

Peroxidizable, Potentially Explosive Chemicals (PEC's) Storage Chart

<u>Group B-Chemicals that form Explosive levels of Peroxides on Concentration</u> Test or Dispose of (every): 12 months after opening, 12 months if unopened				
Chemical	CAS #	Synonym	State	Ref.
Acetal	000105-57-7		liquid	5
Acetaldehyde	000075-07-0		liquid	4
Benzyl alcohol	000100-51-6		liquid	4
2-Butanol	000078-92-2		liquid	4
Cumene	000098-82-8	see Isopropyl Benzene		
Cyclohexanol	000108-93-0		liquid	4
Cyclohexene	000110-83-8		liquid	5
2-Cyclohexen-1-ol	000822-67-3		liquid	4
Cyclopentene	000142-29-0		liquid	5
Decahydronaphthalene	000091-17-8		liquid	4
Diacetylene	000460-12-8		gas	5
Dicyclopentadiene	000077-73-6		liquid	5
Diethylene glycol dimethyl ether	000111-96-6	Diglyme	liquid	5
Dioxane	000123-91-1	1,4-Dioxane	liquid	5
Ethylene glycol dimethyl ether	000110-71-4	Glyme	liquid	5
Ethyl ether	000060-29-7	Diethyl ether	liquid	5
Furan	000110-00-9		liquid	5
4-Heptanol	000589-55-9		liquid	4
2-Hexanol	000626-93-7		liquid	4
Isopropyl benzene	000098-82-8	Cumene	liquid	5
Methyl acetylene	000074-99-7	Propyne	gas	5
3-Methyl-1-butanol	000123-51-3	Isoamyl alcohol	liquid	4
Methyl cyclopentane	000096-37-7		liquid	5
Methyl isobutyl ketone	000108-10-1	Methyl- <i>i</i> -butyl ketone	liquid	5
4-Methyl-2-pentanol	000108-11-2		liquid	4
2-Pentanol	006032-29-7		liquid	4
4-Penten-1-ol	000821-09-0		liquid	4
1-Phenylethanol	000098-85-1	alpha-Methyl-benzyl alcohol	liquid	4
2-Phenylethanol	000060-12-8	Phenethyl alcohol	liquid	4
2-Propanol	000067-63-0	Isopropyl Alcohol	liquid	
Tetrahydrofuran	000109-99-9		liquid	5
Tetrahydronaphthalene	000119-64-2		liquid	5
Vinyl ethers				
Other secondary Alcohols				

Reference Notes:

1. When stored as a liquid monomer.
2. Although these form peroxides, no explosions involving these monomers have been reported.
3. Also stored as a gas in gas cylinders.
4. Kelly, R.J., Review of Safety Guidelines for Peroxidizable Organic Chemicals, Chemical Health and Safety, September/October, 1996
5. National Research Council, Prudent Practices in the Laboratory, Handling and Disposal of Chemicals; National Academy Press; Washington, D.C., 1999

Peroxidizable, Potentially Explosive Chemicals (PEC's) Storage Chart

Default for ALL Unopened PEC Chemicals listed:

Test or Dispose of after every 12 months, unless specified otherwise

Group A- Chemicals that form Explosive levels of Peroxides Automatically (Without concentration)

**Test or Dispose of (every): 3 months after opening,
12 months if unopened**

Chemical	CAS #	Synonym	State	Ref.
Butadiene ^(1,3)	000106-99-0	1,3-Butadiene	gas	4
Chloroprene ^(1,3)	000126-99-8	2-Chloro-1,3- butadiene	liquid	4
Divinyl acetylene	000821-08-9	1,5-Hexadien- 3-yne	liquid	5
Isopropyl ether	000108-20-3		liquid	5
Tetrafluoroethylene	000116-14-3		gas	4
Vinyl ether	000109-93-3	Divinyl ether	liquid	5
Vinylidene chloride	000075-35-4	1,1- Dichloroethylene	liquid	5

Group C- Chemicals which may Autopolymerize as a result of Peroxide Accumulation

**Test or Dispose of (every): Non-inhibited chemicals 24 hours after opening,
Inhibited chemicals 12 months after opening,
12 months if unopened**

Chemical	CAS #	Synonym	State	Ref.
Acrylic acid ⁽²⁾	000079-10-7		liquid	5
Acrylonitrile ⁽²⁾	000107-13-1		liquid	5
Butadiene ^(1,3)	000106-99-0		gas	5
Buten-3-yne	000689-97-4	Vinyl acetylene & Butenyne	gas	5
Chloroprene ^(1,3)	000126-99-8	2-Chloro-1,3-butadiene	liquid	5
Chlorotrifluoroethylene	000079-38-9		gas	5
Methyl methacrylate ⁽²⁾	000080-62-6		liquid	5
Styrene	000100-42-5		liquid	5
Tetrafluoroethylene	000116-14-3		gas	5
Vinyl acetate	000108-05-4		liquid	5
Vinyl acetylene				
Vinyl chloride	000075-01-4	Mono-chloroethylene	gas	5
Vinylidene chloride	000075-35-4	1,1-Dichloroethylene	liquid	5
2-Vinyl pyridine	000100-69-6		liquid	5
4-Vinyl pyridine	000100-43-6		liquid	5

