



SECTION 1	PRODUCT AND COMPANY INFORMATION																														
TRADE NAME:	Muriate of Potash (MOP), all grades																														
CHEMICAL NAME:	Potassium Chloride																														
CAS NUMBER:	7447-40-7																														
CHEMICAL FAMILY:	Inorganic Salt																														
SYNONYMS:	Potash; MOP; Potassium Chloride, Potassium Muriate; Potassium Monochloride																														
PRIMARY USE:	Crop nutrient; Industrial applications																														
COMPANY INFORMATION:	<p style="text-align: center;"><b>The Mosaic Company</b>  Atria Corporate Center  Suite E490  3033 Campus Drive  Plymouth, MN 55441  USA  <a href="http://www.mosaicco.com">www.mosaicco.com</a></p> <p>For non-emergency questions, phone hours are 8 AM to 5 PM Central Time US  800.918.8270 (toll free)  763.577.2700 (phone)</p>																														
EMERGENCY TELEPHONE:	<p style="text-align: center;"><b>EMERGENCY OVERVIEW</b>  <b>24 Hour Emergency Telephone Number:</b>  <b>For Chemical Emergencies:</b>  <b>Spill, Leak, Fire or Accident</b>  <b>Call CHEMTREC</b>  <b>North America: (800) 424-9300</b>  <b>Others: (703) 527-3887 (collect)</b></p>																														
SECTION 2	HAZARD IDENTIFICATION																														
EMERGENCY OVERVIEW :	Health Hazards:	Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Potassium chloride is generally recognized as safe (GRAS).																													
	Physical Hazards:	None expected																													
	Physical Form:	Solid																													
	Appearance:	White to reddish-brown, crystalline or granular																													
	Odor:	None																													
	Toxicity:	None expected under normal use.																													
	<table border="1" data-bbox="535 1344 820 1617"> <thead> <tr> <th colspan="2">NFPA HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td>Health:</td> <td>1</td> </tr> <tr> <td>Flammability:</td> <td>0</td> </tr> <tr> <td>Instability:</td> <td>0</td> </tr> <tr> <td>Special Hazard:</td> <td>None</td> </tr> </tbody> </table>	NFPA HAZARD CLASS		Health:	1	Flammability:	0	Instability:	0	Special Hazard:	None	<table border="1" data-bbox="844 1344 1144 1617"> <thead> <tr> <th colspan="2">HMIS HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td>Health:</td> <td>1</td> </tr> <tr> <td>Flammability:</td> <td>0</td> </tr> <tr> <td>Physical Hazard:</td> <td>0</td> </tr> <tr> <td>PPE:</td> <td>Section 8</td> </tr> </tbody> </table>	HMIS HAZARD CLASS		Health:	1	Flammability:	0	Physical Hazard:	0	PPE:	Section 8	<table border="1" data-bbox="1177 1344 1485 1617"> <thead> <tr> <th colspan="2">WHMIS HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td>Symbol</td> <td>Not WHMIS Controlled</td> </tr> <tr> <td>Classification</td> <td>N/A</td> </tr> <tr> <td>Sub Class (N/A)</td> <td>N/A</td> </tr> </tbody> </table>	WHMIS HAZARD CLASS		Symbol	Not WHMIS Controlled	Classification	N/A	Sub Class (N/A)	N/A
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POTENTIAL HEALTH EFFECTS:	<b>Eye:</b>	Contact may cause mild eye irritation including stinging, watering and redness.																													
	<b>Skin:</b>	Contact may cause mild irritation including redness and a burning sensation. No information available on skin absorption.																													
	<b>Inhalation (Breathing):</b>	No toxicology data available.																													
	<b>Ingestion (Swallowing):</b>	May be harmful if swallowed. Do not take internally. Do not taste or swallow.																													



