




SAFETY DATA SHEET

| SECTION 1 | PRODUCT AND COMPANY IDENTIFICATION | |
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| Trade Name: | MicroEssentials® S15® / MES15® | |
| Chemical Name: | Monoammonium Phosphate with Ammonium Sulfate and Sulfur | |
| CAS Number: | 7722-76-1 | |
| Chemical Family: | Ammonium Phosphates—Inorganic Salts | |
| Synonyms: | Monoammonium Phosphate + Sulfur Monobasic Ammonium Phosphate + Sulfur Ammonium Dihydrogen Phosphate + Sulfur MAP + S Ammonium Dihydrogen Orthophosphate MES15® MES® | |
| Primary Use: | Crop nutrient | |
| Company Information: | Corporate Headquarters | The Mosaic Company 101 East Kennedy Blvd, Ste 2500 Tampa, FL 33602 |
| | US Guarantor | Mosaic Global Sales, LLC 13830 Circa Crossing Drive Lithia, FL 33547 |
| | Canada Guarantor | Mosaic Canada Crop Nutrition, LP 1700 – 2010 12th Ave. Regina, SK Canada S4P 0M3 |
| | Contact Info | www.mosaicco.com (800) 918-8270 or (813) 775-4200 |
| 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 | |
| OSHA/HCS Status: | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). See appropriate classifications below. | |
| GHS Classification: | Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3 | Hazard Statement H303 Hazard Statement H315 Hazard Statement H320 Hazard Statement H335 |
|  | Signal Word: WARNING Hazard Statement(s) H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation | |



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| Label Elements: | | |
| Prevention: | P264: Wash hands thoroughly after handling. P280: Wear protective gloves P261: Avoid breathing dust P271: Use only outdoors or in a well-ventilated area. | |
| Response: | P302+ P352 | IF ON SKIN: Wash with plenty of water. |
| | P321 | Specific Treatment, see supplemental first aid information. |
| | P332+ P313 | If skin irritation occurs: Get medical advice/attention. |
| | P362+ P364 | Take off contaminated clothing and wash it before reused. |
| | P305+P351+ P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| | P337+ P313 | If eye irritation persists: Get medical advice/attention. |
| | P304+ P340 P312 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER. |
| Storage: | Not applicable | Not applicable |
| Disposal: | P501 | Disposal of content/containers to be in accordance with local/regional/national regulations. |

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| SECTION 3 | COMPOSITION INFORMATION ON INGREDIENTS | | |
| Formula: | $(\text{NH}_4)_2\text{H}_2\text{PO}_4 + (\text{NH}_4)_2\text{SO}_4 + \text{S}$ | | |
| Composition: | Monobasic Ammonium Phosphate | CAS 7722-76-1 | 55-60% |
| | Ammonium Sulfate | CAS 7783-20-2 | 25-35% |
| | Sulfur | CAS 7704-34-9 | 7-8% |

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| SECTION 4 | FIRST AID MEASURES | |
| First Aid Procedures: | Eyes: | Move victim away from exposure and into fresh air. Flush eyes with plenty of clean water for at least 15 minutes. If symptoms persist, seek medical attention. |
| | Skin: | Wash contaminated area thoroughly with mild soap and water. If chemical or solution soaks through clothing, remove clothing and wash contaminated skin. If irritation develops and persists after washing, seek medical attention. |
| | Inhaled: | If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. |
| | Ingestion: | If large amounts are swallowed, seek emergency medical attention. If possible, do not leave victim unattended and observe closely for adequacy of breathing. |
| Note to Physician: | If person has been exposed to concentrated decomposition products, treat symptomatically and watch for delayed symptoms of pulmonary edema. | |

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| SECTION 5 | FIRE FIGHTING MEASURES | |
| Extinguishing Media: | Use extinguishing agent suitable for type of surrounding fire. Avoid excessive water to minimize runoff. Prevent firefighter water from entering the environment. Small fires: Water spray, foam, dry chemical or CO ₂ Large fires: Water spray, fog or foam | |
| Protection of Firefighters: | Positive pressure, self-contained breathing apparatus is required for all firefighting activities involving hazardous materials. | |



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| SECTION 6 | ACCIDENTAL RELEASE MEASURES |
| Response Techniques: | Stay upwind and away from spill (dust hazard). Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Notify appropriate federal, state, and local agencies as may be required (see Section 15). Minimize dust generation. Sweep up and package appropriately for disposal. |

