramer (dodecene)
1-Tetradecene
1-Tridecene
Turpentine
1-Undecene

Group 12: Petroleum Oils

Asphalt
Gasolines
- Casingead
- Automotive
- Aviation

Jet Fuels
JP-1 (kerosene)
JP-3
JP-4
JP-5 (kerosene, heavy)
Kerosene
Mineral spirits
Naphtha (non aromatic)
Naphtha
- Solvent
- Stoddard solvent
- VM&P

Oils
- Absorption oil
- Clarified oil
- Crude oil
- Diesel oil
- Fuel oil
  - No. 1 (kerosene)
  - No. 1-D
  - No. 2
  - No. 2-D
  - No. 4
  - No. 5
  - No. 6
- Lubricating oil
- Mineral oil
- Mineral seal oil
- Motor oil
- Penetration oil
- Range oil
- Road oil
- Spindle oil
- Spray oil
- Transformer oil
- Turbine oil

Group 13: Esters

Amyl acetate
Amyl tallate
Butyl acetates (n, iso, sec)
Butyl benzyl phthalate
Castor oil
Croton oil
Dibutyl phthalate
Diethyl carbonate
Dimethyl sulfate
Dioctyl adipate
Dioctyl phthalate
Epoxidized vegetable oils
Ethyl acetate
Ethyl diacetate
Ethylene glycol monoethyl ether acetate
Ethylhexyl tallate
Fish oil
Glycol diacetate
Methyl acetate
Methyl amyl acetate
Neatsfoot oil
Olive oil
Peanut oil
Propyl acetates (n, iso)
Resin oil
Soya bean oil
Sperm oil
Tallow
Tanner's oil
Vegetable oil
Wax, carnauba

Group 14: Monomers and Polymerizable esters

Acrylic acid (inhibited)
Acrylonitrile
Butadiene (inhibited)
Butyl acrylate (n, iso)
Ethyl acrylate (inhibited)
2-Ethylhexyl acrylate (inhibited)
Isodecyl acrylate (inhibited)
Isoprene (inhibited)
Methyl acrylate (inhibited)
Methyl methacrylate (inhibited)
o-Propiolactone
Styrene (inhibited)
Vinyl acetate (inhibited)
Vinyl chloride (inhibited)
Vinylidene chloride (inhibited)
Vinyl toluene

Group 15: Phenols

Carbolic oil
Creosote, coal tar
Cresols
Nonylphenol
Phenol

Group 16: Alkylene Oxides

Ethylene Oxide
Propylene Oxide

Group 17: Cyanohydrins

Acetone cyanohydrin
Ethylene cyanohydrin

Group 18: Nitriles

Acetonitrile
Adiponitrile

Group 19: Ammonia

Ammonium hydroxide

Group 20: Halogens

Bromine
Chlorine

Group 21: Ethers

Diethyl ether (ethyl ether)
1, 4-Dioxane
Isopropyl ether
Tetrahydrofuran

Group 22: Phosphorus, elemental

Group 23: Sulphur, molten

Group 24: Acid Anhydride

Acetic anhydride
Propionic anhydride

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CHEMICAL RESISTANCE OF PLASTICS

					Polyethylene			
	Polypropylene		Polycarbonate		LD		HD	
Chemical	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C
Acetic acid solution <90%	R	R	R	R	R	R	R	R
Acetic acid, glacial	R	U	U	U	A	U	R	L
Acetone	R	R	U	U	E	U	R	R
Ammonia	R	R	U	U	R	R	R	R
Aniline	R	R	U	U	U	U	R	R
Benzene	A	U	U	U	U	U	U	U
Boric acid	R	R	R	R	R	R	R	R
Bromine	U	U	U	U	U	U	U	U
Carbon tetrachloride	U	U	U	U	U	U	A	U
Chlorinated solvents	U	U	U	U	U	U	U	U
Chloroform	U	U	U	U	U	U	U	U
Cresols	U	U	U	U	U	U	U	U
Diethyl ether	U	U	U	U	U	U	U	U
Diethylene glycol	R	R	R	U	R	R	R	E
Ethers	U	U	A	U	E	U	A	U
Ethyl acetate	A	A			A	U	A	U
Ethanol	R	R	R	R	R	U	R	R
Ethylene glycol	R	R	R	U	R	R	E	E
Formaldehyde solutions 40%	R	R	R	R	R	E	R	R
Formic acid	R	R	R	R	R	E	R	R
Hydrochloric acid conc.	E	E	L	U	R	R	SW	SW
Hydrofluoric acid 1-60%	E	E	20%	U	R	R	R	L
Hydrofluoric acid conc.	E	E	L	U	R	U	R	L
Hydrogen peroxide 30-90%	R	R	R	R	R	U	R	A
Hypochlorous acid	R	R			A	U	R	R
Magnesium hydroxide	R	R			R	R	R	R
Maleic acid	R	R			R	R	R	R
Mineral oil	R	R	R	R	A	U	R	E
Nitric acid <25%	R	R	R	U	R	R	R	R
Nitric acid 25-70%	R	E	U	U	A	U	L	U
Nitric acid >70	E	U	U	U	U	U	U	U
Oxalic acid	R	A	R	R	R	R	R	R
Paraffin	R	A	R	R	A	U		
Petroleum ether	A	U	R	R	U	U	U	U
Phosphoric acid <30%	R	R	R	R	R	R	R	R
Phosphoric acid 30-85%	R	R	R	R	R	A	R	R
Phosphoric acid >85%	R	R	R	R	A	U	R	A
Potasium hydroxide	50%	10%	U	U	R	R	R	30%
Salicylic acid	R	R	R	R	R	R	R	R
Sodium hydroxide solution	50%	10%	U	U	R	R	R	30%
Sulfuric acid <60%	R	R	R	R	R	R	R	R
Sulfuric acid 60-70%	R	U	R	R	R	A	R	A
Sulfuric acid >70%	E	U	U	U	A	U	A	L
Silicone oil	R	R	R	R	A	U	E	E
Stearic acid	R	R	R	R	R	R	R	R
Toluene	U	U	U	U	U	U	U	U
Trichloroethylene	U	U	U	U	U	U	V	U
Water	R	R	R	R	R	R	R	R

Key

R Resistant
V Vapour diffusion
U Unsuitable
SW Swelling occurs
L Limited resistance
% Max concentration
A Slowly attacked (not recommended for long term storage)
E Environmental stress cracking

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