	<p><b>Signs and Symptoms:</b></p> <p>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.</p>						
	<p><b>Cancer:</b></p> <p>Inadequate data available to evaluate the cancer hazard of this material.</p>						
	<p><b>Target Organs:</b></p> <p>No data available.</p>						
	<p><b>Developmental:</b></p> <p>Inadequate data available for this material.</p>						
	<p><b>Other Comments:</b></p> <p>None.</p>						
	<p><b>Pre-Existing Medical Conditions:</b></p> <p>Conditions aggravated by exposure may include kidney disorders and abnormal blood pressure.</p>						
POTENTIAL ENVIRONMENTAL EFFECTS:	Potassium Chloride is a naturally occurring mineral used as a crop nutrient and plant food however; large spills can harm or kill vegetation.						
<b>SECTION 3</b>	<b>COMPOSITION INFORMATION ON INGREDIENTS</b>						
FORMULA:	KCl						
COMPOSITION:	<table border="1"> <tr> <td>Potassium Chloride CAS No. 7447-40-7</td> <td>95 - 99.5 %</td> </tr> <tr> <td>Sodium Chloride CAS No. 7647-14-5</td> <td>0.3 - 3.7 %</td> </tr> <tr> <td>Calcium and Magnesium Chlorides and Sulfates CAS No. Various</td> <td>0.2 - 1.3 %</td> </tr> </table>	Potassium Chloride CAS No. 7447-40-7	95 - 99.5 %	Sodium Chloride CAS No. 7647-14-5	0.3 - 3.7 %	Calcium and Magnesium Chlorides and Sulfates CAS No. Various	0.2 - 1.3 %
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<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>						
FIRST AID PROCEDURES:	<p><b>Eyes:</b></p> <p>If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water for at least 15 minutes. If symptoms persist, seek medical attention.</p>						
	<p><b>Skin:</b></p> <p>Cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops and persists, seek medical attention.</p>						
	<p><b>Inhaled:</b></p> <p>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.</p>						



	Ingestion:	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 PHYSICIAN:	None known.	
<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>	
FLAMMABLE PROPERTIES:	Flash Point:	Not applicable
	OSHA Flammability Class:	Not applicable
	LEL/UEL:	LEL: Not applicable / UEL: Not applicable
	Auto-Ignition Temperature:	Not applicable
EXTINGUISHING MEDIA:	Use extinguishing agent suitable for type of surrounding fire.	
PROTECTION OF FIREFIGHTERS:	<p>No unusual fire or explosion hazards are expected. When this material is subjected to high temperatures, it may release small amounts of chloride gas.</p> <p>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.</p> <p>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).</p>	
<b>SECTION 6</b>	<b>ACCIDENTAL RELEASE MEASURES</b>	
RESPONSE TECHNIQUES:	<p>Muriate of Potash is a naturally occurring mineral used as a crop nutrient and plant food however; large spills can harm or kill vegetation.</p> <ul style="list-style-type: none"> <li>• Stay upwind and away from spill (dust hazard).</li> <li>• Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).</li> <li>• Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways.</li> <li>• Notify appropriate federal, state, and local agencies as may be required (see Section 13).</li> <li>• Minimize dust generation.</li> <li>• Sweep up and package appropriately for disposal.</li> </ul>	
RELEASE NOTES:	If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC in North America at 800-424-9300; CHEMTREC in other countries at (International code) +1-703-527-3887 (collect).	



<b>SECTION 7</b>		<b>HANDLING AND STORAGE</b>	
HANDLING:		The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits. 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.	
<b>SECTION 8</b>		<b>EXPOSURE CONTROLS / PERSONAL PROTECTION</b>	
ENGINEERING CONTROLS:		If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional ventilation or exhaust systems may be required.	
PERSONAL PROTECTIVE EQUIPMENT (PPE):		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.
		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).
		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. Impervious clothing should be worn as needed.
GENERAL HYGIENE CONSIDERATIONS:		Wash thoroughly after handling. Wash contaminated clothing. Use adequate ventilation. Use good personal hygiene practice.	
EXPOSURE GUIDELINES:		OSHA Permissible Exposure Limits (PEL):	Particulates Not Otherwise Regulated (PNOR) : 5 mg/m <sup>3</sup> TWA – Respirable 15 mg/m <sup>3</sup> TWA - Total Dust
		ACGIH Threshold Limit Value (TLV):	Not Established
<b>SECTION 9</b>		<b>PHYSICAL AND CHEMICAL PROPERTIES</b>	
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm).			
Flash Point:		No data available	
Flammability/ Explosive Limits (%):		LEL: Not applicable / UEL: Not applicable	



