

(Material) Safety Data Sheet



Section 1 - Product and Company

PRODUCT NAME: Ammonium Sulfate

CHEMICAL NAME:	Ammonium sulfate	PRODUCT CODE:	AS
CHEMICAL CATEGORY:	Ammonium salt	CAS NUMBER:	7783-20-2
MOLECULAR FORMULA:	(NH ₄) ₂ SO ₄	EINECS NUMBER:	231-984-1
MOLECULAR WEIGHT:	132.14		

PRODUCT DESCRIPTION: White Granule
PRODUCT USE: Agricultural and industrial
SYNONYMS: Ammonium sulphate; Diammonium sulfate

Company Identification:

Rentech Nitrogen Pasadena, LLC	Phone Numbers:
2001 Jackson Road	Rentech Technical Information: (01)-713-920-5331
Pasadena, TX 77506	Transportation Emergency: CHEMTREC (800) 424-9300 (within U.S.)

Section 2 – Hazards Identification

Emergency Overview

Physical Form: Solid granule

GHS: Corrosive to metals – Category 1

ROUTES OF ENTRY: Inhalation, Skin / Dermal, Eye / Ocular, Ingestion / Oral

POTENTIAL HEALTH EFFECTS – ACUTE (IMMEDIATE):

INHALATION:	Overexposure to airborne dust may cause upper respiratory tract irritation. Decomposition at high temperatures (>150°C / 312°F) releases fumes that can be severely irritating to the respiratory system.
SKIN:	May result in moderate skin irritation when exposure is prolonged or repeated.
EYE:	May irritate eyes from mechanical abrasion. Exposure to airborne dusts may cause mild, temporary irritation to the eyes.
INGESTION:	Ammonium sulfate has relatively low acute oral toxicity. Ingestion of large amounts may cause irritation of the gastrointestinal tract, characterized by burning and diarrhea.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Inhalation of airborne dusts may aggravate pre-existing respiratory conditions.

See Section 11 for Potential Chronic (Delayed) Effects

CONDITIONS TO AVOID: Avoid contact with moisture. Hydrolysis will slowly produce acids corrosive to metals. Highly corrosive to aluminum, zinc and copper.

POTENTIAL ENVIRONMENTAL EFFECTS: Release to water courses will liberate ammonium ions. Ammonia is a toxic hazard to fish.

See Section 12 for Ecological Information

Section 3 – Composition / Information on Ingredients

Components				
Chemical Name	CAS	%(weight)	UN;EINECS	EU Classification & R Phrases
Ammonium sulfate	7783-20-2	> 98%	231-984-1	None
Aluminum sulfate	10043-01-3	<2%	233-135-0	None

Section 4 – First Aid Measures

INHALATION: If symptoms are experienced, remove the source of contamination or move the person to fresh air. If symptoms persist, obtain medical advice.

SKIN: Remove contaminated clothing, shoes and leather goods (e.g., watch bands and belts). Quickly and gently blot or brush away excess chemical. Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap for 5 minutes. If irritation persists, repeat flushing. Obtain medical advice. Completely decontaminate clothing, shoes and leather goods before re-use, or discard.

EYE: Remove contact lenses if worn. Immediately rinse eyes with water for at least 15 minutes while holding the eyelid(s) open. Obtain medical advice.

INGESTION: If swallowed, DO NOT induce vomiting. May cause digestive tract irritation, with accompanying nausea, vomiting and diarrhea. If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat. Obtain medical advice.

See Section 2 for Potential Acute Health Effects and Section 11 for Potential Chronic Health Effects

Section 5 – Fire Fighting Measures

FLASH POINT: Ammonium sulfate is not combustible.

EXPLOSION LIMITS: Upper: Not applicable Lower: Not applicable

EXTINGUISHING MEDIA: Extinguish fire using an agent suitable for the surrounding fire (dry chemical, foam or carbon dioxide). Aqueous solution will be a strong acid. See Unusual Fire and Explosion Hazards. Water spray may be used to cool containers exposed to fire but avoid water entering containers of product.

PROTECTION OF FIREFIGHTERS: As with any fire, evacuate the area and fight the fire from a safe distance. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Wear a positive pressure, self-contained breathing apparatus and full protective gear.

FIREFIGHTING PROCEDURES: Runoff from fire control may cause pollution. See Section 6, Accidental Release Measures, for additional information.

