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A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Please Note: This chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not classified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.

REACTIVITY GROUP NAME		CODE		CONSEQUENCE	
1	Acids, Mineral, Non-oxidizing	1			
2	Acids, Mineral, Oxidizing		2		
3	Acids, Organic		H		
4	Alcohols and Glycols	H	F		
5	Aldehydes	P	F		
6	Amides	H	GT		
7	Amines, Aliphatic and Aromatic	H	GT		
8	Azo Compounds, Diazo Compounds and Hydrazines	H	G		
9	Carbamates	H	G		
10	Caustics	H	H		
11	Cyanides	GT	GF		
12	Dithiocarbamates	H,F	GF		
13	Esters	H	F		
14	Ethers	H	F		
15	Fluorides, Inorganic	GT	GT		
16	Hydrocarbons, Aromatic	H	F		
17	Halogenated Organics	H	GT		
18	Isocyanates	H	G		
19	Ketones	H	F		
20	Mercaptans and Other Organic Sulfides	GT	GF		
21	Metals, Alkali and Alkaline Earth, Elemental	H,F	GF		
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sponges	H,F	GF		
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drops, etc.	H,F	GF		
24	Metals and Metal Compounds, Toxic	S	S		
25	Nitrides	GF	HF		
26	Nitriles	H,GT	GF		
27	Nitro Compounds, Organic	H	GT		
28	Hydrocarbons, Aliphatic, Unsaturated	H	F		
29	Hydrocarbons, Aliphatic, Saturated	H	F		
30	Peroxides and Hydroperoxides, Organic	H	G		
31	Phenols and Cresols	H	F		
32	Organophosphates, Phosphothioates, Phosphodithioates	H	GT		
33	Sulfides, Inorganic	GT	GF		
34	Epoxides	H	P		
101	Combustible and Flammable Materials, Miscellaneous	H	G		
102	Explosives	H	E		
103	Polymerizable Compounds	H	P		
104	Oxidizing Agents, Strong	GT	GT		
105	Reducing Agents, Strong	GF	GF		
106	Water and Mixtures Containing Water	H	H		
107	Water Reactive Substances				

CODE

CONSEQUENCE

H

Heat Generation

F

Fire

G

Innocuous and non-flammable gas generation

GT

Toxic Gas formation

GF

Flammable Gas formation

E

Explosion

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Violent Polymerization

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Solubilization of toxic substance

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May be hazardous, but Unknown

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<---EXTREMELY REACTIVE!

DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL!

EXTREMELY REACTIVE!---

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Chemical Compatibility Chart

Below is a chart adapted from the CRC Laboratory Handbook which groups various chemicals in to 23 groups with examples and incompatible chemical groups. This chart is by no means complete but it will aid in making decisions about storage. For more complete information please refer to the MSDS for the specific chemical.

Group	Name	Example	Incompatible Groups
Group 1	Inorganic Acids	Hydrochloric acid Hydrofluoric acid Hydrogen chloride Hydrogen fluoride Nitric acid Sulfuric acid Phosphoric acid	2,3,4,5,6,7,8,10,13,14,16,17,18,19,21,22,23
Group 2	Organic acids	Acetic acid Butyric acid Formic acid Propionic acid	1,3,4,7,14,16,17,18,19,22
Group 3	Caustics	Sodium hydroxide Ammonium hydroxide solution	1,2,6,7,8,13,14,15,16,17,18,20,23
Group 4	Amines and Alkanolamines	Aminoethylethanolamine Aniline Diethanolamine Diethylamine Dimethylamine Ethylenediamine 2-Methyl-5-ethylpyridine Monoethanolamine Pyridine Triethanolamine Triethylamine Triethylenetetramine	1,2,5,7,8,13,14,15,16,17,18,23
Group 5	Halogenated Compounds	Allyl chloride Carbon tetrachloride Chlorobenzene Chloroform Methylene chloride Monochlorodifluoromethane 1,2,4-Trichlorobenzene 1,1,1-Trichloroethane Trichloroethylene Trichlorofluoromethane	1,3,4,11,14,17
Group 6	Alcohols Glycols Glycol Ether	1,4-Butanediol Butanol (iso, n, sec, tert) Diethylene glycol Ethyl alcohol Ethyl butanol Ethylene glycol Furfuryl alcohol	1,7,14,16,20,23

		Isoamyl alcohol Methyl alcohol Methylamyl alcohol Propylene glycol	
Group 7	Aldehydes Acetaldehyde	Acrolein Butyraldehyde Crotonaldehyde Formaldehyde Furfural Paraformaldehyde Propionaldehyde	1,2,3,4,6,8,15,16,17,19,20,23
Group 8	Ketones	Acetone Acetophenone Diisobutyl ketone Methyl ethyl ketone	1,3,4,7,19,20
Group 9	Saturated Hydrocarbons	Butane Cyclohexane Ethane Heptane Paraffins Paraffin wax Pentane Petroleum ether	20
Group 10	Aromatic Hydrocarbons	Benzene Cumene Ethyl benzene Naphtha Naphthalene Toluene Xylene	1,20
Group 11	Olefins	Butylene 1-Decene 1-Dodecene Ethylene Turpentine	1,5,20
Group 12	Petroleum Oils	Gasoline Mineral Oil	20
Group 13	Esters	Amyl acetate Butyl acetates Castor oil Dimethyl sulfate Ethyl acetate	1,3,4,19,20
Group 14	Monomers Polymerizable Esters	Acrylic acid Acrylonitrile Butadiene Acrylates	1,2,3,4,5,6,15,16,19,20,21,23
Group 15	Phenols	Carbolic acid Cresote Cresols Phenol	3,4,7,14,16,19,20
Group	Alkylene Oxides	Ethylene oxide	1,2,3,4,6,7,14,15,17,18,19,23

16		Propylene oxide	
Group 17	Cyanohydrins	Acetone cyanohydrin Ethylene cyanohydrin	1,2,3,4,5,7,16,19,23
Group 18	Nitriles	Acetonitrile Adiponitrile	1,2,3,4,16,23
Group 19	Ammonia	Ammonium Hydroxide Ammonium Gas	1,2,7,8,13,14,15,16,17,20,23
Group 20	Halogens	Chlorine Fluorine	3,6,7,8,9,10,11,12,13,14,15,19,21,22
Group 21	Ethers	Diethyl Ether THF	1,14,20
Group 22	Phosphorus	Phosphorus, Elemental	1,2,3,20
Group 23	Acid Anhydrides	Acetic anhydride Propionic anhydride	1,3,4,6,7,14,16,17,18,19