




SAFETY DATA SHEET

| SECTION 1 | PRODUCT AND COMPANY IDENTIFICATION |
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| Trade Name: | Ammonium Sulfate Solution |
| Chemical Name: | Ammonium Sulfate Solution |
| CAS Number: | 7783-20-2 |
| Chemical Family: | Solution of an Inorganic Acid |
| Synonyms: | Sulfuric Acid, Diammonium Salt; Diammonium Sulfate; 8-0-0-9; 7-0-0-8. |
| Primary Use: | Agricultural – Liquid Fertilizer |
| Company Information: | THE MOSAIC COMPANY 3033 Campus Drive Plymouth, MN 55441 www.mosaicco.com 800-918-8270 or 763-577-2700 8 AM to 5 PM Central Time US |
| Emergency Telephone: | EMERGENCY OVERVIEW 24 Hour Emergency Telephone Number: <u>For Chemical Emergencies:</u> Spill, Leak, Fire or Accident Call CHEMTREC North America: (800) 424-9300 (reference CCN201871) Others: (703) 527-3887 (collect) |

| SECTION 2 | HAZARD IDENTIFICATION | |
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| GHS Classification: | Skin Corrosion / Irritation Cat 2 Respiratory Sensitization Cat 1 | Hazard Statement H315 Hazard Statement H334 |
|  | Signal Word: DANGER Hazard Statement(s) H315 Causes skin irritation H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled | |
| Label Elements: | | |
| Prevention: | P264 Wash skin thoroughly after handling P280 Wear protective gloves/protective clothing / Wear eye protection/face protection P261 Avoid breathing fumes / gas / mist / vapor /spray P284 In case of inadequate ventilation – wear respiratory protection | |
| Response: | P302 + P352 P321 P332 + P313 P362 + P364 P304 + P340 P342 + P311 | IF ON SKIN: Wash with plenty of water. Specific treatment see supplemental first aid information If skin irritation occurs: Get medical attention Take off contaminated clothing and wash it before reuse IF INHALED: remove person to fresh air and keep comfortable for breathing If experiencing respiratory symptoms: Call a Doctor |



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| Storage: | | |
| Disposal: | P501 | Dispose of contents/container in accordance with local/regional/national regulations |

| SECTION 3 | | COMPOSITION INFORMATION ON INGREDIENTS | | |
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| Formula: | (NH ₄) ₂ SO ₄ | | | |
| | Chemical Name | Identifiers | % | OSHA HCS 2012 Classification |
| Composition: | Ammonium Sulfate | CAS 7783-20-2 | 25.0-38.0% | Not Classified |
| | Ammonium Bisulfate | CAS 7803-63-6 | <4.0% | Skin Corrosion 1B |
| | Ammonium Bisulfite | CAS 10192-30-0 | <1.0% | Not Classified |
| | Sulfur Dioxide | CAS 7446-09-5 | <0.6% | Acute Tox 3 (Inh); Skin Corr 1; Eye Dam 1; Resp Sens 1; Muta 2 |
| | Water | CAS 7732-18-5 | 57.0-62.0% | Not Classified |

| SECTION 4 | | FIRST AID MEASURES | |
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| First Aid Procedures: | Eyes: | Hold eyelids open and flush eye immediately with water for at least 15 minutes. Get medical attention immediately. | |
| | Skin: | Wash affected area with soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation occurs or persists. | |
| | Inhaled: | Move victim away from source and allow to rest in well-ventilated area. Get medical attention immediately if symptoms persist. | |
| | Ingestion: | Do not induce vomiting. If person is conscious, immediately give water or milk to victim. Seek medical attention promptly. | |
| Note to Physician: | None | | |

| SECTION 5 | | FIRE FIGHTING MEASURES | |
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| Extinguishing Media: | Small fires: Water spray, dry chemical or CO ₂ ; Large fires: Water spray, dry chemical or CO ₂ | | |
| Protection of Firefighters: | Wear NIOSH-approved self-contained breathing apparatus with full protective clothing for fires involving ammonium sulfate stripped liquor to protect against toxic decomposition products. Ammonium Sulfate solution is not flammable; however toxic decomposition products include nitrous oxides, ammonia and sulfur oxides. | | |

| SECTION 6 | | ACCIDENTAL RELEASE MEASURES | |
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| Personal Precautions, PPE and Emergency Procedures: | Clean up workers should wear appropriate clothing. See section 8. | | |
| Environmental Precautions: | Prevent discharge into waterways and sewers. | | |