**UNUSUAL FIRE AND
EXPLOSION HAZARDS
AND
HAZARDOUS COMBUSTION
PRODUCTS:**

Under fire conditions or when heated to decomposition, this substance can release toxic / corrosive fumes of sulfur dioxide and other sulfur oxides, nitrogen oxides and ammonia. Thermal decomposition may also result in the generation of nitrogen (an asphyxiant). Thermal decomposition temperature is reported to be between 150-280°C (302-536°F).

Section 6 – Accidental Release Measures

PERSONAL PRECAUTIONS: Wear appropriate protective clothing and equipment (see Section 8).
Ventilate enclosed areas.

EMERGENCY PROCEDURES: Keep spilled material away from water and metals. Control source of spill/leak if possible to do so without exposure. Isolate spill or leak area.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, waterways, drinking water supplies or low-lying areas. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users.

Containment / Clean-up Measures: Granules and dust should be cleaned up using methods that will minimize dust generation. For small spills, recover solid material and place in a suitable, labeled container for intended use or disposal. For large spills, prevent spills from entering sewers, watercourses, wells, etc. Recover solid material and place material in suitable, labeled container for recycle, reuse or disposal. If spilled material cannot be used for intended purpose, see Section 13.

PROHIBITED MATERIALS: See Section 10.

Section 7 – Handling and Storage

HANDLING: Do not get on skin or in eyes. Avoid generation of airborne dusts from this product. Handle this product with adequate ventilation. Wear all personal protective equipment as described in Section 8. Keep away from extreme heat. Do not use with incompatible materials such as strong oxidizing agents (see Section 10). Wash all exposed skin thoroughly with soap and plenty of water after handling. Remove contaminated clothing and wash before reuse.

STORAGE: Store in a dry, cool, well-ventilated area. Keep containers closed when not in use. Store product in an appropriate container and provide adequate exposure controls and personal protection and protection from weather. Have suitable emergency equipment for fires, spills and leaks readily available.

Section 8 – Exposure Controls/Personal Protection

PERSONAL PROTECTIVE EQUIPMENT (PPE):



Protective Clothing: The hazard potential of this material is low. Where there is large scale use of this material with significant potential for worker contact, long-sleeved clothing or coveralls, chemical resistant gloves and safety glasses with side shields may be necessary.

Ventilation: Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure guidelines. If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure guidelines.

Respiratory Protection: Where dust is generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-95 particulate filter cartridge respirator or an N-95 disposable dust mask).

Listed Exposure Limits / Guidelines ⁽¹⁾				
	U.S. OSHA PEL	ACGIH TLV	U.S. NIOSH REL	Manufacturer
Ammonium sulfate	None Established – See notes below.			

NOTE: OELs for individual jurisdictions may differ from the U.S. Check with local authorities for the applicable OELs in your jurisdiction.

OSHA PEL – All inert or nuisance dusts, whether mineral, inorganic, or organic not listed specifically by substance name in Tables Z-1 or Z-3 of 29 CFR 1910.1000 are covered by the Particulates Not Otherwise Regulated (PNOR) limit of 15 mg/m³ total dust and 5 mg/m³ respirable fraction.

ACGIH TLV – ACGIH believes that even biologically inert, insoluble, or poorly soluble particles may have adverse effects and recommends that airborne concentrations should be kept below 3 mg/m³ respirable particles and 10 mg/m³ inhalable particles, until such time as a TLV is set for a particular substance. While ammonium sulfate does not completely meet the ACGIH definition of a Particle Not Otherwise Specified (PNOS) due to its solubility, this is still considered to be a valid guideline for ammonium sulfate dust.

OSHA - Occupational Safety and Health Administration; ACGIH - American Conference of Governmental Industrial Hygienists; NIOSH - National Institute for Occupational Safety and Health. OEL – Occupational Exposure Limit, PEL – Permissible Exposure Limit, TLV – Threshold Limit Value, REL – Recommended Exposure Limit.

Section 9 – Physical and Chemical Properties

APPEARANCE: Solid, white granules	ODOR: Odorless	ODOR THRESHOLD: ~17 ppm for ammonia	
BOILING POINT:	Decomposes >280°C (536°F)	PH (10% aqueous solution):	3-4
MELTING POINT:	235°C (455°F)	SPECIFIC GRAVITY (WATER = 1):	0.913
WATER SOLUBILITY:	Easily soluble in hot water. Soluble in cold water	BULK DENSITY:	Loose: ~913 kg/m ³ ; 57 lbs/ft ³ ; Tapped: ~945 kg/m ³ ; 59 lbs/ft ³
Vapor Pressure:	Not Applicable	Vapor Density (Air = 1):	Not Applicable

Section 10 – Stability and Reactivity

- STABILITY:** Stable under normal temperatures and pressures.
- HAZARDOUS POLYMERIZATION:** Will not occur.
- CONDITIONS TO AVOID:** Avoid contact with moisture. Hydrolysis will slowly produce acids corrosive to metals.
- INCOMPATIBLE MATERIALS:** Slightly reactive with oxidizing agents, metals, alkalis, or moisture. Non-reactive with reducing agents, combustible materials, organic materials and acids.
- CORROSIVITY:** Highly corrosive to aluminum, zinc and copper. Slightly corrosive to steel and 304 stainless steel; non-corrosive to 316 stainless steel. Incompatible with copper alloys. Corrosive to brass. Corrosive to ferrous metals and alloys.

