

ATTACHMENT B – DETERIORATING CHEMICALS

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The following is a selection of chemical substances which can deteriorate to a dangerous condition with age under common storage conditions. The degree of the hazard will vary considerably with age and the exact situation, but it is advisable to take precautions when discarding, recycling, or otherwise handling old samples.

The chemical name is followed by a code indicating the deterioration description.

Acetal (3)	Decahydronaphthalene (3)
Acetaldehyde diethyl acetal (3)	Decalin (3)
2-Acetyl furan (3)	Di-allyl ether (3)
Acetyl peroxide (1)	Di-iso-amyl ether (3)
Aluminium chloride (5)	Dibenzyl ether (3)
Aluminium lithium hydride (5)	Di-iso-butyl ether (2)
Ammonia solution (5)	Di-n-butyl ether (3)
Ammonium dichromate (4)	Dicyclopentadiene (3)
Ammonium hydroxide (5)	1,1-Diethoxyethane (3)
Ammonium persulphate (5)	Diethylacetal (3)
Anethole (3)	Diethyl azidoformate (4)
Anisaldehyde (3)	Diethyl azodicarboxylate (1)
Anisole (3)	Diethylene glycol dimethyl ether (3)
Anisyl chloride (5)	Diethyl ether (3)
Aqua regia (5)	Diglyme (3)
	Dihydropyran (3)
Benzenesulphonyl chloride (5)	1,2-Dimethoxyethane (3)
Benzoyl peroxide (1)	Dimethoxymethane (3)
Bleach (5)	Dimethylamine (5)
Bleaching powder (5)	2,4-Dinitrophenol (1)
2-(2-Butoxyethoxy)ethyl acetate (3)	2,4-Dinitrophenylhydrazine (1)
2-Butoxyethyl acetate (3)	1,4-Dioxan (3)
t-Butyl hydroperoxide (4)	Diphenyl ether (3)
iso-Butyl ether (2)	Di-iso-propyl ether (2)
n-Butyl ether (3)	Di-n-propyl ether (3)
n-Butyl glycidyl ether (3)	
	Ether (3)
Calcium carbide (5)	Ethyl cellosolve (3)
Calcium hydride (5)	Ethylene glycol dimethyl ether (3)
Calcium hypochlorite (5)	Ethylene glycol ethyl ether acetate (3)
Cellosolve (3)	Ethylene glycol monobutyl ether (3)
Chloroform (5)	Ethylene glycol monoethyl ether (3)
Chromic acid (5)	Ethylene glycol monomethyl ether (3)
Chromium trioxide (4)	Ethyl ether (3)
Cleaning mixtures (5)	2-Ethoxyethanol (3)
Cumene (3)	2-Ethoxyethyl acetate (3)
Cumene hydroperoxide (5)	Ethyl vinyl ether (2)
Cyclohexene (3)	
Cyclopentadiene (3)	Formic acid (100%) (5)
Cyclopentene (3)	

ATTACHMENT B - DETERIORATING CHEMICALS (Cont'd)

Furan (3)	Sodium hydrosulphite (5)
Glycidyl n-butyl ether (3)	Sodium hypochlorite (5)
Glyme (3)	Sodium metal dispersions (1)
Hydrogen peroxide (5)	Sodium perchlorate (4)
Iodine pentoxide (4)	Sodium peroxide (5)
Isoamyl ether (3)	Sodium persulphate (5)
Isobutyl ether (2)	Styrene (3)
Isopentyl ether (3)	Tetrahydrofuran (3)
Isopropyl alcohol (3)	Tetralin (3)
Isopropyl ether (2)	Thionyl chloride (5)
Isopropyl benzene (3)	Trinitrobenzene (1)
Lauroyl peroxide (5)	Trinitrobenzene sulphonic acid (1)
Lithium aluminium hydride (5)	Urea nitrate (4)
Lithium hydride (5)	Urea peroxide (5)
Magnesium perchlorate (4)	Vinyl acetate (3)
Mercury fulminate (1)	Vinylidene chloride (1)
2-Methoxyethanol (3)	Vinyl pyridine (3)
Methylal (3)	Zinc (5)
Methyl cellosolve (3)	
Methyl iso-butyl ketone (3)	
Methyl ethyl ketone peroxide (1)	
Methyl vinyl ketone (3)	
Nitric acid (5)	
Nitromethane (1)	
Nitrosoguanidine (5)	
Peracetic acid (1,4,5)	
Perchloric acid (4)	
Phosphorus trichloride (5)	
Picric acid (1)	
Picryl chloride (1)	
Picryl sulphonic acid (1)	
Potassium (metal) (1)	
Potassium amide (1)	
Potassium chlorate (4)	
Potassium perchlorate (4)	
Potassium persulphate (5)	
Propan-2-ol (3)	
Propargyl bromide (1)	
Propargyl chloride (1)	
Silicon tetrachloride (5)	
Silvering solution (1)	
Sodamide (1)	
Sodium amide (1)	
Sodium borohydride (5)	
Sodium chlorate (4)	
Sodium chlorite (4)	
Sodium dithionite (5)	
Sodium hydride (5)	

***Key:**

- (1) Can deteriorate to a shock-sensitive explosive. Take exceptional care if there is evidence of drying out, crystallization or contamination. It may be very dangerous to attempt to open the container.
- (2) Forms peroxides, especially on exposure to air and light, making the material liable to explode. This class is so dangerous that it should not normally be distilled unless it has been very well controlled. Material more than one year old should be discarded, even if unopened. Containers should not be opened if there is any solid visible around the closure or any evidence of crystals inside.
- (3) Also forms peroxides. If very old or obviously in poor condition, treat as (2). Otherwise, take care to test for peroxides before use or recovery procedures.
- (4) High energy materials which are sensitive to the presence of dust. Clean the outside of containers before opening. If in doubt, do not open. Mixtures of the material with dust, paper, or organics may ignite or detonate when exposed to friction, e.g. on the threads of a screw-capped container.
- (5) Containers may have a high internal gas pressure owing to decomposition. Open carefully behind a safety shield in a fume hood.

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