Standard Operating Procedure

Ammonium Perchlorate

*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**

Ammonium perchlorate is a potentially explosive chemical and a strong oxidizer. Predominantly used in pyrotechnics, explosives and solid fuel for rockets. Laboratory use includes analytical techniques and etching/engraving.

Ammonium perchlorate is a mass explosion hazard. Additionally, upon combustion it forms hazardous products such as nitrogen oxides and hydrogen chloride gas. Acute toxicity from ammonium perchlorate itself occurs upon ingestion. Symptoms can include shortness of breath, and a bluish discoloration of the skin. The effects may be delayed for several hours following exposure.

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

CAS#: 7790-98-9

Class: **Potenially Explosive Chemical and Strong Oxidizer**

Molecular Formula: H4ClNO4

Form (physical state): Solid

Color: White

Boiling point: No data available

**Potential Hazards/Toxicity**

May be harmful if inhaled, swallowed, or absorbed through skin. May cause skin, respiratory tract or eye irritation. Chronic exposure may cause problems in the thyroid & lungs.

**Personal Protective Equipment (PPE)**

**Respirator Protection**

Full face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the 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**

Nitrile gloves is recommended to work with Ammonium Perchlorate.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with Ammonium Perchlorate..

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. Full face shield for supplementary protection.

**Skin and Body Protection**

Full length pants or its equivalence, closed-toe shoes, and a flame resistant lab coat.

**Hygiene Measures**

Handle in accordance with good general industrial hygiene and safety practice. Wash hands after every operation. Avoid formation of dust and aerosols.

**Engineering Controls**

Handle in a chemical fume hood to avoid dust and aerosol buildup.

**First Aid Procedures**

**If inhaled**

Move person to fresh air. Consult a physician.

**In case of skin contact**

Wash with soap and plenty of water for 15 minutes. Consult a physician in the event of irritation.

**In case of eye contact**

Flush eyes with water for at least 15 minutes. Seek medical attention immediately.

**If swallowed**

Do not induce vomiting. Rinse mouth with water. Consult a physician.

**Special Handling and Storage Requirements**

Avoid formation and contact with of dust and aerosols. Keep material away from light, heat, flammables or combustibles. Store in a cool, well-ventilated area. Keep dry.

**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 ammonium perchlorate and disposables contaminated with ammonium perchlorate 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 ammonium perchlorate., 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:

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