
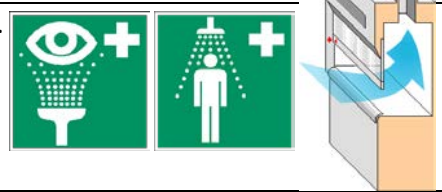





# Duke OESO Guidelines for Safe Use of PERCHLORIC ACID



A lab-specific SOP is required. Heating is "High Risk" & requires OESO approval.

<b>Hazards</b>	<b>Potential Hazards</b>	<ul style="list-style-type: none"> <li>Highly corrosive to skin, eyes, and respiratory tract. Skin contact may cause burns or death.</li> <li>Strong oxidizer: &gt;50% is a category 1 oxidizing liquid; &lt;50% is a category 2 oxidizing liquid. Heated perchloric acid is an extremely strong oxidizer.</li> <li>Explosive perchlorates may accumulate in the ductwork of a standard hood if perchloric acid is heated. If you suspect perchloric acid has been heated in a hood, contact OESO.</li> <li>Certain perchlorate salts present a serious explosion hazard.</li> <li>Review Safety Data Sheet (SDS) and the <a href="#">Perchloric Acid Laboratory Chemical Safety Summary</a>.</li> </ul>
	<b>Selection &amp; Purchase</b>	<ul style="list-style-type: none"> <li>Purchase the smallest, shatter-resistant containers at the lowest concentration practical.</li> <li>Consider alternate methods and use a less dangerous acid if possible.</li> </ul>
<b>Hazard Controls</b>	<b>Storage &amp; Transport</b>	<ul style="list-style-type: none"> <li>Store in secondary containment in a well ventilated area.</li> <li>Store away from incompatibles including organics &amp; powdered metals.</li> <li>Do not use cork or rubber stoppers! Keep away from paper.</li> <li>Transport in secondary containment, preferably a polyethylene or other non-reactive acid/solvent bottle carrier.</li> <li>Store below eye level but NOT in wooden cabinets or on the floor.</li> </ul> 
	<b>Engineering Controls</b>	<ul style="list-style-type: none"> <li>Eyewash and safety shower required in immediate area.</li> <li>Work in a chemical fume hood.</li> <li>If large quantities will be used, or if it will be heated, a special perchloric acid hood with water wash-down system will be necessary.</li> </ul> 
	<b>Work Practice Controls</b>	<ul style="list-style-type: none"> <li>Set up a designated area for perchloric acid and label it.</li> <li>Clear work area of flammables and organic materials.</li> <li>DO NOT HEAT in a standard chemical fume hood.</li> <li>Do not use as a drying agent if there is any chance of contact with organic compounds or a dehydrating acid strong enough to concentrate the perchloric acid due to risk of explosion.</li> <li>Decontaminate work area with a 10% sodium carbonate (soda ash) solution.</li> </ul>
	<b>Personal Protective Equipment (PPE)</b>	<ul style="list-style-type: none"> <li>Wear closed-toed shoes and clothing covering the legs.</li> <li>Minimum PPE:             <ul style="list-style-type: none"> <li>Safety goggles</li> <li>Buttoned lab coat</li> <li>TWO pairs nitrile gloves. Change promptly if splashed.</li> </ul> </li> <li>Risk of splash/work with &gt;100 ml add: face shield, impervious apron &amp; sleeves (or coverall).</li> <li>For expected glove contact use gloves rated for &gt;60 minutes with perchloric acid (e.g., thick nitrile, laminate, or 12 mil butyl).</li> <li>Wash hands at time of glove change.</li> </ul> 
<b>Other</b>	<b>Emergencies</b>	<ul style="list-style-type: none"> <li>See Emergency Response Flip Chart and/or lab specific chemical hygiene plan.</li> <li>For clean-up of small spills (&lt;100 ml), neutralize with sodium carbonate from edge to center, transfer slurry to a container of water, then the neutralize surface again and clean with soap and water. DO NOT absorb spilled perchloric acid with paper towels, rags, or other combustible materials because they can ignite once the perchloric acid dries!!</li> </ul>
	<b>Waste</b>	See lab-specific chemical hygiene plan, <a href="#">Lab Chemical Waste Management Practice</a> , and <a href="#">Drain Disposal Practice</a> . DO NOT MIX waste with incompatible wastes (e.g., organics)!!!
	<b>Training</b>	Sign signature page in lab-specific chemical hygiene plan to indicate review.
	<b>Questions</b>	Contact OESO Lab Safety at 919-684-8822 or labsafety@dm.duke.edu