

Safe Handling of Peroxide Forming Chemicals

Chemicals that react with oxygen to make peroxides create materials that can explode with impact, heat, or friction. Peroxide-forming compounds can be divided into three hazard categories based on method of reaction.

1. **Spontaneous Decomposition:** Compounds such as divinyl acetylene and isopropyl ether form peroxides that can spontaneously decompose.
2. **Requires External Energy for Decomposition:** Compounds that form peroxides, but require the addition of a certain amount of energy to decompose explosively. Examples of these chemicals include dicyclopentadiene, diethyl ether, dioxane, tetrahydrofuran and vinyl ethers.
3. **Shock and Heat Sensitive:** Materials that can form peroxide polymers, a highly reactive form of peroxide, which is extremely shock and heat sensitive. Representative compounds include butadiene, chloroprene, methyl methacrylate, vinyl pyridine, tetrafluoroethylene, acrylonitrile and styrene.

Guidelines

1. Date all peroxide formers upon receipt and upon opening. Discard peroxide formers 3 months after opening or 12 months after receipt. Ensure that you know whether or not an inhibitor has been added by the manufacturer.
2. Do not open any container of a peroxide forming chemical that has obvious crystal formation. Do not handle or force open lids – treat as potentially explosive. Call EH&S for assistance.
3. Maintain an inventory of peroxide forming chemicals. Dispose of chemicals by their expiration date.
4. Do not purchase large quantities of peroxide forming chemicals. Purchase the amount that you will actually use in a 3-6 month time period.
5. DO NOT store peroxide forming chemicals in open, partially empty, or transparent containers; these conditions promote formation of peroxides. (DO NOT expose to oxygen).