Standard Operating Procedure

**Ethylene glycol dimethyl ether**

(e.g. glyme, monoglyme, dimethyl glycol, ethylene glycol dimethyl ether, dimethyl cellosolve, DME, 1,2-Dimethoxyethane)

*This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.*

 Print a copy and insert into your
*Laboratory Safety Manual* and *Chemical Hygiene Plan*.
Refer to instructions for assistance.

|  |  |
| --- | --- |
| **Department:** | Click here to enter text. |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:** | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Type of SOP:** [ ]  Process [x] Hazardous Chemical [x]  Hazardous Class

**Purpose**

This chemical may form explosive peroxides. It is often used as a higher boiling alternative to diethyl ether and THF. It is therefore often used in organometallic chemistry like Grignard reactions, hydride reductions, and palladium-catalyzed reactions like Suzuki reactions and Stille couplings and is also a good solvent for oligo- and polysaccharides.

**Physical & Chemical Properties/Definition of Chemical Group**

CAS#: 110-71-4

Class: Peroxide forming, flammable chemical & Reproductive Toxin

Molecular Formula: C4H10O2

Form (physical state): Liquid

Color: Clear, colorless

Boiling point: 85°C

**Potential Hazards/Toxicity**

Flammable liquid and vapor. May form explosive peroxides.

May impair fertility (reproductive toxin), cause harm to the unborn child (teratogen).

Causes eye irritation, chemical conjunctivitis, and corneal damage.

May be absorbed through skin and cause skin irritation, cracking of the skin, and eczema.

Ingestion may cause gastrointestinal irritation with nausea and stomach pain. Alchol consumption increases risk of poisoning.

Inhalation may cause respiratory tract irritation and coughing. May produce narcotic effects in high concentrations.

Oral LD50 (Rat): 775 mg/kg

**Personal Protective Equipment (PPE)**

**Respirator Protection**

A ½ or full face respirator should be used any time there is the potential for exposure to vapor and a fume hood cannot be used.

Respirators should be used only under any of the following circumstances:

* As a last line of defense (i.e., after engineering and administrative controls have been exhausted).
* When Permissible Exposure Limit (PEL) has exceeded or when there is a possibility that PEL will be exceeded.
* Regulations require the use of a respirator.
* An employer requires the use of a respirator.
* There is potential for harmful exposure due to an atmospheric contaminant (in the absence of PEL)
* As PPE in the event of a chemical spill clean-up process

Lab personnel intending to use/wear a respirator mask must be trained and fit-tested by ORS and should contact occhealt@uga.edu. This is a UGA requirement described in more detail in the [UGA Respiratory Protection Plan](https://esd.uga.edu/sites/default/files/respiratoryprotection.pdf) and supported by the [Office of Research Occupational Health and Safety Program](https://research.uga.edu/ohsp/).

**Hand Protection**

Wear appropriate protective gloves to prevent skin exposure. Butyl-rubber gloves are recommended.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with ethylene glycol dimethyl ether..

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.allsafetyproducts.biz/page/74172>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection**

Safety glasses (goggles and/or full face shield during activities which pose a splash hazard)

**Skin and Body Protection**

Lab coats should be worn. A flame resistant lab coat must be worn when handling quantities of four liters or more. These laboratory coats must be appropriately sized for the individual and be buttoned to their full length. Laboratory coat sleeves must be of a sufficient length to prevent skin exposure while wearing gloves. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle should not be exposed.

**Hygiene Measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling.

**Engineering Controls**

Work with this chemical inside a fume hood.

**First Aid Procedures**

**If inhaled**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. Get medical attention immediately.

**In case of skin contact**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**In case of eye contact**

Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**If swallowed**

Do NOT induce vomiting unless directed to do so by medical personnel. If victim is conscious and alert, rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Special Handling and Storage Requirements**

Store in a tightly closed container in a cool, dry, well-ventilated area away from incompatible materials, ignition sources, excess heat, and strong oxidizing agents. Date containers upon receiving and opening, and dispose of or use within one year of opening date or manufacturer’s expiration date. Undated containers must be disposed of as hazardous waste. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Spill and Accident Procedure**

**Chemical Spill Dial 911**

**24-7 On-Call Response to Research, Environment, Health or Safety Concerns Dial 2-5561 from a campus phone or 706-542-5561 from a non-campus line.**

**Spill** – Follow the procedures set out in the [UGA Chemical and Laboratory Safety Manual.](http://research.uga.edu/docs/units/safety/manuals/Chemical-Laboratory-Safety-Manual.pdf)

[If there are any chemical-specific protocols for responding to a spill, insert them here or mark “none”:]

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# **Medical Emergency Dial 911**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial **911** or the emergency phone numbers listed at the beginning of the UGA Chemical and Laboratory Safety Manual

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Non-Life Threatening Emergency** – Follow the instructions in the UGA Chemical and Laboratory Safety Manual.

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Decontamination/Waste Disposal Procedure**

**For general hazardous waste disposal procedures, see Appendix H of the UGA Chemical and Laboratory Safety Manual.**

**Chemical Specific Procedures: [to be inserted or marked as “none”]**

Contaminated instruments and benches should be decontaminated with soap and water. All waste and contaminated disposables should be disposed of as hazardous waste.

**Safety Data Sheet (SDS) Location**

UGA personnel can access Online SDS through a link in the upper left corner of the ESD home page (<https://esd.uga.edu>) and logging in by using their UGA email user name and password.

**Protocol/Procedure (Add lab specific Protocol/Procedure here)**

Click here to enter text.

**NOTE**

Any deviation from this SOP requires approval from PI.

**Documentation of Training** (signature of all users is required)

* Prior to conducting any work with ethylene glycol dimethyl ether., designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and access to the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last 12 months.

**Principal Investigator SOP Approval**

Print name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Approval Date:

I have read and understand the content of this SOP:

|  |  |  |
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| **Name** | **Signature** | **Date** |
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