SAFETY BULLETIN

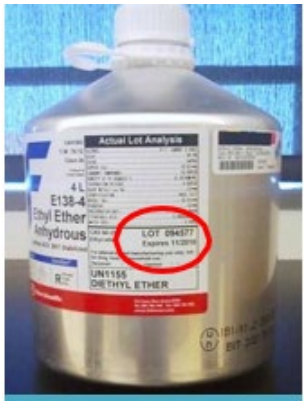
King Abdullah University of Science and Technology

جامعة الملك عبدالله للعلوم والتقنية

Safe Handling of Peroxide Formers

Purpose of the safety bulletin:

Alert laboratory staff of the dangers of peroxide forming chemicals and the precautions for handling them safely. The unusual stability problems of this class of compounds make them a serious fire and explosion hazard that requires careful management.



Above: Diethyl Ether Is Past Expiration Date

Peroxide forming chemicals (such as diethyl ether, tetrahydrofuran, 1,4 dioxane ,etc.) present a danger because of the possibility high levels of peroxides forming (e.g. during long-term storage or when a sample containing such chemicals are concentrated using rotary evaporation) which can cause a spontaneous explosion.

Once peroxides have formed, an explosion can result during routine handling, such as twisting the cap off a bottle – if peroxides are formed in the threads of the cap. Explosions are more likely when concentrating, evaporating, or distilling these compounds if they contain peroxides.

Why do peroxide forming chemicals present a hazard?

Peroxides can form in many ethers (and other chemicals) by simple reaction with atmospheric oxygen during storage. If the peroxides become concentrated, they can form shock sensitive substances which can explode spontaneously and destructively. For example, a dangerous concentration of peroxide can build up if an ether, containing peroxides, has most of the ether removed by vacuum distillation or rotary evaporation.

Steps to be taken to minimize the risk from the formation of peroxides:

Store safely *•Store in air tight containers in flammable liquid storage cabinet.*	**Date all bottles** *•Date all peroxide forming chemicals when received and 1st opened.*
Purchase wisely *•Purchase quantities you expect to use within the expiration date of the material.* *•Purchase in smallest practical container size.* *•The purchase of peroxide formers with added inhibitors in strongly encouraged.*	**Check peroxide levels** *•Each peroxide forming chemical container must be tested for peroxides when first opened and at least every 6 months thereafter. The results of the peroxide test and the test dates must be marked on the outside of the container.* *•Peroxide test strips can be purchased through the chemical warehouse.*

For more information on Peroxides, visit Lab Safety Manual: https://hse.kaust.edu.sa/Documents/ResearchSafety/Laboratory_Safety_Manual.pdf

If you have any questions, contact: researchsafety@kaust.edu.sa

November 2019