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| SECTION 7 | HANDLING AND STORAGE |
| Handling: | <p>The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Section 8). Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Wash contaminated clothing or shoes. Use good personal hygiene practices.</p> <p>Avoid systems that would tend to segregate dust or any components of this product. Avoid accumulation of fugitive dust, as high concentrations of sulfur dust may present an explosion hazard. Follow standard safe-work practices, including hot-work procedures when working around this product.</p> |
| Storage: | Use and store this material in dry, well-ventilated areas. Store only in approved containers. Keep container(s) tightly closed. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Material may absorb moisture from the air. |

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| SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION | |
| Engineering Controls: | Use process enclosure, general dilution ventilation or local exhaust systems where necessary to maintain airborne dust concentration below the OSHA standards or in accordance with applicable regulations. | |
| Personal Protective Equipment (PPE): | Eye/Face: | Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. |
| | Skin: | The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption. |
| | Respiratory: | A NIOSH approved air purifying respirator with a type 95 (R or P) particulate filter may be used under conditions where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is potential for uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed if workplace conditions warrant a respirator. |
| | Other: | A source of clean water should be available in the work area for flushing eyes and skin. |
| General Hygiene Considerations: | Wash thoroughly after handling Use adequate ventilation | |



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| Exposure Guidelines: | OSHA Permissible Exposure Limits (PEL): | Particulates Not Otherwise Regulated: 5 mg/m ³ TWA (respirable); 15 mg/m ³ TWA (total) Ammonia: 50 ppm (35 mg/m ³) TWA Sulfur: No Occupational Limits |
| | ACGIH Threshold Limit Value (TLV): | Particulates Not Otherwise Specified: 3 mg/m ³ TWA (respirable); 10 mg/m ³ TWA (inhalable) Ammonia: 25 ppm (18 mg/m ³) TWA; 35 ppm (27 mg/m ³) STEL Sulfur: No Occupational Limits |

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| 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).

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| Appearance: | Gray, tan, or brown granules | Vapor Pressure (mm Hg): | Not applicable |
| Odor: | Rotten egg-like or Slight ammonia odor | Vapor Density (air=1): | Not applicable |
| Odor Threshold: | No data available | Specific Gravity or Relative Density: | Not applicable |
| Physical state: | Solid | Bulk Density: | Loose 54 - 64 lbs/ft ³ (865 - 1025 kg/m ³) |
| pH: | 4.2 – 5.5 in a 1 w/v % | Solubility in Water: | 80% - 90% |
| Melting Point/ Freezing Point: | Partial at 235°F (113°C) | Partition coefficient: | No data available |
| Boiling Point: | Not applicable | Auto-Ignition Temperature: | Not applicable |
| Flash Point: | Not applicable | Decomposition Temperature: | 374°F (190°C) |
| Evaporation Rate: | No data available | Viscosity: | No data available |
| Flammability: | Not applicable | Volatility: | Not applicable |
| Upper/Lower Flammability or explosive limits | Not applicable | | |

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| SECTION 10 | STABILITY AND REACTIVITY |
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| Chemical Stability: | Stable under normal conditions of storage and handling. Decomposes at 374°F (190°C). |
| Conditions to Avoid: | Extreme temperatures, accumulation of dust. |
| Incompatible Materials: | Avoid contact with alkaline materials |
| Hazardous Decomposition Products: | If heated to the point of decomposition, oxides of phosphorus, nitrogen and/or sulfur (e.g., SO ₂) may be released, as well as ammonia vapor. |
| Corrosiveness: | May be corrosive to iron and mild steels, aluminum, zinc and copper |
| Hazardous Polymerization: | Will not occur |

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| SECTION 11 | TOXICOLOGICAL INFORMATION |
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| Substance: | Monoammonium Phosphate |
| Acute Oral Toxicity: | LD ₅₀ (rat, oral) > 2000 mg/kg |



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| Acute Inhalation Toxicity: | No data available | | |
| Acute Dermal Toxicity: | LD ₅₀ (rat, dermal) > 5000 mg/kg | | |
| Substance: | Ammonium Sulfate | | |
| Acute Oral Toxicity: | LD ₅₀ (rat, oral) > 2000 to 4250 mg/kg LD ₅₀ (mouse, oral) > 640 to 4250 mg/kg | | |
| Acute Inhalation Toxicity: | No data available | | |
| Acute Dermal Toxicity: | LD ₅₀ (rat, mouse, dermal) > 2000 mg/kg | | |
| Substance: | Sulfur | | |
| Acute Oral Toxicity: | LD ₅₀ (rat, oral) > 5000 mg/kg | | |
| Acute Inhalation Toxicity: | No data available | | |
| Acute Dermal Toxicity: | LD ₅₀ (rat, dermal) > 2000 mg/kg | | |
| Mutagenesis: | No data available | Target Organ | STOT SE Cat 3; may cause respiratory irritation. |
| Developmental Toxicity: | No data available | Carcinogenicity | The ingredients of this product are not classified as carcinogenic by NTP (National Toxicology Program), IARC, or OSHA |