Information obtained from A&M's Chemical Lists and Berkeley's PEC's guidelines

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<u>Other Peroxidizable Chemicals which cannot be placed into the other categories but nevertheless require handling with precaution (Berkeley's List D)</u> Test or Dispose of (every): 12 months after opening, 12 months if unopened			
Acrolein	Cyclopropyl methyl ether	Diethoxymethane	
Allyl ether	Diallyl ether	2,2-Diethoxypropane	
Allyl ethyl ether	p-Di-n-butoxybenzene	Diethyl ethoxymethylenemalonate	
Allyl phenyl ether	1,2-Dibenzoyloxyethane	Diethyl fumarate	
p-(n-Amyloxy)benzoyl chloride	Dimethylketene	Diethyl acetal	
n-Amyl ether	3,3-Dimethoxypropene	Diethylketene	
Benzyl n-butyl ether	2,4-Dinitrophenetole	m,o,p-Diethoxybenzene	
Benzyl ether	1,3-Dioxepane	1,2-Diethoxyethane	
Benzyl ethyl ether	Di(1-propynyl) ether	Dimethoxymethane	
Benzyl methyl ether	Di(2-propynyl) ether	1,1-Dimethoxyethane	
Benzyl-1-naphthyl ether	Di-n-propoxymethane	Methyl-p-(n-amyloxy)benzoate	
1,2-Bis(2-chloroethoxy)ethane	1,2-Epoxy-3-isopropoxypropane	4-Methyl-2-pentanone	
Bis(2-ethoxyethyl)ether	1,2-Epoxy-3-phenoxypropane	n-Methylphenetole	
Bis(2-(methoxyethoxy)ethyl) ether	p-Ethoxyacetophenone 2-	2-Methyltetrahydrofuran	
Bis(2-chloroethyl) ether	Methoxyethyl vinyl ether	3-Methoxy-1-butyl acetate	
Bis(2-ethoxyethyl) adipate	1-(2-Ethoxyethoxy)ethyl acetate	2-Methoxyethanol	
Bis(2-methoxyethyl) carbonate	2-Ethoxyethyl acetate	3-Methoxyethyl acetate	
Bis(2-methoxyethyl) ether	(2-Ethoxyethyl)-a-benzoyl benzoate	Methoxy-1,3,5,7-cyclooctatetraene	
Bis(2-methoxyethyl) phthalate	1-Ethoxynaphthalene	b-Methoxypropionitrile	
Bis(2-methoxymethyl) adipate	o,p-Ethoxyphenyl isocyanate	m-Nitrophenetole	
Bis(2-n-butoxyethyl) phthalate	1-Ethoxy-2-propyne	1-Octene	
Bis(2-phenoxyethyl) ether	3-Ethoxypropionitrile	Oxybis(2-ethyl acetate)	
Bis(4-chlorobutyl) ether	2-Ethylacrylaldehyde oxime	Oxybis(2-ethyl benzoate)	
Bis(chloromethyl) ether	2-Ethylbutanol	b,b-Oxydipropionitrile	
2-Bromomethyl ethyl ether	Ethyl-b-ethoxypropionate	1-Pentene	
beta-Bromophenetole	2-Ethylhexanal	Phenoxyacetyl chloride	
o-Bromophenetole	Ethyl vinyl ether	a-Phenoxypropionyl chloride	
p-Bromophenetole	Furan	Phenyl-o-propyl ether	
3-Bromopropyl phenyl ether	2,5-Hexadiyn-1-ol	p-Phenylphenetone	
1,3-Butadiyne	4,5-Hexadien-2-yn-1-ol	n-Propyl ether	
Buten-3-yne	n-Hexyl ether	n-Propyl isopropyl ether	
tert-Butyl ethyl ether	o,p-Iodophenetole	Sodium 8-11-14-eicosatetraenoate	
tert-Butyl methyl ether	Isoamyl benzyl ether	Sodium ethoxyacetylde	
n-Butyl phenyl ether	Isoamyl ether	Tetrahydropyran	
n-Butyl vinyl ether	Isobutyl vinyl ether	Triethylene glycol diacetate	
Chloroacetaldehyde diethylacetal	Isophorone	Triethylene glycol dipropionate	
2-Chlorobutadiene	b-Isopropoxypropionitrile	1,1,2,3-Tetrachloro-1,3-butadiene	
1-(2-Chloroethoxy)-2-phenoxyethane	Isopropyl-2,4,5-trichlorophenoxy acetate	4-Vinyl cyclohexene	
Chloroethylene		Vinylene carbonate	
Chloromethyl methyl ether	Limonene	Vinylidene chloride	
b-Chlorophenetole	1,5-p-Methadiene		
o-Chlorophenetole	p-Dibenzoyloxybenzene		
p-Chlorophenetole	1,2-Dichloroethyl ethyl ether		
Cyclooctene	2,4-Dichlorophenetole		