

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER: **DAKSUL 45 - Ammonium Sulfate**

GENERAL USE: Fertilizers, water treatment, fermentation, fireproofing compositions, viscose rayon, tanning, food additive.

PRODUCT DESCRIPTION: Brown-gray to white crystals or granules.

MANUFACTURER:

Dakota Gasification Company
420 County Road 26
Beulah, North Dakota 58523-9400
(701) 873-6677

EMERGENCY TELEPHONE NUMBERS:

Dakota Gasification (701) 873-6600
CHEMTREC (800) 424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENTS</u>	<u>WT. %</u>	<u>CAS Registry #</u>
Ammonium Sulfate	99-100%	7783-20-2

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200): EXPOSURE LIMITS 8 hrs. TWA (ppm)

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Ammonium Sulfate	Not Established	Not Established

3. HAZARDS IDENTIFICATION / EMERGENCY OVERVIEW:

Routes of Entry: Inhalation, ingestion, skin contact, and eye contact. Target organs include the respiratory system and lungs.

General Warnings: Harmful if swallowed. Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Keep in tightly closed container. Use adequate ventilation. Wash thoroughly after handling.

Effects of Acute Exposure: Causes irritation.

Organs Affected by Long-Term Exposure: Respiratory system and lungs.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: Irritation. Contact with dust can cause eye irritation.

SKIN CONTACT: Prolonged contact may cause irritation.

INHALATION: Dust inhalation may irritate nose, throat, and lungs.

INGESTION: Gastrointestinal irritation. Not generally considered toxic (see section 11. TOXICOLOGICAL INFORMATION).

4. FIRST AID MEASURES

- EYES:** In case of eye contact, immediately flush with plenty of water for at least 15 minutes.
- SKIN:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
- INHALATION:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- INGESTION:** If swallowed and the victim is conscious, give large amounts of water. Induce vomiting. Seek medical attention.
-

5. FIRE FIGHTING MEASURES

- FLASH POINT:** Does not apply.
- AUTO-IGNITION TEMPERATURE:** Does not apply.
- FIRE AND EXPLOSION HAZARDS:** Contact with strong oxidizers may cause fire and explosion.
- UPPER EXPLOSIVE / FIRE LIMITS:** Nonflammable.
- LOWER EXPLOSIVE / FIRE LIMITS:** Nonflammable.
- EXTINGUISHING MEDIA:** Use appropriate media for surrounding fire.
- SPECIAL FIRE FIGHTING PROCEDURES:** Fire fighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.
-

6. ACCIDENTAL RELEASE MEASURES

- SPILL OR LEAK PROCEDURES:** Wear self-contained breathing apparatus and protective clothing to keep material off skin. With a clean shovel, place material into clean, dry container and cover; remove from area. Flush spill area with water.
- WASTE DISPOSAL METHOD:** Dispose of waste according to federal, state, local, or other applicable standards.
-

7. HANDLING AND STORAGE

- STORAGE TEMPERATURE:** Avoid hot temperatures (see section 10. STABILITY AND REACTIVITY).
- SHELF LIFE:** Indefinite.
- SPECIAL SENSITIVITY:** Incompatible with strong oxidizing agents, copper, brass, bronze, and strong acids.
- HANDLING / STORAGE PRECAUTIONS:** Keep containers tightly closed. Suitable for general chemical storage area. Do not store near oxidizing materials (Oxidizers; e.g., potassium salts - nitrite, nitrate, chlorate; also chlorine and hypochlorite).
-

