

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: Potassium Dichromate Etchant

Product Code(s): Custom

Synonyms: Mixture.

Recommended Use: For manufacturing, industrial, and laboratory use only. Use as a laboratory reagent.

Uses Advised Against: Not for food, drug, or household use.

Supplier: Rocky Mountain Reagents, Inc.
4621 Technology Drive, Golden, CO 80403
Phone: (303) 762-0800 Fax: (303) 762-1240

Emergency Phone Number: (800) 255-3924 (CHEM-TEL)

2. HAZARDS IDENTIFICATION

Hazard Classifications:

Acute Toxicity – Oral:	Category 4
Acute Toxicity – Dermal:	Category 3
Acute Toxicity – Inhalation:	Category 4
Skin Corrosion/Irritation:	Category 1A
Eye Damage/Irritation:	Category 1
Sensitization – Respiratory:	Category 1
Germ Cell Mutagenicity:	Category 1B
Carcinogenicity:	Category 1B
Toxic to Reproduction:	Category 1B
Specific Target Organ Toxicity (Repeated Exposure):	Category 1

Signal Word: DANGER

Hazard Statements:

- Harmful if swallowed.
- Toxic in contact with skin.
- Harmful if inhaled.
- Causes severe skin burns and serious eye damage.
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- May cause genetic defects.
- May cause cancer.
- May damage fertility or the unborn child.
- Causes damage to organs through prolonged or repeated exposure.

Pictograms:



Precautionary Statements:

- Prevention:** Wash thoroughly after handling.
Do not eat, drink, or smoke when using this product.
Wear protective gloves, protective clothing, eye protection, and face protection.
Do not breathe fumes, mists, vapors, or spray.
Use only outdoors or in a well-ventilated area.
Obtain special instructions before use.
Do not handle until all safety instructions have been read and understood.
- Response:** Immediately call a poison center or doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Wash with plenty of water. Take off immediately all contaminated clothing and wash it before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get medical attention if you feel unwell.
- Storage:** Store locked up.
- Disposal:** Dispose of contents and container in accordance with local, regional, national, and international regulations.
- Hazards Not Otherwise Classified:** Very toxic to aquatic life with long-lasting effects. Avoid release to the environment.
- Toxicity Statement:** Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Water	Water	7732-18-5	H ₂ O	85.1
Sulfuric Acid	Dihydrogen Sulfate	7664-93-9	H ₂ SO ₄	12.0
Potassium Dichromate	Potassium Bichromate	7778-50-9	K ₂ Cr ₂ O ₇	1.64
Sodium Chloride	Table Salt	7647-14-5	NaCl	1.18

Trade Secret Statement: Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

- Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce

artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Call a physician or poison control center immediately.

Skin Contact: Wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

Eye Contact: Check for and remove contact lenses, if present and easy to do. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Immediate medical attention is required. Call a physician immediately.

General Advice: Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that those providing first aid and medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms and Effects: Inhalation may cause irritation, burns, coughing, sneezing, choking sensation, hoarseness, difficulty swallowing, and allergic reaction. Ingestion may cause irritation, burns, ulcers, nausea, vomiting, diarrhea, headache, cyanosis, nervous system effects, and shock. Skin contact may cause irritation, burns, dermatitis, skin discoloration, and ingestion symptoms. Eye contact may cause irritation, tissue damage, and conjunctivitis. Prolonged or repeated exposure may cause tooth decay, reproductive effects, mutagenic effects, cancer, and target organ effects.

**Immediate Medical Care/
Special Treatment:** Get medical attention immediately if exposed, concerned, or feeling unwell. Symptoms may be delayed.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry powder, alcohol resistant foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Hazardous Combustion Products: Hydrogen, sulfur oxides, chromium oxides, potassium oxides, sodium oxides, hydrogen chloride.

Specific Hazards: Contact with metals may produce hydrogen gas. Excessive thermal conditions may cause decomposition and yield corrosive and/or toxic fumes.

**Special Protective Equipment/
Precautions for Firefighters:** As in any fire, wear MSHA/NIOSH-approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Protective Equipment: Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, and clothing.

Emergency Procedures: In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

Methods for Containment: Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible.

Methods for Cleanup: Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Residues from spills can be diluted with water and neutralized with alkaline material such as soda ash or lime. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

Handling: Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin, eyes, and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product. Do not add water directly to this product. Instead, add product to water to prevent violent eruption of the solution.

