MATERIAL SAFETY DATA SHEET
Muriate of Potash

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**Muriate of Potash (MOP), all grades**
Chemical Name:	**Potassium Chloride**
Chemical Family:	**Inorganic Salt**
Synonyms:	**Potash; MOP; Potassium Chloride; Potassium Muriate; Potassium Monochloride**
Chemical Formula:	**KCl**
Primary Use:	**Crop nutrient; Industrial applications**
Responsible Party:	**Mosaic USA LLC 3033 Campus Drive Plymouth, MN 55441**
Non-Emergency Technical Contact:	**8:00 am - 4:00 pm Central Time, Mon - Fri: 800-323-5523**

EMERGENCY OVERVIEW
24 Hour Emergency Telephone Number:
For Chemical Emergencies:
Spill, Leak, Fire or Accident
Call CHEMTREC
North America: (800) 424-9300
Others: (703) 527-3887 (collect)

Health Hazards:	**Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Potassium chloride is generally recognized as safe (GRAS) when used in accordance with good manufacturing practice.**
Physical Hazards:	**None expected**
Physical Form:	**Solid**
Appearance:	**White to reddish-brown, crystalline or granular**
Odor:	**None**

NFPA HAZARD CLASS		**HMIS HAZARD CLASS**	
Health:	**1 (Slight)**	**Health:**	**1 (Slight)**
Flammability:	**0 (Least)**	**Flammability:**	**0 (Least)**
Instability:	**0 (Least)**	**Physical Hazard:**	**0 (Least)**
Special Hazard:	**None**		

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	% Weight	Exposure Guideline		
Potassium Chloride CAS No. 7447-40-7	95 - 99.5	NE	OSHA ACGIH	All All
Sodium Chloride CAS No. 7647-14-5	0.3 - 3.7	NE	OSHA ACGIH	All All
Calcium and Magnesium Chlorides and Sulfates CAS No. Various	0.2 - 1.3	NE	OSHA ACGIH	All All

NE = Not established, but the following particulate limits apply to all inert inorganic dusts.

Particulates Not Otherwise Classified (PNOC)	10 mg/m^3 3 mg/m^3	ACGIH	TWA - Inhalable TWA - Respirable
Particulates Not Otherwise Regulated (PNOR)	15 mg/m^3 5 mg/m^3	OSHA	TWA - Total Dust TWA - Respirable

Notes:
State, local or other agencies or advisory groups may have published more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS	
Eye:	Contact may cause mild eye irritation including stinging, watering and redness.
Skin:	Contact may cause mild irritation including redness and a burning sensation. No information available on skin absorption.
Inhalation (Breathing):	No information available.
Signs and Symptoms:	Effects of overexposure may include irritation of the nose, throat and digestive tract, nausea, vomiting, diarrhea, abdominal cramping, irregular heartbeats (arrhythmias), dehydration, and hypertension. Repeated overexposure to dusts may result in irritation of the respiratory tract, coughing and shortness of breath.
Cancer:	Inadequate data available to evaluate the cancer hazard of this material.
Target Organs:	No data available.
Developmental:	Inadequate data available for this material.
Other Comments:	None.
Pre-Existing Medical Conditions:	Conditions aggravated by exposure may include kidney disorders and high blood pressure (hypertension).

4. FIRST AID MEASURES

Eye:	If irrigation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.
Skin:	Cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops and persists, seek medical attention.
Inhalation (Breathing):	If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.
Ingestion (Swallowing):	If large amounts are swallowed, seek emergency medical attention. If victim is drowsy or unconscious and vomiting, place on left side with the head down and do not give anything by mouth. If victim is conscious and alert and ingestion occurred within the last hour, vomiting should be induced for ingestion of large amounts (more than 5 ounces or a little more than 1/2 cup in an adult) preferably under direction from a physician or poison center. If possible, do not leave victim unattended and observe closely for adequacy of breathing.
Note to Physicians:	No information found.

5. FIRE FIGHTING MEASURES

Flammable Properties:	**This product is non-flammable**. Flash Point - Not applicable OSHA Flammability Class - Not applicable LEL/UEL - Not applicable Auto-ignition Temperature - Not applicable
Unusual Fire & Explosion Hazards:	No unusual fire or explosion hazards are expected. When this material is subjected to high temperatures, it may release small amounts of chloride gas.
Extinguishing Media:	Use extinguishing agent suitable for type of surrounding fire.
Fire Fighting Instructions:	Positive pressure, self contained breathing apparatus is required for all fire fighting activities involving hazardous materials. Full structural fire fighting (bunker) gear is the minimum acceptable attire. The need for proximity, entry, flashover and/or special chemical protective clothing (see Section 8) needs to be determined for each incident by a competent fire fighting safety professional. Water used for fire suppression and cooling may become contaminated. Discharge to sewer system(s) or the environment may be restricted, requiring containment and proper disposal of water (see Section 6).

6. ACCIDENTAL RELEASE MEASURES

Muriate of Potash is a crop nutrient and plant food however, large spills can harm or kill vegetation.

- 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 13).
- Minimize dust generation.
- Sweep up and package appropriately for disposal.

7. HANDLING AND STORAGE

Handling:	The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Wash contaminated clothing. Use good personal hygiene practice.
Storage:	Keep container(s) tightly closed. When possible use and store this material in cool, dry, well ventilated areas. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required.

