

Emergency Overview**Signal Word****Warning****Hazard Statements**

- May form combustible dust concentrations in air
- May be harmful if swallowed
- May cause cancer if inhaled
- May be harmful in contact with skin
- Causes skin and eye irritation



Appearance: White and Green Granules **Physical State:** Solid **Odor:** No Information Available

Precautionary Statements - General

- Wear protective gloves/protective clothing/eye protection/face protection
- Keep out of reach of children
- If medical advice required, see first aid instructions below
- Ground storage and handling equipment

3. COMPOSITION / INFORMATION ON INGREDIENTS**Mixture**

Chemical Name	CAS-No	Weight %
Ammonium Sulfate	7783-20-2	58
Sulfur	7704-34-9	37.8
Bentonite Clay	1302-78-9	4.2
Crystalline Silica	14808-60-7	<0.126

4. FIRST AID MEASURES**Description of necessary first-aid measures****Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for 5 minutes. Get medical attention if symptoms occur.

Skin Contact

Wash off immediately with soap and plenty of water for 5 minutes. Remove contaminated clothing and shoes.

Inhalation

Move to fresh air. Get medical attention if symptoms occur.

Ingestion

Ingredients Ammonium sulphate and Sulfur-Bentonite fertilizer have relatively low acute toxicity. Swallowing may cause gastro-intestinal irritation. Symptoms may include abdominal pain, nausea and diarrhea. Seek medical advice if irritation or discomfort occur.

Most important symptoms/effects, acute and delayed

- In Eyes** May cause moderate to severe irritation (sore, red, tearing eyes).
- Inhaled** Repeated or long-term inhalation may lead to respiratory problems (see note in Section 11).
- On Skin** May cause dermal irritation.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician Treat symptomatically.

5. FIRE – FIGHTING MEASURES

Suitable Extinguishing Media

Water spray or fog is preferred; if water not available use dry chemical, carbon dioxide or regular foam. Small fires may be smothered with sand.

Unsuitable Extinguishing Media

Do not scatter spilled material with high pressure water streams.

Specific Hazards rising from Sulfur Bentonite

Avoid dust formation. Dust suspended in air can be ignited by flame, static electricity or friction spark. Every reasonable step must be taken to minimize dust formation (gentle, infrequent product handling, avoid seasonal carryover of inventory). Combustion products include Sulfur dioxide and hydrogen sulfide.

Specific hazards arising from Ammonium Sulfate:

Ammonium Sulfate is not combustible.

Under fire conditions or when heated to decomposition this substance can release toxic and corrosive fumes of sulfur dioxide, sulfur trioxide, nitrogen oxides and ammonia.

Under fire conditions, thermal decomposition may also result in the generation of nitrogen (an asphyxiant), sulfur dioxide and ammonia (corrosives). Thermal decomposition temperature is reported to be between 150 -280°C (302-536°F).

Protective Equipment and Precautions for Firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight from a protected location or safe distance (avoid breathing fumes).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Avoid dust formation. Do not get in eyes. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Wash thoroughly after handling.

Environmental Precautions: Do not allow material to contaminate domestic sewers, natural waterways, or storm water management systems.

Methods and materials for containment and cleaning up

Methods for Containment: Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up: Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Ensure adequate ventilation. Do not get on skin or in eyes. Avoid dust formation in confined areas. Keep away from open flames, hot surfaces and sources of ignition. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Dust tight castings should be equipped with explosion relief vents. Sparkless electrical equipment is recommended.

Conditions for safe storage, including any incompatibilities

Storage Keep in a dry, cool and well-ventilated place, away from heat and ignition sources.

Incompatible Products

- Sulfur Bentonite: Incompatible with oxidizing agents; Acids.
- Ammonium Sulfate: Oxygen, oxidizers such as peroxides, ammonium nitrate, potassium chlorate, potassium nitrate, sodium nitrate, metal chlorates and strong bases.
Reacts with bases forming ammonia.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines: Sulfur Bentonite

Chemical Name	ACGIH TLV
Sulfur 7704-34-9	TWA: 10 mg/m ³
Bentonite 1302-78-9	TWA: 1 mg/m ³ respirable fraction
Silica, Quartz 14808-60-7	TWA: 0.025 mg/m ³

Exposure Guidelines: Ammonium Sulfate

<u>Ingredient</u>	<u>ACGIH® TLV®</u>	<u>OSHA PEL TWA</u>	<u>Other Exposure Limits</u>
Ammonium sulphate	Not established	Not established	Not established
Aluminum, metal and insoluble salts	TLV® withdrawn	2 mg/m ³	Quebec VEMP: 2 mg/m ³
Particles (Insoluble or poorly soluble) not otherwise specified (PNOS / PNOR)	3 mg/m ³ (respirable) 10 mg/m ³ (inhalable)	5 mg/m ³ (respirable) 15 mg/m ³ (total dust)	Ontario, Alberta TWA: 3 mg/m ³ (respirable) 10 mg/m ³ (inhalable) Quebec VEMP: 10 mg/m ³ (Poussières totales)

