

MATERIAL SAFETY DATA SHEET

Note: Users of this product should study this data sheet containing important safety information and should make it available to all employees, agents and contractors. If the product is resold, copies of this data sheet should be provided to the purchaser for use with its employees, agents and contractors.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME: AMMONIUM SULFATE**

SYNONYMS: Diammonium Sulfate; Standard or Granular Ammonium Sulfate; Ammonium Sulphate; Sulfuric Acid, Diammonium salt.

CHEMICAL FORMULA: $(\text{NH}_4)_2\text{SO}_4$

CHEMICAL CATEGORY: Inorganic Salt

MANUFACTURER: DSM Chemicals North America, Inc.
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TRANSPORTATION EMERGENCIES, CALL: CHEMTREC, 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

2. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW****CAUTION!**

Brownish gray to white crystals or granules

Odorless

Moderately irritating to the eyes

Mildly irritating to the skin

Inhalation may cause irritation to the respiratory tract

Ingestion may cause gastrointestinal irritation

POTENTIAL HEALTH EFFECTS:

EYES: Contact with dust or mist can cause moderate eye irritation, redness and pain.

SKIN: Prolonged contact with dust may cause skin irritation, redness, itching, and pain.

INHALATION: Inhalation of dust may cause irritation to the respiratory tract. Symptoms may include sore throat, coughing or shortness of breath. Decomposes at high temperatures ($\sim 235^\circ\text{C}$) to release toxic vapors of ammonia gases and sulfur oxides. Avoid inhaling vapors or mists.

INGESTION: Ingestion may cause gastrointestinal irritation with sore throat, abdominal pain, nausea, diarrhea, and vomiting. Animal studies suggest that ulceration or hemorrhage of the G.I. tract could occur. Systemic ammonia poisoning is possible if sufficient absorption occurs.

CHRONIC: No adverse chronic effects are associated with this material.

CARCINOGEN STATUS: Ammonium sulfate is not listed as a carcinogen by the National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), or the Occupational Safety and Health Administration (OSHA).

AGGRAVATED MEDICAL CONDITIONS: Individuals with asthma may be at increased risk from exposure to ammonium sulfate.

For additional toxicology data please refer to Section 11.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Name	CAS #	% by Weight	TLV/PEL
Ammonium Sulfate	7783-20-2	98.5 - 100	None established. A TWA of 10 mg/m ³ (ACGIH) or 15 mg/m ³ (OSHA PEL) total dust and 3 mg/m ³ (ACGIH) or 5 mg/m ³ (OSHA PEL) respirable dust is required for all particulates not otherwise regulated. Because of its irritant nature, occupational exposures to ammonium sulfate dust should be maintained at levels somewhat below the regulatory limit for respirable dusts.

4. FIRST AID MEASURES

EYES: Immediately hold eyelids apart and flush with plenty of water for at least 20 minutes. Get medical attention if irritation persists.

SKIN: Immediately flush skin with plenty of water and wash contact area with mild soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation persists.

INHALATION: If exposed to excessive levels, remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if cough, irritation, or other symptoms develop.

INGESTION: DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

Not flammable under normal conditions of use.

FLAMMABLE PROPERTIES: FLASH POINT: Not flammable

FLAMMABLE LIMITS: LOWER FLAMMABLE LIMIT (% Volume in air): NA
UPPER FLAMMABLE LIMIT (% Volume in air): NA

AUTOIGNITION TEMPERATURE: NA

OSHA FLAMMABILITY CLASS: Noncombustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic vapors. Decomposition starts at temperatures greater than 235°C (455°F).

EXTINGUISHING MEDIA: Substance is nonflammable. Extinguish using agent required for type of fire surrounding material. Any standard extinguishing agent may be used.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear NIOSH approved self-contained breathing apparatus with full facepiece operated in the pressure demand mode and protective clothing to prevent contact with skin and eyes. Use water spray to cool fire exposed containers. Do not spray water directly on material.

SENSITIVITY TO MECHANICAL IMPACT/STATIC DISCHARGE: Not expected to be sensitive to mechanical impact or static discharge.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Accidental mixing with oxidizers like potassium chlorate, potassium nitrate or potassium nitrite may result in an explosion hazard during fires.

HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur oxides and ammonia gases may be formed in fires involving ammonium sulfate.

6. ACCIDENTAL RELEASE MEASURES

PROCEDURES FOR SPILLS: Ventilate area of leak or spill. Keep unauthorized personnel out of the area. Wear recommended personal protective equipment (see Section 8). Contain the spill. Vacuum or sweep up material and place into a suitable container for disposal or reclamation. Avoid generating dusty conditions. Do not discharge into waterways or sewer systems.

See Sections 7 and 13 for storage and waste disposal instructions.

7. HANDLING AND STORAGE

NORMAL HANDLING: Wear recommended personal protective equipment (see Section 8). Minimize dust generation and accumulation. Use with adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe dusts or ingest material. Wash thoroughly after handling. Launder contaminated clothing before reuse. Good personal hygiene and housekeeping practices should be followed.

STORAGE RECOMMENDATIONS: Store in a cool, dry area away from strong oxidizers and other incompatible materials. Store in a tightly closed container.

8. EXPOSURE CONTROL, PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide natural or mechanical ventilation sufficient to maintain airborne concentrations below the recommended exposure levels.

RESPIRATORY PROTECTION: Not required in adequately ventilated areas. For exposure above the TLV, use NIOSH approved dust respirator for needed protection. A self contained breathing apparatus should be used in emergencies situations or instances where the exposure levels are not known.

EYE PROTECTION: Indirectly vented chemical safety goggles are recommended for protection against nuisance dust.

