

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

**Default for ALL Unopened PEC Chemicals listed below:
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

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

Group B-Chemicals that form explosive levels of peroxides on concentration				
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		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				
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

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