Standard Operating Procedure

**Isopropyl Ether**

*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 [ ]  Hazardous Class

**Purpose**

Isopropyl ether is extremely flammable and forms explosive peroxide crystals over time. Isopropyl ether is secondary ether that is used as a solvent. It is a colorless liquid that is slightly soluble in water, but miscible with most organic solvents. It is also used as an oxygenate gasoline additive. Isopropyl ether tends to form explosive peroxides upon standing in air for long periods (years). This reaction proceeds more easily than for ethyl ether, due to the secondary carbon next to the oxygen atom, which makes storage of isopropyl ether more dangerous

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

CAS#: 108-20-3

Class: Extremely Flammable and Peroxide Former

Molecular Formula: C6H14O

Form (physical state): liquid

Color: clear and colorless

Boiling point: 65-70OC

**Potential Hazards/Toxicity**

Over time, may form explosive peroxides. Causes eye, skin, and respiratory tract irritation. Ingestion may cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Prolonged or repeated contact may cause dry, cracked skin and cause irritation.

**Personal Protective Equipment (PPE)**

**Respiratory Protection**

Use a full-face respirator with multi-purpose combination cartridges as a backup to engineering controls. When a respirator is the sole means of protection, use a full-face supplied air respirator.

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**

When handling the chemical, laminate film, polyvinyl alcohol, neoprene or nitrile gloves are recommended. Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with isopropyl ether.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with isopropyl 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**

ANSI Z87 safety glasses with side shields

**Skin and Body Protection**

Wear full-length pants, closed-toe shoes, and a flame-resistant lab coat.

**Hygiene Measures**

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

**Engineering Controls**

Work with this chemical in a certified ducted fume hood. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

**First Aid Procedures**

**If inhaled**

Move person into fresh air. If not breathing, give artificial respiration. Consult a physician.**.**

**In case of skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water for 15 minutes. Take victim immediately to hospital. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Continue to wash eyes during transport to the hospital.

**If swallowed**

Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Special Handling and Storage Requirements**

For safe handling, be sure there are no white crystals forming on the outside of the bottle. Work in an area with adequate ventilation. When handling the chemical, use it away from shock, friction, and open flames. Prevent electric static build-up with a grounding cable. Wash thoroughly after handling. For safe storage, please label the date received and the date opened, prior to working with isopropyl ether.

If there are white crystals around the cap of the bottle, do not attempt to move the bottle and call the Industrial Hygiene division of ESD at (706)-542-5801. The white crystals are a sign of explosive peroxide formation and needs to be removed from the lab by a professionally trained person.

Keep the chemical in a tightly sealed container in dry and well-ventilated area. Containers of isopropyl ether should be protected from physical damage, direct sunlight, and ignition sources. It should be stored separately from strong oxidizing agents and strong acids. Segregate the chemical and store in secondary containment. Label the bottle, secondary containment, and storage cabinet as “Potentially Explosive Chemical.” Write the date the chemical was received and date the chemical was opened.

**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”]**

Wearing proper PPE, please decontaminate equipment and bench tops using soap and water. Please dispose of the used chemical and disposables contaminated with the chemical 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 isopropyl alcohol, 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.

I have read and understand the content of this SOP:

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