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Safety glasses with side-shields, or goggles.
Skin and Body Protection	Long sleeved clothing, impervious gloves.
Respiratory Protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. In emergency, wear self-contained breathing apparatus (SCBA).
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Provide regular cleaning of equipment, work area and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical State:	Solid	Appearance	Light Green
Odor	No information available	Odor Threshold	No information available

Properties of Sulfur Bentonite	Values	Remarks/ - Method
pH	No data available	None known
Melting Point/Range	119 °C	None known
Boiling Point/Boiling Range	444 °C	None known
Flash Point	188 °C	None known
Evaporation rate Flammability (solid, gas)	No data available	None known
Flammability Limits in Air upper flammability limit	1400 gm/m ³	
Flammability Limits in Air lower flammability limit	35 gm/m ³	
Vapor Pressure	No data available	None known
Vapor Density	No data available	None known
Specific Gravity	2.07	None known
Water Solubility	Insoluble	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Auto-ignition Temperature	190 °C	None known
Decomposition Temperature	No data available	None known
Viscosity	Solid	None known
Flammable Properties	Not Flammable	
Explosive Properties	No data available	
Oxidizing Properties	No data available	

Other information

VOC Content (%) None

Information on basic physical and chemical properties: Ammonium Sulfate	
Appearance:	Solid, Opaque white crystalline granules
Odor:	Odorless. Strong odor may indicate presence of toxic gases from thermal decomposition.
Odor threshold:	5 ppm for ammonia gas
pH:	4 (10% aqueous solution)
Melting point/freezing point:	235°C (decomposes)
Initial boiling point and boiling range:	Not applicable
Flash point:	Not flammable
Evaporation rate:	Not available
Flammability (solid/gas):	Non-flammable.
Explosive properties:	Non-explosive
Upper/lower flammability or explosive limits:	Not applicable
Vapor pressure:	Approximately 0
Vapor density:	Not available
Relative density:	1.7 – 1.8 (water = 1)
Solubility (ies):	Soluble in water.
Partition coefficient (n-octanol/water):	Not available
Auto-ignition temperature:	Not applicable
Decomposition temperature:	Decomposition starts at 150 - 280°C. Decomposition is complete at 336-357°C.
Viscosity:	Not applicable

10. STABILITY AND REACTIVITY**Reactivity**

No dangerous reaction known under conditions of normal use.

Chemical stability

Stable at normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

None under normal processing.
Fine dust dispersed in air may ignite.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Dust formation. Exposure to air or moisture.
Avoid heating to decomposition

Incompatible materials

Sulfur Bentonite: Incompatible with oxidizing agents; acids.
Ammonium Sulfate: Oxygen, oxidizers such as peroxides, ammonium nitrate, potassium chlorate, potassium nitrate, sodium nitrate, metal chlorates and strong bases.
Reacts with bases forming ammonia.

Hazardous decomposition products

Sulfur Bentonite: Sulfur dioxide.
 Ammonium Sulfate: Extreme heat (280°C) or under fire conditions, may generate toxic and corrosive gases such as sulfur dioxide, sulfur trioxide, ammonia, and nitrogen.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation May cause irritation of respiratory tract.
Eye Contact May cause irritation.
Skin Contact May cause irritation.
Ingestion May cause irritation to the gastrointestinal tract.

Acute Toxicity:

Chemical Name	LC50 (oral)	LD50
Sulfur	> 0.047 mg/L (rat) (4-hr exp)	> 5000 mg/kg (rat)
Bentonite Clay		5000 mg/kg (rat)
Ammonium Sulfate	> 1800 mg/m ³ (guinea pig) (4-hr exp)	2840-4250 mg/kg (rat)
Silica Quartz		500 mg/kg (rat)

Skin Contact: May cause irritation to skin.

Eye Contact: May cause serious eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure Inhalation: Nose and throat irritation.

STOT (Specific Target Organ Toxicity) - Repeated Exposure: If inhaled: lung injury, irritation of the respiratory system. May cause respiratory tract injury (see note below).

Skin Absorption: May cause skin to become sensitive to sunlight.

Ingestion: May be harmful if large amounts are swallowed. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

Aspiration Hazard: Not known to be an aspiration hazard.

Respiratory and/or Skin Sensitization: May cause an allergic reaction (skin sensitization) based on limited evidence.

