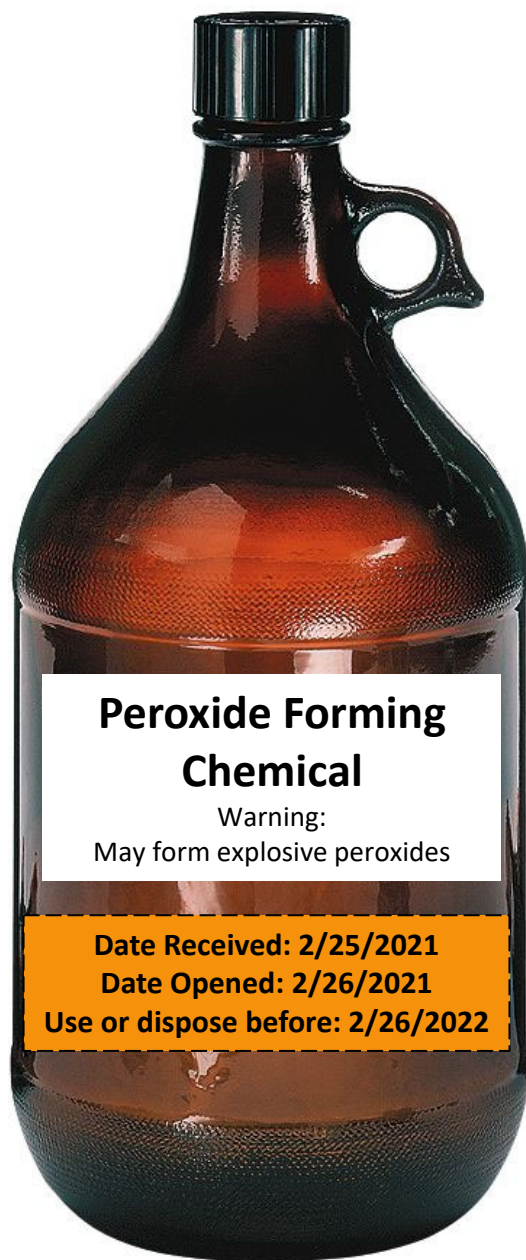


# Peroxide Forming Chemicals

Peroxide forming chemicals (PFCs) are chemicals that can form peroxides upon exposure to air. These peroxides can initiate autopolymerization or can themselves be explosive when exposed to heat, shock, or friction. Since peroxide formation takes time, these chemicals can be stored and handled safely. Also many manufacturers will add inhibitors (e.g. butylated hydroxytoluene, BHT) to the chemical to further slow the formation of peroxides.



## Guidelines for PFCs

1. **Always** wear appropriate PPE and use a chemical fume hood.
2. The containers should be labeled with the **date received** and the **date opened**. This information, along with the chemical identity should face forward to minimize container handling.
3. Any chemical with a manufacturer's expiration date **must** be used or disposed before that expiration date.
4. Any uninhibited peroxide forming chemical has **3 months** from opening to be used or disposed.
5. Most peroxide forming chemicals have **12 months** from opening to be used or disposed. Please see the CHP for the exceptions which, have **3 months** from opening.
6. Purchase the **smallest** quantity of PFCs as possible.
7. Peroxide forming chemicals should be stored in **airtight containers** in a dark, cool, and dry place. Refrigeration and freezers may facilitate crystallization and should be avoided.
8. Never return unused quantities back to the original container and clean all spills immediately.
9. Do not move a PFC container if there is evidence of peroxide formation (discoloration, cloudiness, crystal formation especially around the lid and around the top of the liquid) or if it is **3 years** past its expiration date.
10. Do not test peroxide forming chemicals in order to extend their shelf life. Disposal of waste containing even small amounts of peroxide chemicals can require a different waste vendor, which can be very expensive.

**Following the guidelines above will ensure little to no peroxide concentrations.**

## Common Examples

Potassium\*, Sodium Amide\*, Diisopropyl ether\*, Tetrahydrofuran (THF), Diethyl ether, 1,4-dioxane, Dicyclopentadiene, Cyclohexene, Glycol ethers, Decalin, Tetralin, Styrene<sup>†</sup>, Methyl methacrylate<sup>†</sup>, Butadiene<sup>†</sup>

Please see Chemical Hygiene Plan (CHP) and Safety Data Sheets (SDS) for additional information.

\* Must be disposed within 3 months of opening

<sup>†</sup> Peroxides formation can initiate autopolymerization

Evaporation (e.g. rotatory evaporation) is one of the high-risk processes when handling peroxide forming chemicals and has led to reported explosions in academic laboratories. Distillation results in an uninhibited peroxide forming chemical, which should be used or disposed after 3 months. You may test a PFC for peroxide before evaporation, however any detection of peroxide should result in immediate disposal.