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

RECOMMENDED WORK / HYGIENE PROCEDURES:	Use precaution when handling material. Avoid breathing dust. Wash thoroughly after handling material. Use proper personal protective clothing.
EYE PROTECTION REQUIREMENTS:	Under dusty conditions, wear chemical safety goggles. Safety goggles are recommended where material can come in contact with the eyes.
HAND PROTECTION REQUIREMENTS:	Use chemical resistant gloves of neoprene, natural rubber, or PVC.
PROTECTIVE CLOTHING REQUIREMENTS:	Wear clothing that protects the skin from chemical contact (e.g., coveralls, long sleeve shirt).
RESPIRATORY REQUIREMENTS:	Respirator is not required where adequate ventilation conditions exist. Avoid breathing dust. Use local exhaust system, if dusty conditions prevail. Where dusty or misty conditions require it, use a NIOSH-approved dust or mist respirator for needed protection. If airborne concentration is high, use a half-face cartridge respirator with filter cartridges.
WASH REQUIREMENTS:	Wash thoroughly after handling material.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Brown-gray to white crystals or granules.
pH:	1.3% solution: pH = 5.5
ODOR:	Odorless
PHYSICAL STATE:	Solid
VAPOR PRESSURE:	Does not apply (material is a solid).
MELTING POINT:	280°C (536°F) (at 765 mmHg)
SPECIFIC GRAVITY:	1.77 (water = 1)
EVAPORATION RATE:	Does not apply.
PERCENT VOLATILES:	0 (by volume at 21°C)
BULK DENSITY:	1.77
SOLUBILITY IN WATER:	Appreciable (>10%)
SOLVENT SOLUBILITY:	Insoluble in alcohol and acetone.
MOLECULAR WEIGHT:	132.14
CHEMICAL FORMULA:	(NH ₄) ₂ SO ₄
CHEMICAL FAMILY:	Ammonium Salts

10. STABILITY AND REACTIVITY

INSTABILITY CONDITIONS: Avoid contact with heat. Temperatures above 280°C

(536°F) causes material to decompose.

INCOMPATIBILITIES: Contact with strong oxidizers may cause fire or explosion. Incandescent reaction on heating with potassium chlorate. Reaction with sodium hypochlorite forms the unstable explosive trichloride. Copper, brass, bronze, strong acids.

DECOMPOSITION PRODUCTS: Ammonia and Sulfur Oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact.

EFFECTS OF ACUTE EXPOSURE: Causes irritation.

SYMPTOMS: Irritation, harmful if swallowed.

EYE EFFECTS: Irritation.

SKIN EFFECTS: Irritation.

ACUTE ORAL EFFECTS: TDLo 1500 mg/kg, man; LD₅₀ 3000 mg/kg rat. The sulfur ion may cause vomiting.

ACUTE INHALATION EFFECTS: Respiratory irritation.

CHRONIC EFFECTS / CARCINOGENICITY: This agent is not considered a carcinogen by NTP, IARC, or OSHA.

ORGANS AFFECTED BY LONG-TERM EXPOSURE: Respiratory system and lungs.

12. ECOLOGICAL INFORMATION

One use of Ammonium Sulfate is as a fertilizer; therefore, waste ammonium sulfate might be used as a fertilizer. If discarded to waterways, it may promote eutrophication.

AQUATIC TOXICITY: 25 HR. TL_m: 423 mg/L
50 HR. TL_m: 433 mg/L
100 HR. TL_m: 292 mg/L

13. DISPOSAL CONSIDERATIONS

Recycling/reuse of all ammonia sulfate residuals is recommended. When discharged, this product, in our opinion, is not listed by the EPA as a Hazardous Waste (40 CFR, Part 261). This product does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity, and is not formulated with the metals or organic in the TCLP test.

Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME: Ammonium Sulfate

D.O.T. HAZARD CLASS: Nonregulated substance.
U.N. NUMBER: N/A
D.O.T. PLACARD: N/A
D.O.T. LABEL CODE: N/A
PACKAGING CLASSIFICATION: Does not apply.
D.O.T. REPORTABLE QUANTITY: Not Established.

15. REGULATORY REQUIREMENTS

EPA DETERMINATIONS

CERCLA, 40 CFR 302

The material does not contain hazardous substances which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986,

TITLE III - SECTIONS 302, 304, 311, 312, 313

SECTION 302 / 304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0 % concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release under section 304.

SECTION 311 / 312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA Hazard categories.

- Immediate (Acute Health Hazard)
- 4 Delayed (Chronic Health Hazard)
- Fire
- Sudden Release of Pressure
- Reactive

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of toxic chemicals and is not subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA) (40 CFR 710)

The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory (40 CFR 710) and/or are otherwise in compliance with TSCA.

LIABILITY DISCLAIMER

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct since it was obtained from sources we believe are reliable. However no representation, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material, or the results to be obtained from the use thereof. User assumes all risks and liability of any use, processing or handling of any material, variations in methods, conditions and equipment used to store, handle, or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at his sole discretion.

Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe work place to examine all aspects of its operation and to determine if or where precautions, in addition to those described herein, are required.