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to decomposition this substance emits very toxic and corrosive fumes of sulfur oxides, ammonia and nitrogen. Upon heating in an open system, decomposition begins at temperatures between 150 - 280°C. Decomposition is complete at 336-357°C.

Section 11 – Toxicological Information

General: In the form in which this product is sold it has relatively low toxicity. The major route of exposure would be through the generation and inhalation of airborne dust.

Acute Health Effects

Irritation: Over-exposure to airborne dusts may cause irritation to the eyes and the upper respiratory tract. Contact with the skin may cause mild irritation when exposure is prolonged or repeated.

Acute Toxicity Data

Ingredient	LD ₅₀ Oral (mg/kg)	LD ₅₀ Dermal (mg/kg)	LC ₅₀ Inhalation (ppm 4 hr.)
Ammonium sulfate	2840 – 4540 (rat)	>2000 (rat)	Not available

Chronic Toxicity Data

Carcinogenicity: Ammonium sulfate is not known to be a carcinogen. This product does not contain any component that is considered to be a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA or NTP (National Toxicology Program).

Sensitization: Not applicable

Neurological Effects: Not applicable

Genetic Effects: Ammonium sulfate was not mutagenic in bacteria (Ames test) and yeasts with and without metabolic activation systems. It did not induce chromosomal aberrations in mammalian or human cell cultures.

Reproductive Effects: Not available

Developmental Effects: In a screening study according to OECD TG 422 with up to 1500 mg/kg, of Ammonium sulfate, no effects on development have been detected in rats.

Target Organ Effects: Not applicable

Section 12 – Ecological Information

Ecotoxicity (ammonium sulfate): Crustacea (water flea):
24 Hr EC₅₀ Daphnia magna: 423 mg/L
48 Hr LC₅₀ Daphnia magna: 14 mg/L

Fish (freshwater fish):

96 Hr LC50 Leuciscus idus: 460 - 1000 mg/L [static]
96 Hr LC50 Brachydanio rerio: 250 mg/L
96 Hr LC50 Brachydanio rerio: 480 mg/L [flow-through]
96 Hr LC50 Brachydanio rerio: 420 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio: 18 mg/L
96 Hr LC50 Pimephales promelas: >100 mg/L
96 Hr LC50 Oncorhynchus mykiss: 32.2-41.9 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss: 5.2-8.2 mg/L [static]
96 Hr LC50 Poecilia reticulata: 123-128 mg/L [semi-static]
96 Hr LC50 Poecilia reticulata: 126 mg/L

Aquatic / Marine Toxicity: Avoid spills or releases to waterways. In water, ammonium sulfate releases ammonium ions, a toxicity hazard for aquatic organisms.

Mobility: This substance will disperse in water.
Persistence: This product is non-persistent.
Products of Degradation: Products of degradation include oxides of nitrogen and sulfur. Product will promote algae growth which may degrade water quality and taste.
Bioaccumulation Potential: No bioaccumulation potential when applied using normal agricultural practice.

Section 13 – Disposal Considerations

Do not wash down drain. Recover and place material in a suitable container for intended use or disposal. Ensure that disposal complies with applicable federal, state/provincial and local regulations.

Section 14 – Transportation Information

U.S. DOT:	Not regulated	TDG:	Not regulated
IMO / IMDG:	Not regulated	ADN:	Not regulated
IATA:	Not regulated	ADR:	Not regulated

Shipping Name: Ammonium sulfate

Section 15 – Regulatory Information

U.S. Emergency Planning and Community Right-to-Know Act (EPCRA):

- Section 302: This product contains no "Extremely Hazardous Substances".
- Section 311/312 Hazard Categories: Acute
- Section 313: Ammonium salts are not specifically identified as being reportable EPCRA section 3 chemicals. However, when water dissociable ammonia salts are placed in water, reportable aqueous ammonia is released.