SKIN PROTECTION: Wear impervious protective clothing; including long sleeved shirt and pants, boots, lab coat, apron or coveralls, as appropriate, to minimize skin contact. Wear appropriate protective work gloves when handling material to prevent skin contact.

OTHER CONTROLS/PROTECTION: Provide eyewash station and safety shower convenient to work area.

9. PHYSICAL AND CHEMICAL PROPERTIES**BOILING POINT:** NA**MELTING POINT:** 235°C (455°F) decomposition starts**SPECIFIC GRAVITY (Water = 1):** 1.77**MOLECULAR WEIGHT:** 132.16**VAPOR PRESSURE (mm Hg):** NA**VAPOR DENSITY (Air = 1):** NA**SOLUBILITY IN WATER:** 77 g/100 g @20°C (68°F)**ODOR:** Odorless**APPEARANCE:** Brownish-gray to white crystals or granules.**pH:** 4.5 - 5.5**10. STABILITY AND REACTIVITY****STABILITY:** Stable under normal conditions of use and storage.**MATERIALS TO AVOID:** Oxidizers, peroxides, potassium chlorate, potassium nitrate, sodium nitrate, sodium hypochlorite, metal chlorates, strong bases. Avoid contact or mixing with calcium carbonate (lime) or cement products, due to release of ammonia vapor. Corrosive to carbon steel, copper and copper alloys.**CONDITIONS TO AVOID:** Heat, to avoid decomposition, and dust generation**HAZARDOUS DECOMPOSITION PRODUCTS:** May release ammonia, oxides of sulfur, oxides of nitrogen, and oxides of carbon.**HAZARDOUS POLYMERIZATION:** Will not occur.**11. TOXICOLOGICAL INFORMATION****ROUTES OF ENTRY:** Skin contact, Eye contact, Inhalation, and Ingestion**TARGET ORGANS:** Respiratory system, eyes, and skin**TOXICITY - ACUTE EFFECTS: (RTECS: BS4500000)**

ORAL-MAN TDLo: 1500 mg/kg

ORAL-DOMESTIC ANIMAL (goat, sheep) LDLo: 3500 mg/kg

ORAL-RAT LD₅₀: 2840 mg/kg *ORAL-MOUSE LD₅₀: 640 mg/kg *INTRAPERITONEAL-MOUSE LD₅₀: 610 mg/kg**CARCINOGENICITY:** Not listed.**REPRODUCTIVE EFFECTS:** No information found.**MUTAGENICITY:** No information found.**DELAYED (SUBCHRONIC & CHRONIC) EFFECTS:** No known adverse chronic effects are associated with ammonium sulfate at this time.

12. ECOLOGICAL INFORMATION

TLm Daphnia magna: 423 mg/l/24 hr. Conditions of bioassay not specified.

13. DISPOSAL CONSIDERATIONS

Dispose of empty container and unused material according to applicable federal, state, and local regulations. Incineration or burial in licensed facilities may be appropriate. Do not discharge into waterways or sewer systems. Mixing with other materials or other alterations to pure product may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORTATION INFORMATION

US DOT ID NUMBER: Not regulated by DOT.

DOT PROPER SHIPPING NAME: Fertilizer or Fertilizer Materials VIZ: Sulphate of Ammonia, Dry. (Non-Regulated).

US DOT HAZARD CLASS: Not regulated by DOT.

15. REGULATORY INFORMATION

TOXIC SUBSTANCE CONTROL ACT (TSCA) INVENTORY STATUS: Listed on EPA TSCA Section 8(b) Chemical Inventory. Subject to the EPA's Inventory Update Reporting. This chemical is sponsored under the HPV Challenge program by the International Council of Chemical Association (ICCA) HPV Initiative.

OSHA: Not considered highly hazardous chemical.

SARA TITLE III/CERCLA: Not Regulated.

SARA 302: Not Regulated.

SARA 311/312 HAZARD CLASS: Ammonium Sulfate is listed as an acute health hazard.

SARA 313: Ammonium Sulfate solution deleted from TRI effective 6/30/95; must consider any contribution toward total ammonia releases.

CLEAN AIR ACT: This material does not contain any hazardous air pollutants or any Class 1 or 2 Ozone depletors.

CLEAN WATER ACT: This material is not listed as a Hazardous Substance, Priority Pollutant or a Toxic Pollutant under the CWA.

CHEMICAL WEAPONS CONVENTION: Not Regulated.

RCRA P-LIST and U-LIST: Not Regulated.

STATE RIGHT-TO-KNOW REGULATIONS: Listed in: Massachusetts; New Jersey; Pennsylvania; Rhode Island.

FOREIGN INVENTORY STATUS: Listed on:
 Canadian DSL;
 Canadian Ingredient Disclosure List;
 European EINECS (EINECS No.: 231-984-1);
 Japanese ENCS (ENCS No.: 1-400);
 Korean ECL (ELC Serial No.: KE-01743);
 Australian AICS;
 Swiss Giftliste 1 (SWISS No.: G-1121);
 Philippines PICCS.

WHMIS CLASSIFICATION (CANADA): This product is not a WHMIS controlled product in Canada.

16. OTHER INFORMATION

HMIS RATINGS:

Health	1	(slight hazard)
Flammability	0	(minimal hazard)
Reactivity	0	(minimal hazard)

HMIS RATING SYSTEM

0 - minimal hazard	3 - serious hazard
1 - slight hazard	4 - severe hazard
2 - moderate hazard	

Issued: October 1985
 Revisions: September 1992
 December 1995
 December 1996
 August 16, 2000: Sections: 2, 5, 9, 12 & 15
 April 16, 2001: Sections: 2, 3, 5, 9, 10 & 15
 November 16, 2001: Sections 4, 7, 14 & 15
 December 27, 2004: Section 8
 March 11, 2008: All sections (except 12 & 14)

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