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| SECTION 12 | ECOLOGICAL INFORMATION |
| Ecotoxicology: | <p>Ammonium sulphate (CAS 7783-20-2) Aquatic Algae EC₅₀ Chlorella vulgaris 2700 mg/l, 18 days Crustacea EC₅₀ Water flea (Daphnia magna) > 100 mg/l, 96 hours Fish LC₅₀ Salmo gairdneri 173 mg/l, 96 hours</p> <p>Sulfur (CAS 7704-34-9) Aquatic Fish LC₅₀ Western mosquitofish (Gambusia affinis) > 10000 mg/l, 96 hours Crustacea LC₅₀ Water flea (Daphnia magna) 0.098 mg/l, 48 Hours</p> <p>May release ammonium ions that are toxic to fish. Un-ionized ammonia concentrations above 0.02 mg/l are considered toxic in fresh water. May release phosphates which will result in algae growth, increased turbidity, and depleted oxygen. At high concentrations, this may be hazardous to fish or other marine organisms. Release to watercourses may cause effects downstream. Fish 96 hour LC₅₀, OECD Guidelines 203 (rainbow trout): > 86 mg/l.</p> |

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| SECTION 13 | DISPOSAL CONSIDERATIONS |
| | Recover or recycle if possible. Properly characterize all waste materials. Consult federal, state/provincial and local regulations regarding the proper disposal of this material. Prevent material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. |




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| SECTION 14 | TRANSPORT INFO |
| Regulatory Status: | Not regulated |
| Identification Number: | HTS 3105.59.0000 |



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| 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: | Non-HME |
| IMO/IMDG: | Not applicable |

| SECTION 15 | REGULATORY INFORMATION | | | | |
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| CERCLA: | Not listed | | | | |
| RCRA 261.33: | Not listed | | | | |
| 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: Not listed | | | | |
| NTP, IARC, OSHA: | This material has not been identified as a carcinogen by NTP, IARC, or OSHA. | | | | |
| Canada DSL and NDSL: | DSL: Yes NDSL: Not listed | | | | |
| TSCA: | Listed on the TSCA Inventory | | | | |
| 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. | | | | |
| REACH Registration: | Substance Names Monoammonium dihydrogen orthophosphate (MAP) #01-2119488166-29-0091 Ammonium Sulphate #01-2119455044-46-0256 Sulfur #01-2119487295-27-0218 | | | | |



| 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 6, 2022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sections Revised: | 1, 2, 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SDS Number: | MOS 100036 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other Hazard Classifications: | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">NFPA HAZARD CLASS</th> <th colspan="2" style="text-align: center;">HMIS HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;">Health:</td> <td style="width: 50%; text-align: center;">2</td> <td style="width: 50%;">Health:</td> <td style="width: 50%; text-align: center;">2</td> </tr> <tr> <td>Flammability:</td> <td style="text-align: center;">0</td> <td>Flammability:</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Instability:</td> <td style="text-align: center;">0</td> <td>Physical Hazard:</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Special Hazard:</td> <td style="text-align: center;">None</td> <td>PPE:</td> <td style="text-align: center;">Section 8</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">WHMIS 2015 (HPR) HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Signal Word</td> <td style="text-align: center;">Warning</td> </tr> <tr> <td>Symbol</td> <td style="text-align: center;"></td> </tr> <tr> <td>Classification</td> <td>Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3</td> </tr> <tr> <td>Hazard Statements</td> <td>H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation</td> </tr> </tbody> </table> | | NFPA HAZARD CLASS | | HMIS HAZARD CLASS | | Health: | 2 | Health: | 2 | Flammability: | 0 | Flammability: | 0 | Instability: | 0 | Physical Hazard: | 0 | Special Hazard: | None | PPE: | Section 8 | WHMIS 2015 (HPR) HAZARD CLASS | | Signal Word | Warning | Symbol |  | Classification | Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3 | Hazard Statements | H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation |
| NFPA HAZARD CLASS | | HMIS HAZARD CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Health: | 2 | Health: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flammability: | 0 | Flammability: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Instability: | 0 | Physical Hazard: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Special Hazard: | None | PPE: | Section 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WHMIS 2015 (HPR) HAZARD CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Signal Word | Warning | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Symbol |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Classification | Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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