

Principal Investigator: _____

Date Approved: _____





This document covers basic chemical safety information for ammonium perchlorate and ammonium nitrate. The use of any ammonium perchlorate or ammonium nitrate is subject to pre-approval by the Principal Investigator (PI) and/or Supervisor. PI and/or Supervisor may use the sheet attached to this SOP to document any lab specific training for Ammonium Perchlorate or Ammonium Nitrate. **DO NOT USE AMMONIUM PERCHLORATE OR AMMONIUM NITRATE UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.**

Ammonium Perchlorate and Ammonium Nitrate

Ammonium perchlorate (NH_4ClO_4) and ammonium nitrate (NH_4NO_3) are solid, oxidizing salts with a high potential for explosion when mixed with fuels such as aluminum powder, azides, or hydrocarbon oils. The strongly oxidizing anions perchlorate and nitrate can also use the ammonium cation as a fuel source when subjected to high temperatures or rapid heating. Sudden decomposition leads to detonation and generates rapidly expanding nitrogen and oxygen gas, among other byproducts.



Ammonium perchlorate is primarily used in the preparation of solid fuel propellants, while ammonium nitrate is used in instant cold packs, in agriculture as a fertilizer, and also as a component in explosive mixtures.

Personal Protective Equipment & Personnel Monitoring			
 Lab Coat	 Gloves	 Eye Protection	 Face Shield
Flame resistant lab coat.	Nitrile or neoprene gloves.	ANSI Z87.1-compliant safety glasses or safety goggles. Consider using a face shield and/or blast shield for extra protection, especially if heating.	

Labeling & Storage

Store tightly sealed in secondary containment at the manufacturer's recommended temperature in an explosion-proof cabinet, or an explosion-proof refrigerator/freezer, that does not contain flammables, combustibles, reducing agents, powdered metals, or strong acids. Primary containers should be labeled according to the UNC Charlotte Chemical Hygiene Plan. The secondary container's label must contain the chemical name and corresponding hazards. Keep away from heat, light, and any potential initiating mechanisms. Also, if not plainly visible (e.g. through a cabinet window), labeling must be applied to storage locations where these are stored to avoid an inadvertent encounter.

Engineering Controls, Equipment & Materials

Fume Hood

Work in a chemical fume hood whenever possible. Keep the sash at the lowest practical height while working, and close the sash when the fume hood is not in use.

Blast Shield

When working with these substances the use of a portable blast shield inside the fume hood is highly recommended.

Cautions & Considerations

Initiating Mechanism

Before working with ammonium perchlorate or ammonium nitrate, remove from the work area all items that could inadvertently lead to an explosion via friction, impact, flammability/combustibility, light, or heat. Also consider working with equipment that cannot generate static electricity or sparks.

Spills

Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 911 from any campus phone (or 704-687-2200 from a cell phone). Report any exposure to EHS at 704-687-1111. Remain on-site (at a safe distance) to provide detailed information to first responders.

Decontamination

Decontaminate equipment and work surfaces which may have come into contact with ammonium perchlorate or ammonium nitrate using soap and water.

Waste

Collect spent material in sealed containers protected from light and heat, and dispose of as hazardous waste.

First Aid & Emergencies

Skin or Eye Contact

Remove contaminated clothing and accessories; flush affected area with water. If symptoms persist, get medical attention.

Inhalation

Move person into fresh air. If symptoms persist, get medical attention.

Ingestion

Rinse mouth with water. If symptoms persist, get medical attention.

Name	Signature	Date