U.S. State Right To Know				
Component	CAS	MA	NJ	PA
Ammonium sulfate	7783-20-2	Yes	No	Yes
Aluminum sulfate	10043-01-3	Yes	Yes	Yes

National Inventories							
Component	CAS	U.S. TSCA	Canada DSL	China IECS	EU EINECS	Japan ENCS	Korea KECL
Ammonium sulfate	7783-20-2	Yes	Yes	Yes	Yes	Yes	Yes
Aluminum sulfate	10043-01-3	Yes	Yes	Yes	Yes	Yes	Yes

Canada – Labor

Canada - WHMIS - Classifications of Substances

- Ammonium sulfate 7783-20-2 > 98% Uncontrolled product according to WHMIS classification criteria
- Aluminum sulfate 10043-01-3 < 2% D2B

Canada - WHMIS - Ingredient Disclosure List

- Ammonium sulfate 7783-20-2 > 98% 1 %

Canada - Environment

Canada - CEPA - Priority Substances List

- Aluminum sulfate 10043-01-3 < 2% Priority Substance List 2 (substance not considered toxic)

Europe - Other

EU - Existing Substance Regulation (793/93/EEC) - Evaluation of Existing HPV Chemicals (REPEALED)

- Ammonium sulfate 7783-20-2 > 98%
- Aluminum sulfate 10043-01-3 < 2%

EU - Food Additives (1333/2008/EC) - Annex IV - Other Permitted Food Additives

- Aluminum sulfate 10043-01-3 < 2% E 520

EU - Food Additives (1333/2008/EC) - Annex V - Permitted Food Carriers and Carrier Solvents

- Ammonium sulfate 7783-20-2 > 98%

EU - Food Additives (2008/84/EC) - Specific Purity Criteria for Food Additives Other than Colours and Sweeteners

- Ammonium sulfate 7783-20-2 > 98% E 517
- Aluminum sulfate 10043-01-3 < 2% E 520

EU - Inventory of Cosmetic Ingredients Directive (INCI) (76/768/EEC) - Other Ingredients

- Ammonium sulfate 7783-20-2 > 98% Reducing; Viscosity controlling
- Aluminum sulfate 10043-01-3 < 2% Antiperspirant; Deodorant

Germany - Environment

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

- Ammonium sulfate 7783-20-2 > 98% Number 296, hazard class 1 - low hazard to waters
- Aluminum sulfate 10043-01-3 < 2% Number 486, hazard class 1 - low hazard to waters (footnote 8)

Other Agency Information – Other

ICCA - High Production Volume Working List

- Ammonium sulfate 7783-20-2 > 98%
- Aluminum sulfate 10043-01-3 < 2%

OECD - List of High Production Volume Chemicals

- Ammonium sulfate 7783-20-2 > 98% SIDS Chemical
- Aluminum sulfate 10043-01-3 < 2%

Other Agency Information – Other (continued)

OECD - SIDS for HPV Chemicals - Publications Date of SIDS Initial Assessment Reports

- Ammonium sulfate 7783-20-2 > 98% April 2007

OSPAR - List of Substances Considered to Pose Little Risk to the Environment

- Aluminum sulfate 10043-01-3 < 2%

United States - Environment

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

- Aluminum sulfate 10043-01-3 < 2% 5000 lb final RQ; 2270 kg final RQ

U.S. - CWA (Clean Water Act) - Hazardous Substances

- Aluminum sulfate 10043-01-3 < 2%

U.S. - CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances

- Aluminum sulfate 10043-01-3 < 2% 5000 lb RQ

U.S. - EPA - Designated Generic Categories - Aqueous Ammonia

- Ammonium sulfate 7783-20-2 > 98% NH3 Equiv. Wt. % = 25.78

U.S. - EPA - HPV (High Production Volume) Challenge Program Chemical List

- Ammonium sulfate 7783-20-2 > 98% Indicators 2,4; ICCA Confirmed Commitment

U.S. - FIFRA - Listing of Pesticide Chemicals (40 CFR 180)

- Ammonium sulfate 7783-20-2 > 98% Section number 180.910
- Aluminum sulfate 10043-01-3 < 2% Section number 180.920

U.S. - FIFRA - Pesticide Product Other Ingredients

- Ammonium sulfate 7783-20-2 > 98% List 4B - Inert Ingredients
- Aluminum sulfate 10043-01-3 < 2% List 4B - Inert Ingredients

United States - Other

U.S. - FDA - Food Additives Generally Recognized as Safe (GRAS)

