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• Represents Unsafe Combinations  
 □ Represents Safe Combinations

## 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

## 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  
 Triethylamine  
 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  
 Methoxytriglycol  
 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  
 Liquefied natural gas  
 Liquefied 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)  
 Tetrahydronaphthalene  
 Toluene  
 Triethyl benzene  
 Xylene (m-, o-, p-)

## Group 11: Olefins

Butylene  
 1-Decene  
 Dicyclopentadiene  
 Diisobutylene  
 Dipentene  
 Dodecene  
 1-Dodecene  
 Ethylene  
 Liquefied 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  

- Casinghead
- 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

## CHEMICAL RESISTANCE OF PLASTICS

Chemical	Polyethylene							
	Polypropylene		Polycarbonate		LD		HD	
	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
Potassium 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	SW Swelling occurs	A Slowly attacked (not recommended for long term storage)
V Vapour diffusion	L Limited resistance	E Environmental stress cracking
U Unsuitable	% Max concentration	