

Peroxide Forming Solvents



- An undergraduate at UC Berkeley was using a rotary evaporator to remove THF and diethyl ether from an azobenzene precipitate.
 - THF and diethyl ether form peroxides over time
- She adjusted the bottom flask which then exploded sending glass towards her face, hitting her safety goggles and forehead.
 - Concentrated peroxides in the round bottom were shock sensitive
- She was released from the hospital the same day.

Peroxide Forming Solvents

Used in our Lab

- All peroxide-forming solvents should be checked for the presence of any peroxides prior to distillation or evaporation using potassium iodide.
- Solvents containing low levels of free radical scavengers such as BHT should be used whenever the presence of the stabilizing species does not interfere with intended application.
- Peroxide-forming solvents should be purchased in limited quantities and older material in inventory should be preferentially selected for use.
- Materials should be stored away from light and heat with tightly secured caps and labeled with dates of receipt and opening.

Class A: Chemicals that form explosive levels of peroxides without concentration. Severe peroxide hazard occurs after prolonged storage, especially after exposure to air. Test for peroxide formation prior to use or discard after 3 months.

Butadiene	Isopropyl ether	Sodium amide
Chlorobutadiene (chloroprene)	Potassium amide	Tetrafluoroethylene
Divinyl acetylene	Potassium metal	Vinylidene chloride

Class B: These chemicals are a peroxide hazard on concentration (distillation/evaporation). Test these chemicals for peroxides prior to distillation or evaporation or discard after 12 months.

Acetal	Dicyclopentadiene	Methyl acetylene
Cumene	Diethylene glycol dimethyl ether (diglyme)	Methyl cyclopentane
Cyclohexene	Diethyl ether	Methyl-isobutyl ketone
Cyclooctene	Dioxane (p-dioxane)	Tetrahydrofuran
Cyclopentene	Ethylene glycol dimethyl ether (glyme)	Tetrahydronaphthalene
Diacetylene	Furan	Vinyl ethers

Class C: Unsaturated monomers that may autopolymerize as a result of peroxide accumulation if inhibitors have been removed or are depleted. Test for peroxide formation prior to use or discard after one year.

Acrylic acid	Ethyl acrylate	Vinyl acetate
Butadiene	Methyl methacrylate	Vinyl chloride
Chlorotrifluoroethylene	Styrene	Vinyl pyridine