PEROXIDE FORMING CHEMICALS

This list should not be considered all-inclusive. Chemicals with similar names to the ones on this list should be given consideration when assessing the potential for peroxide formation.

Classes of Chemicals That Can Form Peroxides Upon Aging
(*reference : Prudent Practices for Disposal of Chemicals from Laboratories*)

LIST A: Severe Peroxide Hazard on Storage with Exposure to Air

Discard within 3 months

- Diisopropyl ether (isopropyl ether)
- Divinylacetylene (DVA)
- Potassium metal
- Potassium amide
- Sodium amide
- Vinylidene chloride (1,1-dichloroethylene)

LIST B: Peroxide Hazard on Concentration; Do Not Distill or Evaporate Without First Testing for the Presence of Peroxides

Discard or test for peroxides within 6 months

- Acetaldehyde diethyl acetal
- Cumene (Isopropylbenzene)
- Cyclohexene
- Cyclopentene
- Decalin (decahydronapthylene)
- Diacetylene (butadiene)
- Dicyclopentadiene
- Diethyl ether (ether)
- Diethylene glycol dimethyl ether (diglyme)
- Dioxane
- Ethylene glycol dimethyl ether (glyme)
- Ethylene glycol ether acetate
- Ethylene glycol monoethers (cellusolves)
- Furan
- Methylacetylene
- Methylcyclopentane
- Methyl isobutyl ketone
- Tetrahydrofuran (THF)
- Tetralin (tetrahyronaphthalene)
- Vinyl ethers

LIST C: Hazard of Rapid Polymerization Initiated by Internally Formed Peroxides

a. Normal liquids: Discard or test for peroxides after 6 months

- Chloroprene (2-chloro-1,3-butadiene)
- Styrene
- Vinyl acetate
- Vinylpyridine

b. Normal gases: Discard after 12 months

- Butadiene
- Tetrafluoroethylene (TFE)
- Vinylacetylene (MVA)
- Vinyl chloride

Peroxide Testing Method

Peroxide forming compounds should be tested on a regular basis to detect the presence of peroxides before they reach dangerous concentrations.

One testing method is the Redox test strip (available through Sigma Aldrich). The strip contains the enzyme peroxidase which transfers oxygen from the peroxide to an organic redox indicator, which is then converted to a blue oxidation product. Follow manufacturer's instructions for testing and interpreting results.

- Although it has not been determined what concentration of peroxide is explosive, the following rules should provide a reasonable margin of safety:
- If the peroxide concentration is greater than 25 ppm, but less than 100 ppm, the chemical may be used, but DO NOT DISTILL OR CONCENTRATE.
- If the peroxide concentration is greater than 100 ppm, it should be considered as potentially explosive and should not be used. It should be disposed of as hazardous waste (see next section).

Disposal

If a peroxide forming compound has been stored either beyond its useful shelf life or safe storage time/testing frequency, or if its age or history can not be determined, it shall be considered potentially explosive and must be disposed of as hazardous waste. Contact the DEHS Lab Safety Coordinator if you have questions regarding safety. Waste disposal questions should be addressed to the DEHS Hazardous Waste Coordinator (both can be reached at 852-6670).