Carcinogenicity Inhalation: Crystalline Silica is a confirmed human carcinogen (Lung cancer). But the OSHA publication (3911-07 2017) Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime, states “exposures from the processing of sorptive clays are excluded from this standard. Sorptive clays such as bentonite are specific types of clay found in a few geologic deposits in the country that are used in a range of consumer products and industrial applications, such as pet litter and sealants for landfills. The occluded quartz found in sorptive clays is considerably less toxic than unoccluded quartz (e.g. from construction activities such drywalling or cutting, grinding, sandblasting, drilling, crushing, etc. of rock, concrete, brick or ceramics), and there is insufficient evidence for its inclusion in the standard”. In addition to being a less toxic form, the Crystalline Silica present in Keg90S is less than 3% of the bentonite clay ingredient, which equates to <0.3% of finished Keg90S (and less than 0.129% of Keg 12-0-0-50S). Furthermore, the clay and silica are encapsulated in the sulfur pastilles and generally not airborne and subject to inhalation.

Reproductive Toxicity: No information found.
Sensitization No information available.
Mutagenic Effects No information available.
Reproductive Toxicity No information available.
Aspiration Hazard dust/mist No information available.
 6.9 mg/L; Acute toxicity estimate

12. ECOLOGICAL INFORMATION

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Chemical Name	Toxicity to Fish	Daphnia Magna (Water Flea)
Sulfur 7704-34-9	LC50: 866 mg/L Brachydanio rerio 96 h static LC50: <14 mg/L Lepomis macrochirus 96 h static LC50: >180 mg/L Oncorhynchus mykiss 96 h static	
Bentonite 1302-78-9	LC50 96 h: 8.0-19.0 g/L (Salmo gairdneri) LC50 96 h: = 19000 mg/L static (Oncorhynchus mykiss)	
Ammonium Sulfate	96-hour LC50 Leuciscus idus – 460-1 000 mg/L 96-hour LC50 Brachydanio rerio – 250 mg/L 96-hour LC50 Cyprinus carpio – 18 mg/L 96-hour LC50 Pimphales promelas - >100 mg/L	48-hour EC ₅₀ <i>Daphnia magna</i> – 14 mg/L

Ammonium Sulfate will promote algae growth in aquatic systems and may degrade water quality and taste.

Persistence and Degradability

Sulfur Bentonite: No information available.

Ammonium Sulfate: Readily biodegradable. Products of biodegradation include oxides of nitrogen and sulfur. In water the substance releases ammonium ions, a toxicity hazard for aquatic organisms.

Bioaccumulation

Sulfur Bentonite: No information available.

Ammonium Sulfate: Does not bioaccumulate

Other Adverse Effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Do not re-use empty containers.

14. TRANSPORTATION INFORMATION

Sulfur Bentonite: DOT Not regulated

Ammonium Sulfate:

UN Number: Not regulated as a dangerous good for transport.

UN proper shipping name: Not applicable

Transport hazard class(es): Not applicable

Packing group: Not applicable

Environmental hazards: Not available

Special precautions for user: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Liquid ammonium sulphate solution: Category Z

Transport Regulations:

Canadian Transportation of Dangerous Goods (TDG): Not regulated as a dangerous good for transport.

IMO Classification: Not regulated as a dangerous good for transport.

ICAO/IATA Classification: Not regulated as a dangerous good for transport.

15. REGULATORY INFORMATION

SULFUR BENTONITE:

International Inventories

TSCA All components of this product are either listed or are exempt on the TSCA inventory.

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL) Canada: Listed

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants under the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

Keg 12-0-0-50S does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). Please check to see if specific reporting requirements exist at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65: This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

"X" designates that the ingredients are listed on the state right to know list.

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Sulfur	X	X	X		X

AMMONIUM SULFATE:

Safety, health and environmental regulations/legislation specific for the substance or mixture:

Canada:

DSL Status: All component substances listed on the DSL (Domestic Substances List) or are not required to be listed.

NPRI Substances: Source of aqueous ammonia.

Ammonia (total): both ammonia (NH₃ - CAS No. 7664-41-7) and the ammonium ion (NH₄⁺) in solution is NPRI reportable.

USA:

TSCA Inventory:

All ingredients are on TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.

SARA Title III:

Sec. 313: Ammonia 1% de minimis

CERCLA: Ammonia 1000 lb. (454 kg) RQ. Aluminum sulfate 5000 lb. (2270 kg) final RQ

EPA: Designated Generic Categories, Ammonium sulphate – NH₃ Equivalent Wt. % = 25.78

European Classification:

Classification according to Regulation (EC) No 1272/2008: No hazard classifications

Ammonium sulphate is listed in EINECS: 231-984-1. Aluminum sulphate EINECS 233-135-0.

16. OTHER INFORMATION

NFPA Health Hazard 1 Flammability 1 Instability 0
HMIS Health Hazard 1 Flammability 1 Physical Hazard 0 Personal Protection X

General Disclaimer

The information presented in this Safety Data Sheet is correct to the best of our knowledge and information at the time of preparation. Please use the information only as a guideline for Keg 12-0-0-50S; this sheet is not to be considered a warranty or quality specification. The information applies to Keg 12-0-0-50S only and is not necessarily valid when this material is used in combination with any other materials or in any process, unless specified here. The information contained here is not guaranteed to be completely accurate or complete. The user assumes all risks with using the product.

End of Safety Data Sheet