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| Methods and Materials for Containment and Cleaning up: | <p>Neutralize with Soda Ash. Ammonia will evolve if solution is made alkaline.</p> <p>Small spills. Contain spill and stop leak of it can be done without risk. Dilute with water and mop up or absorb with an inert material and place in approved poly container. Finish cleaning by spreading water on the contaminated surface and dispose of properly See Section 13.</p> <p>Large spills. Take immediate steps to contain spill; dike with inert material (sand, dirt) if possible and recover any reusable product. Ventilate area of spill or leak. Place in a suitable container for recycle, reuse or disposal.</p> |
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| SECTION 7 | HANDLING AND STORAGE |
| Handling: | Avoid contact with eyes, skin and clothing; use appropriate personal protective equipment (PPE). Wash thoroughly after handling. Maintain proper hygiene practices when handling this product. |
| Storage: | Storage should be for short term duration only. Maintain pH above 4.5 during storage (See Section 10). Store in tightly close containers. Protect containers from physical damage. Store in a cool, dry, well ventilated location. Large storage tanks should be bermed. Segregate away from acids and bases. |

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| SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION | |
| Engineering Controls: | Use exhaust ventilation to keep airborne concentration below exposure limits. | |
| Personal Protective Equipment (PPE): | Eye/Face: | Safety glasses with sides shields or splash proof goggles should be worn at all times. |
| | Skin: | Wear acid proof gloves, headgear, protective shoes and clothing should be worn to prevent skin contact. |
| | Respiratory: | <p>Respiratory protection is not normally required. However, use appropriate respirators when performing certain operations where the solution may contact acid.</p> <p>A respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.</p> <p>Wear NIOSH approved respiratory protective equipment when vapor or mists may exceed applicable concentrations limits.</p> |
| | Other: | Emergency showers and eye wash station should be readily available in areas handling or storing this material. |
| General Hygiene Considerations: | Wash thoroughly after handling. Maintain proper hygiene practices when handling this product. | |
| Exposure Guidelines: | OSHA Permissible Exposure Limits (PEL): | 2 ppm TWA ; 5 ppm STEL |
| | ACGIH Threshold Limit Value (TLV): | 2 ppm TWA; 5 ppm STEL |



| SECTION 9 | | PHYSICAL AND CHEMICAL PROPERTIES | |
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| Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm). | | | |
| Appearance: | Clear, colorless to yellow liquid with a slight sulfur dioxide or light ammonia odor | Vapor Pressure (mm Hg): | 12.2 mm Hg |
| Odor: | Slight sulfur oxide odor. This solution emits sulfur dioxide when acidulated | Vapor Density (air=1): | No data available |
| Odor Threshold: | 2 mg/m ³ SO ₂ in air | Specific Gravity or Relative Density: | 1.140 – 1.280 |
| Physical state: | Liquid | Bulk Density: | 9.51 – 10.68 lb./gal |
| pH: | 4.5 – 8.0 (typical) | Solubility in Water: | Complete |
| Melting Point/ Freezing Point: | Not applicable | Partition coefficient: | No data available |
| Boiling Point: | 105 -110° C (221 -230 °F) | Auto-Ignition Temperature: | No data available |
| Flash Point: | No data available | Decomposition Temperature: | Above 455°C (235°F) |
| Evaporation Rate: | No data available | Viscosity: | 1.005 centipoises |
| Flammability: | Not applicable | Volatility: | No data available |
| Upper/lower Flammability or explosive limits | Not applicable | | |