Personal Protective Equipment (PPE)	
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 (see Section 2). 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.
Skin:	The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption (see glove manufacturer literature for information on permeability).
Eye/Face:	Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.
Other PPE:	A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm)

Flash Point:	Not applicable
Flammable/ Explosive Limits (%)	LEL/UEL - Not applicable
Auto-ignition Temperature:	Not applicable
Appearance:	White to reddish-brown, crystalline or granular
Physical State:	Solid
Odor/Taste:	None/Strong saline
Molecular Weight of Pure Material:	KCl - 74.6; NaCl - 58.5
pH:	5.4 - 10.0 in a 5% solution
Vapor Pressure MM Hg):	Approximately zero
Vapor Density (air = 1):	2.57
Boiling Point:	Sublimes at 1,500°C (2,732°F)
Freezing/Melting Point:	772 to 776°C (1423 to 1428°F)
Solubility in Water:	99.5 - 99.999%; 34.2 g/100mL at 20°C
Specific Gravity:	1.986 - 1.990
Volatility:	No data available
Bulk Density:	Loose - 64 to 75 lbs/ft^3 (1025 to 1200 kg/m^3)

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal conditions of storage and handling. Material is hygroscopic (May absorb moisture from air when relative humidity >72%).
Conditions to Avoid:	None known
Incompatible Materials:	Avoid contact with hot nitric acid, may cause evolution of toxic nitrosyl chloride. Contact with other strong acids may produce irritating hydrogen chloride gas. KCl may react violently with bromine trifluoride and may explode if mixed with potassium permanganate and sulfuric acid. NaCl can react with most noble metals, such as iron or steel, building materials (such as cement), bromine, or trifluoride. A potentially explosive reaction may occur if NaCl is mixed with dichloromaleic anhydride and urea. Electrolysis of mixtures containing NaCl and nitrogen compounds may form explosive nitrogen trichloride.
Corrosivity:	Similar to salt. Mildly corrosive to metals in the presence of moisture.
Hazardous Decomposition Products:	None known
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Potassium Chloride:	LD50 (rat, oral) = 2.6 g/kg LD50 (mouse, oral) = 1.5 g/kg LC50: no information available Eye (rabbit): 500 mg/24 H, mild irritant Inadequate carcinogenicity, mutagenicity, or developmental toxicity data located for potassium chloride. No target organ data located for potassium chloride.
Sodium Chloride:	LD50 (rat, oral) = 3 g/kg; LD50 (mouse, oral) = 4 g/kg LC50 (rat) >42 g/m3 / 1 hour Eye (rabbit): 100 mg/24 hour, moderate irritant Eye (rabbit): 500 mg/24 hour, mild irritant Inadequate carcinogenicity, mutagenicity, or developmental toxicity data located for sodium chloride. No target organ data located for sodium chloride.

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Dissolution of large quantities of potassium chloride and sodium chloride in water may create an elevated level of salinity that may be harmful to fresh water aquatic species and to plants that are not salt-tolerant. **Potassium Chloride:** Lepomis macrochirus LC50 - 2010 mg/l Physa heterostrapha LC50 - 940 mg/l Scenedesmus subspicatus EC50 - 2500 mg/l **Sodium Chloride:** Ceriodaphania dubia LC50 - 280,000 - 3,540,000 ug/l Daphnia magnia LC50 - 3,144,000 - 10,000,000 ug/l Daphnia pulex EC50 - 56.40 mM Pimephales promelas LD50 - 6,020,000 - 10,000,000 ug/l
BOD AND COD:	No data found

13. DISPOSAL CONSIDERATIONS

This material, if discarded as produced, is not an RCRA "listed" or "characteristic" hazardous waste. Contamination may subject it to hazardous waste regulations. Properly characterize all waste materials. Consult state and local regulations regarding the proper disposal of this material.

14. TRANSPORT INFORMATION

Hazard Class or Division:	Not listed in the hazardous materials shipping regulation (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) regulations in Canada.

15. REGULATORY INFORMATION

FDA:	1. Potassium Chloride used as a dietary supplement in food for human consumption is generally recognized as safe (GRAS) when used in accordance with good manufacturing practice [21 CFR 182.5622]. 2. Substance added directly to human food affirmed as GRAS [21 CFR 184.1622].
CERCLA:	Not listed
RCRA 261.33:	Not listed
SARA Title III:	**SARA 302:** RQ: No; TPQ: No
	SARA 311/312: Acute: No; Chronic: No; Fire: No; Pressure: No; Reactivity: No - Exemptions at 40 CFR, Part 370 may apply for agricultural use, or quantities of less than 10,000 pounds on site.
	SARA 313 List: No
TSCA:	8 (b) Chemical Inventory: Yes; TSCA 8 (d): No
Proposition 65: (CA Health and Safety Code Section 25249.5)	Warning: This product contains substances that are known to the State of California to cause cancer and/or reproductive harm.
NTP, IARC, OSHA:	This material has not been identified as a carcinogen by NTP, IARC, or OSHA.
Canada DSL:	Yes
Canada NDSL:	No
WHMIS:	Not controlled

16. OTHER INFORMATION

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