

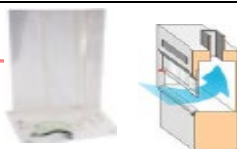








CHEMICAL HAZARD GUIDELINE

<p>Not Classified by GHS!</p>		<h2>ORGANIC PEROXIDE-FORMING MATERIALS</h2> <p><i>See classes & examples of common peroxide formers on page 2.</i></p>	<p>Not Classified by GHS!</p>
Hazardous	Potential Hazards	<ul style="list-style-type: none"> Some organic peroxide-forming materials can form explosive peroxide crystals during storage; these may be sensitive to shock, friction, heat and/or light. Other compounds in this class can form peroxides capable of initiating violent polymerization reactions. Many organic peroxide forming materials are flammable. Refer to Flammable Liquid Guideline. Refer to chemical specific Safety Data Sheet (SDS) for specific hazard information. Note that the ability to form peroxides is a hazard category that is NOT classified under GHS. Some SDS's may include the European hazard classification "May Form organic Peroxides" under hazards not otherwise classified" at the bottom of Section 2 of the SDS. <i>A lab-specific SOP is needed for particularly hazardous organic peroxide-forming materials and/or any operation involving a high-risk chemical. PI approval of lab specific SOP is required for all particularly hazardous chemicals and/or high-risk chemicals.</i> 	
	Purchasing	<ul style="list-style-type: none"> If possible, use a chemical that does not form peroxides. If possible, purchase peroxide formers with an inhibitor. Purchase the smallest practical containers; plan to use peroxide-formers within safe timeframes. (Refer to SDS and page 2 for more information.) Purchase peroxide test strips. <i>Write date received and date opened on the container.</i> 	
Hazard Controls	Storage and Transportation	<ul style="list-style-type: none"> Store in a cool location away from heat & light in sealed airtight containers with tight-fitting nonmetal lids. If in class A or B (or if indicated on the SDS), store under nitrogen or argon. 	
	Work Practice Procedures	<ul style="list-style-type: none"> Never force open a rusted or stuck cap. Never open a dented container. Use the smallest practical quantities for the work being performed. Follow instructions on page 2 for evaluating peroxide formers. Do not distill unless absence of peroxides has been shown. Do not allow to evaporate to dry residue; leave 10-20% residual in container. 	
	Engineering Controls	<ul style="list-style-type: none"> Use a blast shield if there is a possibility of vigorous chemical reaction or explosion. Use under a properly operating chemical fume hood. 	
	Personal Protective Equipment	<div style="display: flex; justify-content: space-around; align-items: center;">  EYE PROTECTION  FACE SHIELD  CHEMICAL GLOVES  LAB COAT  LONG PANTS  INSULATED GLOVES <div style="border: 1px solid black; padding: 2px; font-size: 8px;">CLOSED TOED SHOES ARE REQUIRED</div> </div> <p>For risk if explosion or vigorous reaction:</p> <ul style="list-style-type: none"> Chemical splash goggles and face shield Flame-resistant lab coat Heavy gloves (consider flame-resistant) <p>Note: Always refer to glove manufacturer glove guide for glove effectiveness with the chemical you are using.</p>	
Other	Waste	<p>Contact EHRS at 215-707-2520 immediately:</p> <ul style="list-style-type: none"> If crystals are found around the lid of the container (Do NOT open the container!) OR If the container tests positive for peroxides. <p>Submit a waste pickup request prior to expiration date. Follow above storage guidelines for waste. Collect as hazardous waste. For disposal, request waste pick-up through EHRS.</p>	

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Emergencies	<p>In the event of an emergency – Call campus safety at (215) 214-1234 & EHRS at (215) 707-2520.</p> <p>Direct contact – Flush contaminated area with copious amounts of water (eyewash or safety shower) and then seek medical attention.</p> <p>Inhalation – Remove to fresh air and then seek medical attention.</p> <p>Spill/ Release – Close cylinder valve, if possible. If unable to contain, evacuate lab. Contact EHRS for additional assistance or guidance.</p>
Training	Sign signature on Laboratory-Specific Training Checklist to indicate review.
Questions	Contact Environmental Health and Radiation Safety (EHRS) at (215) 707-2520