| SECTION 10 | | STABILITY AND REACTIVITY | |
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| Chemical Stability: | Stable under proper conditions of storage and handling. See Section 7. | | |
| Conditions to Avoid: | Avoid all heat sources. Avoid prolonged storage, during which the pH will lower and liberate sulfur dioxide gas Ammonia will evolve if solution is made alkaline and sulfur dioxide gas will evolve if solution is acidulated. | | |
| Incompatible Materials: | Separate from strong oxidizers such as chlorates, nitrates or nitrites. There is an explosion hazard during fire if accidentally mixed with potassium chlorate, potassium nitrate or potassium nitrite, A mixture of ammonium sulfate and ammonium nitrate can easily be exploded by potassium or sodium-potassium alloy. Incandescent reaction on heating with potassium chlorate. Reaction with sodium hypochlorite produces unstable explosive nitrogen trichloride. | | |
| Hazardous Decomposition Products: | Extreme temperatures such as during a fire may cause formation of irritating or poisonous gases such as nitrous oxide, ammonia and sulfur oxides. Decomposition occurs at temperatures above 235°C or 455°F. | | |
| Corrosiveness: | | | |
| Hazardous Polymerization: | Will not occur. | | |

| SECTION 11 | | TOXICOLOGICAL INFORMATION | |
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| Substance: | Ammonium Sulfate | | |
| Acute Oral Toxicity: | LD ₅₀ (rat, oral) = 4,250 mg/Kg | | |



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| Acute Inhalation Toxicity: | LC ₅₀ (Guinea pig) = 900 mg/m ³ / 8 hours |
| Acute Dermal Toxicity: | LD ₅₀ (rat, dermal) > 2000 mg/Kg |
| Mutagenesis: | No data available |
| Target Organ | No data available |
| Developmental Toxicity: | No data available |
| Carcinogenicity | No data available |


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| SECTION 12 | ECOLOGICAL INFORMATION |
| Ecotoxicology: | Toxicity to fish LC ₅₀ (rainbow trout) – 36.7 mg/l – 96 h Toxicity to daphnia and other aquatic invertebrates LC ₅₀ (water flea) – 433 mg/l – 50 h |

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| SECTION 13 | DISPOSAL CONSIDERATIONS |
| | If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. |

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| SECTION 14 | TRANSPORT INFO | | |
| Regulatory Status: | Not regulated for shipping by US DOT, Transport Canada, IATA, IMO/IMDG | | |
| Identification Number: | Not applicable | | |
| Hazard Class: | Not applicable | | |
| Proper Shipping Name: | Not applicable | | |
| Packing Group: | Not applicable | | |
| DOT Emergency Response Guide Number: | Not applicable | | |
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: | Not applicable | | |
| MARPOL Annex V: | Not applicable | | |

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| SECTION 15 | REGULATORY INFORMATION | | | | |
| CERCLA: | Not regulated. | | | | |
| RCRA 261.33: | Not regulated | | | | |
| SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less than 10,000 pounds on-site.) | Section 302/304: Not listed | RQ: No | | TPQ: No | |
| | Section 311/312: | | | | |
| | Acute: Yes | Chronic: No | Fire: No | Pressure: No | Reactivity: No |
| | Section 313: Listed | | | | |



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| NTP, IARC, OSHA: | The ingredient(s) of this product is (are) not classified as carcinogenic by NTP, IARC or OSHA |
| Canada DSL and NDSL: | DSL: Yes NDSL: Not listed |
| TSCA: | Listed on TSCA 8(b) |
| CA Proposition 65: (Health & Safety Code Section 25249.5) |  WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov |
| WHMIS: | WHMIS 2015 This SDS has been prepared according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR. |

| SECTION 16 | OTHER INFORMATION |
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| Preparation: | The preparation of this SDS was in accordance with ANSI Z400.1-2010. |
| Revision Date: | December 31, 2018 |
| Sections Revised: | 15, 16 |
| SDS Number: | MOS 200160 |
| References: | Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 4 th Edition 2011 OSHA Hazard Communication Standard, 2012 MARPOL Annex V; The Fertilizer Institute (TFI), 2003; TOXNET |



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| Other Hazard Classifications: | NFPA HAZARD CLASS | | HMIS HAZARD CLASS | |
| | Health: | 1 | Health: | 0 |
| | Flammability: | 0 | Flammability: | 1 |
| | Instability: | 1 | Physical Hazard: | Section 8 |
| | Special Hazard: | None | PPE: | Section 8 |
| | WHMIS 2015 (HPR) HAZARD CLASS | | | |
| | Signal Word | Danger | | |
| | Symbol | | | |
| | Classification | Skin Corrosion / Irritation Cat 2 Respiratory Sensitization Cat 1 | | |
| | Hazard Statements | H315 Causes skin irritation H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled | | |