

Peroxide-forming chemicals include many common solvents and reagents that are known to form organic peroxides on exposure to air and light, e.g. tetrahydrofuran, ethers, isopropanol, dioxanes, styrene, 2-hexanol, etc). Peroxides are very sensitive to shock, sparks, elevated temperatures, light, strong oxidizing and reducing agents, and friction, such as a cap being twisted open.

Please refer to [the EHS Peroxide-Forming Chemicals SOP](#) for more information. This quick guide provides some of the main guidelines for safe handling and disposal of peroxide-forming chemicals:

1. Determine the Group of the chemical based on the potential of peroxide formation.
2. Purchase only what you need and always with an inhibitor if available (unless your specific experiment will not tolerate the inhibitor molecule).
3. Label with date received, date opened and assign an expiration date if one is not supplied by the manufacturer. Obtain peroxide-forming chemicals stickers from the EHS Office.
4. Use or dispose of chemical by expiration date.
5. Protect from light with amber bottles.
6. Test peroxide periodically as specified in table below. Test before each use for distillation or evaporation. Uninhibited Group C chemicals should not be distilled.
7. Write down the test date and results on the bottle.
8. **Do not attempt to test if there are possible crystals or particles in bottle or around the cap.**
9. **Dispose expired or chemical containing peroxides approaching 20 ppm immediately.**
  - Selected peroxide-forming chemicals may be allowed after safe storage period, subjected to more frequent testing and before each use.
10. Place red tag on container, indicate peroxide levels, and request disposal.
11. **If > 20 ppm or observed presence of crystals or particles, contact EHS.**

Group	A	B	C	D
Peroxide formation	Can form explosive levels of peroxides without concentration. Some of these chemicals may form explosive concentrations even if never opened.	Do not usually accumulate potentially explosives concentrations unless the volatile organic material is reduced in volume e.g. evaporation and distillation	May auto-polymerize as a result of peroxide formation.	May form peroxides but cannot be clearly placed in Groups A-C.
Examples	1,3-butadiene; Isopropyl ether; Vinylidene chloride	Tetrahydrofuran; Ethers; Isopropanol; Dioxanes; 2-Hexanol; Acetaldehyde	1,3-butadiene; Acrylonitrile; Acrylic acid; Vinyl pyridine; Methyl methacrylate; Styrene; Vinyl acetate	Acrolein; Ethers; Furan; 2-Methoxyethanol; 2-Methyltetrahydrofuran; 1-Octene
<b>Safe Storage Period</b>				
Open & Uninhibited	3 months	12 months	24 hours	12 months
Open & Inhibited	12 months	12 months	12 months	12 months
Unopen	12 months	12 months	12 months	12 months
<b>Testing Frequency</b>				
Within Safe Storage Period	3 months	6 months	6 months	6 months
After Safe Storage Period	Uninhibited – Must dispose by 3 months. Inhibited – Must dispose by 12 months.	Uninhibited – Test every 3 months and before each use. Inhibited – Test 6 months and before each use. *For isopropanol that is stored in dark and closed container, test every 12 months.	Uninhibited – Must dispose by 24 hours. Inhibited – Test every 6 months and before each use.	Uninhibited – Test every 3 months and before each use. Inhibited – Test every 6 months and before each use