EVALUATING PEROXIDE FORMERS

Initial Screening	<ul style="list-style-type: none"> Verify identity of chemical. Check the date last opened (or, if unopened, date received) is known and is within the recommended safe storage period per guidance below. Make sure that evaporation of the chemical is known or estimated to be less than 10%. Make sure container shows no discoloration, liquid stratification, or crystallization around cap or in solution. <p>CAUTION: Never try to force open a rusted or stuck cap on a container of a peroxide-forming chemical. Do not open a dented container. If any point above cannot be verified, the container should be considered unsafe and should not be disturbed. Promptly call EHRS at 215-707-2520 for assistance with safe disposal.</p>									
Peroxide Test	<table border="1" style="width: 100%;"> <tr> <td rowspan="3" style="width: 50%; vertical-align: top;"> Container passing initial screening may be evaluated for peroxide content. We recommend using peroxide test strips, available from a number of suppliers. Follow the instructions provided. For ease of tracking, testing should be conducted on a specific schedule (determined by the lab). Labs should maintain a record of testing with other safety-related information. </td> <td colspan="2" style="text-align: center;">Assessing Peroxide Levels:</td> </tr> <tr> <td style="text-align: center; width: 15%;">< 25 ppm</td> <td style="text-align: center;">Considered safe for routine use.</td> </tr> <tr> <td style="text-align: center;">25-100 ppm</td> <td style="text-align: center;">Not recommended for distilling or otherwise concentrating.</td> </tr> <tr> <td style="text-align: center;">> 100 ppm</td> <td style="text-align: center;">Avoid handling. Contact EHRS at 215-707-2520 for disposal.</td> </tr> </table>	Container passing initial screening may be evaluated for peroxide content. We recommend using peroxide test strips, available from a number of suppliers. Follow the instructions provided. For ease of tracking, testing should be conducted on a specific schedule (determined by the lab). Labs should maintain a record of testing with other safety-related information.	Assessing Peroxide Levels:		< 25 ppm	Considered safe for routine use.	25-100 ppm	Not recommended for distilling or otherwise concentrating.	> 100 ppm	Avoid handling. Contact EHRS at 215-707-2520 for disposal.
Container passing initial screening may be evaluated for peroxide content. We recommend using peroxide test strips, available from a number of suppliers. Follow the instructions provided. For ease of tracking, testing should be conducted on a specific schedule (determined by the lab). Labs should maintain a record of testing with other safety-related information.	Assessing Peroxide Levels:									
	< 25 ppm		Considered safe for routine use.							
	25-100 ppm	Not recommended for distilling or otherwise concentrating.								
> 100 ppm	Avoid handling. Contact EHRS at 215-707-2520 for disposal.									

COMMON PEROXIDE FORMING CHEMICALS

These lists are not all-inclusive.

Any UNOPENED bottles of peroxide-formers should be submitted as waste within 18 months of receipt or by the expiration date noted on the container, whichever comes first.

Class A	<p>Chemicals that form explosive levels of peroxides without concentration. Store under inert gas if possible. Submit for waste or evaluate for peroxides within 3 months of opening.</p>			
	Butadiene (inhibited liquid monomer)	Chlorobutadiene Chloroprene (inhibited liquid monomer) Diisopropyl Ether	Divinyl acetylene Potassium Amide Potassium Metal Sodium Amide (sodamide)	Tetrafluoroethylene (inhibited liquid monomer) Vinylidene Chloride
Class B	<p>Chemicals that form explosive levels of peroxides without concentration. Store under inert gas if possible. Submit for waste or evaluate for peroxides within 6-12 months of opening.</p>			
	Acetal Acetaldehyde Benzyl Alcohol 2-Butanol Cumene Cyclohexanol 2-Cyclohexen-1-ol Cyclohexene	Decahydronaphthalene Diacetylene Dicyclopentadiene Diethyl Ether Diethyl glycol dimethyl ether (diglyme) Dioxanes Ethylene glycol dimethyl ether (glyme)	Furan 4-Heptanol 2-Hexanol Methyl acetylene 3-Methyl-1-butanol Methyl isobutyl ketone 4-Methyl-2-pentanol 2-Oentanol 4-Penten-1-ol	1-Phenylethanol 2-Phenylethanol 2-Propanol (isopropanol IPA) Tetrahydrofuran Tetrahydronaphthalene Vinyl Ethers Other secondary alcohols

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Class C	Chemicals that may auto polymerize upon peroxide concentration Without inhibitor: Submit as waste within 24 hours after synthesizing or opening With inhibitor: Do not store under inert atmosphere (O ₂ is required for inhibitors to work). Submit as waste or evaluate for peroxides within 12 months of opening.			
	Acrylic Acid Acrylonitrile Butadiene Chloroprene	Chlorotrifluoroethylene Ethyl acrylate Methyl methacrylate Styrene	Tetrafluoroethylene Vinyl Acetate Vinyl Acetylene Vinyl Chloride	Vinyl Pyridine Vinylidene chloride