Standard Operating Procedure

Dicumyl Peroxide

*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 ☒Hazardous Chemical ☐ Hazardous Class

**Purpose**

Dicumyl peroxide is a strong free radical source. It is used as a polymerization initiator in organic reactions. It is also used as a reaction catalyst and a vulcanizing agent.

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

CAS# 80-43-3

Class: potentially explosive

Molecular Formula: [C6H5C(CH3)2-O]2  

Form (Physical State): crystalline solid, withish

Boiling Point: 130 °C

**Potential Hazards/Toxicity**

May cause fire.

Toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.

  

**Potential Health Effects**

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Personal Protective Equipment (PPE)**

Wear overalls, chemical goggles and impervious gloves. Avoid generating and inhaling dusts. If dust exists, wear dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

**Engineering Controls**

Use in well ventilated areas. Avoid generating and breathing in dusts. Use with local exhaust ventilation or while wearing dust mask. Keep containers closed when not in use.

**First Aid Procedures**

Keep at rest until fully recovered. Seek medical advice if effects persist.

**Skin**: If skin or hair contact occurs, immediately remove any contaminated clothing and wash skin and hair thoroughly with running water. If swelling, redness, blistering or irritation occurs seek medical assistance.

**Eye**: If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

**Ingestion**: Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek medical advice.

**Medical attention and special treatment**: Treat symptomatically.

**Fire Fighting Measures**

**Hazards from combustion products:** Organic peroxide. Avoid all ignition sources.

**Precautions for fire fighters and special protective equipment:** Decomposes on heating emitting toxic fumes, including those of oxides of carbon. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. If safe to do so, remove containers from the path of fire. Keep containers cool with water spray.

**Suitable Extinguishing Media: Hazchem Code:** Coarse water spray, fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

**Special Handling and Storage Requirements**

**Conditions for safe storage:** Store away from sources of heat or ignition. Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from incompatible materials.

Keep containers closed when not in use - check regularly for spills.

**Precautions for safe handling:** Avoid skin and eye contact and breathing in dust. In common with many organic chemicals, may form flammable dust clouds in air. For precautions necessary refer to

Safety Data Sheet "Dust Explosion Hazards". Take precautionary measures against static discharges.

**Spill and Accident Procedure**

**Personal precautions**

Use Personal Protective Equipment (PPE).

**Emergency procedures:** Shut off all possible sources of ignition. Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

**Methods and materials for containment and clean up:** Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in dust. Work up wind or increase ventilation. Cover with damp absorbent (inert material). Sweep or vacuum up, but avoid generating dust. Collect in properly labelled containers, with loose fitting lids, for disposal. Large quantities of peroxide should be diluted with desensitisation agent (eg. fuel oil) to a concentration below 10%.

**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 spent hydrochloric acid and disposables contaminated with hydrochloric acid 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**

1. Wear proper PPE before using this product: lab coat, safety glasses, and nitrile gloves.

2. Use only in the fume hood to prevent breathing dust.

3. Avoid exposure to heat, sources of ignition, and open flame.

4. Do not mix with concentrated acids, alkalis. Avoid contact with dirt and rust.

5. Always store in freezer when not in use.

For reactions:

1. Allow dicumyl peroxide to warm to room temperature before use.

2. Do not weigh or use this chemical in the acid hood or base hood. Use only in one of the schlenk hoods.

3. To weigh out any quantity of dicumyl peroxide, move a balance into a fume hood, and weigh out in the fume hood to prevent breathing any dust.

4. Once dicumyl peroxide has been weighed out, transfer it in a sealed vial or flask if it must be moved.

5. When finished with the bottle of dicumyl peroxide, replace in the freezer.

6. For reactions involving dicumyl, prevent exposure to acids and bases as it may cause a violent reaction. Addition to organic solvents should be done so slowly.

7. If heat is needed for a reaction, heat slowly to prevent an explosions and keep away from ignition sources, such as a burner.

8. This chemical may be used in a glove box. To do this, transfer the entire chemical bottle into the glove box and weigh out the desired amount of dicumyl peroxide using the glove box balance. Refer to the SOP on glove boxes for the proper procedure to transfer chemicals in and out. Dicumyl peroxide can be used in either the dry box (non-solvent) or the double box (solvent).

8. Dispose of any waste in a properly labeled container.

**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 **Dicumyl Peroxide**, 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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