

# School Material Safety Data Sheet

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AMMONIUM NITRATE

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## SECTION 1. INTRODUCTORY INFORMATION

**MATERIAL NAME AND FORMULA:** AMMONIUM NITRATE;  $\text{NH}_4\text{NO}_3$   
**SYNONYMS:** Nitric Acid, Ammonium Salt

**CAS NUMBER:** 6484-52-2

**INGREDIENTS:** Ammonium Nitrate

**DOT CLASSIFICATION:** Oxidizer

**MANUFACTURERS:** Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

**DESCRIPTION:** Colorless and odorless; crystalline solid.

**INTRODUCTORY INFORMATION:** A highly reactive strong oxidizer. Potential for explosion exists if mixed with various contaminants. Most common area of use would be in the Chemistry lab; may also be present in plant fertilizer mixtures.



## SECTION 2. USE AND STORAGE INFORMATION

### -- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- Ignites if heated with organic materials, including oil, charcoal, etc.
- When organic contaminants are present,  $\text{NH}_4\text{NO}_3$  can be considered an explosive capable of detonation by shock or combustion.
- Not recommended for use or storage in schools unless adequate precautions are taken.

### -- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- No smoking in storage or use area.
- After working with this material, always wash hands and face before eating, drinking, or smoking.

### -- ADDITIONAL INFORMATION --

- Contact lens wearers: soft lenses may absorb and all lenses may concentrate irritants. - For safety, contact lenses should not be worn in the laboratory.
- Many powdered metals may react explosively when fused with  $\text{NH}_4\text{NO}_3$  below 200°C; including Al, Sb, Bi, Cd, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, Sn, Zn, and brass.
- Ammonium nitrate is stable when stored and used under proper conditions.

### -- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs (if used at all).
- Not recommended for use or storage in schools unless adequate precautions are taken.
- $\text{NH}_4\text{NO}_3$  is hygroscopic.
- Store separately, away from all combustibles.
- Smoking should be banned in all chemical use and storage areas.

## SECTION 3. SPILLS & DISPOSAL PROCEDURES

### IF MATERIAL IS SPILLED:

- Eliminate all possible sources of ignition.
- Use nonsparking tools for cleanup.
- Avoid creating airborne dust conditions.

### DISPOSAL OF SMALL QUANTITIES:

- Add water to dilute, add soda ash, neutralize with 6M HCl, drain to sewer with copious water.
- Or, add NaOH (in fume hood) to liberate  $\text{NH}_3$  gas and form soluble Na salt. Dilute remaining solution and flush to drain with large amounts of water.

**DISPOSAL OF LARGER AMOUNTS :** Contact a licensed disposal company.

\*\*\* FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL \*\*\*

**SECTION 4: HEALTH HAZARDS**

- No TLV established.
- Ammonium nitrate is not listed as a carcinogen by the NTP, IARC, or OSHA.
- Provisional limit: Air 0.05 mg/m<sup>3</sup>: Data by TRW Systems Group for EPA contract (Aug. 1973, NTIS PB 224 591), pg. 78.
- Rat, Oral, LD<sub>50</sub>: 4820 mg/kg
- Contact with skin may cause mild skin irritations.
- Prolonged exposure can lead to lightheadedness, low blood pressure, and fainting.
- Individuals may be exposed to nitrogen oxides due to decomposition of NH<sub>4</sub>NO<sub>3</sub> at high temperatures. These are toxic gases which can quickly cause acute respiratory problems.

**SECTION 5: FIRST AID PROCEDURES****Eye contact:**

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get medical attention if irritation persists.\*

**Skin contact:**

- Wash exposed areas of skin with soap and water.
- Get medical attention if irritation persists.\*

**Inhalation:**

- Remove patient to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.\*

**Ingestion:**

- Get prompt medical attention.\*
- Never give anything by mouth to a person who is unconscious or having convulsions.

\* Get medical help (in school, in community, paramedic) for further treatment, observation, and support after first aid.

**SECTION 6: FIRE PROCEDURES AND DATA**

- Mixture with other combustible materials may cause explosion when heated.
- Gives off toxic nitrogen oxide gases when heated.
- Can be an explosive hazard if heated in confinement to allow pressure buildup.
- Extinguishing media: Flood with large amounts of water.
- For major fires, for fires involving a number of chemicals, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: Extremely toxic nitrogen oxides and nitrous oxide (gases).

FLASH POINT AND METHOD(S) (CC): ... Does not apply

AUTOIGNITION TEMPERATURE ... Does not apply

FLAMMABILITY LIMITS IN AIR (vol. %): Does not apply

**SECTION 7: PHYSICAL DATA**

BOILING POINT (@ 1 atm.) ... 210°C (Decomposes)

SOLUBILITY IN WATER (@ 0°C) ... 118 g/100g H<sub>2</sub>O

pH OF AQUEOUS SOLUTION, (0.1M) ... 5.4

SPECIFIC GRAVITY ... 1.7

MELTING POINT ... 169.6°C

MOLECULAR WEIGHT ... 80.06

DATA SOURCES: Genium Industrial MSDS #79 (7/81) and references 4-11, 25, 501, 503, 504, 510, 518.  
(see glossary for titles)

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