Auto-Ignition Temperature:	No data available
Appearance:	White to reddish-brown, crystalline or granular
Physical State:	Solid
Odor:	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):	No data available
Vapor Density (air=1):	No data available
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 <sup>3</sup> (1025 to 1200 kg/m <sup>3</sup> )
<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
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.
Hazardous Decomposition Products:	None known.
Corrosiveness:	Similar to salt. Mildly corrosive to metals in the presence of moisture.
Hazardous Polymerization:	Will not occur



SECTION 11	TOXICOLOGICAL INFORMATION
Acute Oral Toxicity	Potassium Chloride: LD <sub>50</sub> (rat, oral) = 2.6 g/kg LD <sub>50</sub> (mouse, oral) = 1.5 g/kg  Sodium Chloride: LD <sub>50</sub> (rat, oral) = 3 g/kg LD <sub>50</sub> (mouse, oral) = 4 g/kg
Acute Inhalation Toxicity	No data available for Potassium Chloride: LC <sub>50</sub>  Sodium Chloride: LC <sub>50</sub> (rat) >42 g/m <sup>3</sup> / 1 hour
Acute Dermal Toxicity	No data available
Mutagenesis	No data available
Target Organ	No data available
Developmental Toxicity	No data available
Carcinogenicity	No data available
SECTION 12	ECOLOGICAL INFORMATION
ECOTOXICOLOGY:	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. <b>Potassium Chloride:</b> Lepomis macrochirus LC50 - 2010 mg/l Physa heterostrapha LC50 - 940 mg/l Scenedesmus subspicatus EC50 - 2500 mg/l <b>Sodium Chloride:</b> Ceriodaphnia dubia LC50 - 280,000 - 3,540,000 ug/l Daphnia magna 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
SECTION 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. It is the generator's responsibility to properly characterize all waste materials. Consult federal, state/provincial and local regulations regarding the proper disposal of this material.
SECTION 14	TRANSPORTATION INFO
Regulatory Status	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.
Proper Shipping Name	Not applicable
Hazard Class	Not applicable
Packing Group	Not applicable
Identification Number	Not applicable



Guide Number	Not applicable
HTS (Harmonized Tariff Schedule) Code	3104.20.00
<b>SECTION 15</b>	<b>REGULATORY INFORMATION</b>
FDA:	Potassium Chloride used as a nutrient and/or dietary supplement in food for human consumption. FDA Food Substances Generally Recognized as Safe 21 CFR 184.1 (2010).
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.)	SARA – 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No Reactivity: No
	SARA – 313: No
	SARA – 302/304: RQ: No TPQ: No
NTP, IARC, OSHA:	This material has not been identified as a carcinogen by NTP, IARC, or OSHA.
Canada DSL and NDSL:	DSL: Yes NDSL: No
TSCA:	TSCA 8 (b) Chemical Inventory: Yes TSCA 8 (d): No TSCA 8 (e): 8EHQ-0808-17242A (7% of mixture)
CA Proposition 65: (Health & 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.
WHMIS:	Not controlled. This MSDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the MSDS contains all of the information requested by the CPR.
<b>SECTION 16</b>	<b>OTHER INFORMATION</b>
Disclaimer:	The information in this document is believed to be correct as of the date issued. Nothing herein contained shall be deemed to be a representation or warranty with respect to the product described herein. <b>NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE, AND ALL SUCH REPRESENTATIONS AND WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED BY MOSAIC.</b> This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance.
Preparation:	The preparation of this MSDS was in accordance with ANSI Z400.1-2010.
References:	Toxline, Tomes, ECHA, OECD SIDS