Ammonium sulfate 7783-20-2 > 98% 21 CFR 184.1143

- Aluminum sulfate 10043-01-3 < 2% 21 CFR 182.1125

U.S. - FDA - Indirect Food Additives

- Ammonium sulfate 7783-20-2 > 98% 21 CFR 177.1200

U.S. - FDA - Total Food Additives List Sourced from EAFUS

- Ammonium sulfate 7783-20-2 > 98% 177.1200, 184.1143, 73.85
- Aluminum sulfate 10043-01-3 < 2% 172.892, 182.1125

U.S. - Coast Guard - Compatibility Groups

- Ammonium sulfate 7783-20-2 > 98% Group No. 43 (solution)
- Aluminum sulfate 10043-01-3 < 2% Group No. 43 (solution)

U.S. - Coast Guard - Special Requirements for Bulk Liquid Hazardous Materials

- Aluminum sulfate 10043-01-3 < 2% 46 CFR 151.58-1(e) (solution)

United States – California – Labor

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

- Aluminum sulfate 10043-01-3 < 2%

United States – California - Environment

U.S. - California - Air Toxics Hot Spots Act - Emissions Inventory Criteria & Guidelines - Appendix A-I Substances - ADOA

- Ammonium sulfate 7783-20-2 > 98% 100 lbs/yr ADOA

U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)

- Ammonium sulfate 7783-20-2 > 98% Category IVb

United States – Delaware - Environment

U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities

- Aluminum sulfate 10043-01-3 < 2% 5000 lb DRQ

United States – Louisiana – Environment

U.S. - Louisiana - Reportable Quantity List for Pollutants

- Aluminum sulfate 10043-01-3 < 2% 5000 lb final RQ; 2270 kg final RQ

United States – Massachusetts - Environment

U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1

- Aluminum sulfate 10043-01-3 < 2% See RCs of any listed constituents

U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2

- Aluminum sulfate 10043-01-3 < 2% See RCs of any listed constituents

U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity

- Aluminum sulfate 10043-01-3 < 2% 100 lb RQ

U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1

- Aluminum sulfate 10043-01-3 < 2% See RCs of any listed constituents

U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2

- Aluminum sulfate 10043-01-3 < 2% See RCs of any listed constituents

U.S. - Massachusetts - Toxics Use Reduction Act

- Aluminum sulfate 10043-01-3 < 2% CERCLA Only chemical

United States – Michigan – Environment

U.S. - Michigan - Polluting Materials List

- Aluminum sulfate 10043-01-3 < 2% 500 lb TRQ

United States - New Jersey - Environment

U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances

- Aluminum sulfate 10043-01-3 < 2%

U.S. - New Jersey - Special Health Hazards Substances List

- Aluminum sulfate 10043-01-3 < 2% corrosive

United States - New York - Environment

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

- Aluminum sulfate 10043-01-3 < 2% 5000 lb RQ (air); 100 lb RQ (land/water)

United States – Pennsylvania - Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

- Ammonium sulfate 7783-20-2 > 98%
- Aluminum sulfate 10043-01-3 < 2%

United States - Rhode Island - Labor

U.S. - Rhode Island - Hazardous Substance List

- Ammonium sulfate 7783-20-2 > 98% Flammable

United States – Texas - Other

U.S. - Texas - Effects Screening Levels - Long Term

- Ammonium sulfate 7783-20-2 > 98% 5 µg/m3 ESL
- Aluminum sulfate 10043-01-3 < 2% 5 µg/m3 ESL

U.S. - Texas - Effects Screening Levels - Short Term

- Ammonium sulfate 7783-20-2 > 98% 50 µg/m3 ESL
- Aluminum sulfate 10043-01-3 < 2% 50 µg/m3 ESL

Section 16 – Other Information

Responsible for MSDS:	MSDS Coordinator	PREPARATION DATE:	31 Jan 2013
Address:	Rentech Nitrogen Pasadena, LLC Pasadena, TX 77501	LAST REVISION DATE:	31 Jan 2013
Telephone:	(01)713-920-5362		

OTHER INFORMATION:

National Fire Protection Association (NFPA) Rating:

Health = 1 Flammability = 0 Reactivity = 0 Other = None

Hazardous Materials Information System (HMIS) Rating:

Health = 1 Flammability = 0 Reactivity = 0

Other = Personal Protection rating to be supplied by the user depending on specific conditions of use.

DISCLAIMER / STATEMENT OF LIABILITY: The information herein has been compiled from sources believed to be reliable and up-to-date, and is accurate to the best of our knowledge. However, Rentech Nitrogen Pasadena, LLC cannot give any guarantees regarding information from other sources, and expressly does not make warranties, nor assumes any liability for its use. The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.