Storage: Store in a cool, dry, ventilated area. Store in a segregated and approved area away from heat and incompatible materials (see Section 10). Store in original container. Do not store in metallic containers. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:	Water:	No information found.	
	Sulfuric Acid:	OSHA (PEL):	1 mg/m ³
		ACGIH (TLV):	0.2 mg/m ³
	Potassium Dichromate:	ACGIH (TLV):	0.05 mg/m ³
		OSHA (PEL):	0.005 mg/m ³
NIOSH (REL):		0.001 mg/m ³	
Sodium Chloride:	No information found.		

Engineering Controls: Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Measures:

Eye/Face Protection: Wear safety glasses with side shields or safety goggles. Wear a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.

Skin Protection: Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

Respiratory Protection: An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to

exceed exposure limits. Use a full-face, positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

Specific Requirements for Personal Protective Equipment:

Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise indicated, all properties are given at 25 °C and standard pressure.

Appearance:	Orange, transparent liquid.
Odor:	Very slight.
Odor Threshold:	No information found.
Formula Weight:	Mixture.
pH:	< 4
Melting/Freezing Point:	No information found.
Boiling Point/Range:	No information found.
Decomposition Temperature:	No information found.
Flash Point:	Not applicable.
Auto-ignition Temperature:	Not applicable.
Flammability:	Not flammable.
Flammability/Explosive Limits:	Not applicable.
Solubility:	Miscible with water.
Vapor Pressure:	No information found.
Vapor Density (Relative):	No information found.
Specific Gravity:	≈ 1.09 (Water = 1)
Evaporation Rate:	No information found.
Viscosity:	No information found.
Partition Coefficient (n-octanol/water):	No information found.

10. STABILITY AND REACTIVITY

Reactivity Data:	Corrosive. See Section 11.
Chemical Stability:	Stable under normal conditions.
Conditions to Avoid:	Excessive heat, incompatible materials.
Incompatible Materials:	Strong bases, strong acids, strong reducing agents, organic materials, combustible materials, metals, hydrazine.
Hazardous Decomposition Products:	Hydrogen, sulfur oxides, chromium oxides, potassium oxides, sodium oxides, hydrogen chloride.

Possibility of Hazardous Reactions: May react vigorously, violently, or explosively with the incompatible materials listed above. Excess thermal conditions may yield hazardous decomposition products listed above. Contact with metals may produce hazardous concentrations of hydrogen gas.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Exposure: Inhalation, ingestion, skin contact, eye contact.

Acute Effects: Toxic if absorbed through the skin. Harmful if swallowed or inhaled. Corrosive to skin, eyes, respiratory tract, and gastrointestinal tract. May enter lungs if swallowed or vomited. May affect the respiratory system and cardiovascular system.

Chronic Effects: Prolonged or repeated exposure may affect liver function, respiratory function, kidney function, and behavioral/central nervous system function; may cause tooth decay, dermatitis, sensitization, conjunctivitis, reproductive effects, mutagenic effects, and cancer.

Toxicological Data:

Water:	Not applicable.	
Sulfuric Acid:	LD ₅₀ Oral, Rat:	2140 mg/kg
	LC ₅₀ Inhalation, Rat:	0.510 mg/L 2 h
	Corrosive to skin and eyes based on animal data.	
Potassium Dichromate:	LD ₅₀ Oral, Rat:	25 mg/kg
	LD ₅₀ Dermal, Rabbit:	14 mg/kg
	LC ₅₀ Inhalation, Rat:	29 mg/m ³ 4 h
	Causes sensitization effects.	
	Causes reproductive effects based on animal data.	
	Causes mutagenic effects based on animal data.	
Sodium Chloride:	LD ₅₀ Oral, Rat:	> 3000 mg/kg
	LD ₅₀ Dermal, Rabbit:	> 10,000 mg/kg
	LC ₅₀ Inhalation, Rat:	> 42 mg/L 1 h

Symptoms of Exposure: Irritation, burning, swelling, ulceration, coughing, sneezing, choking sensation, hoarseness, dyspnea, bronchitis, gastric infection, anesthetic effects, rhinorrhea, erythema, nausea, vomiting, diarrhea, headache, thirst, difficulty swallowing, salivation, hypermotility, chills, fever, cyanosis, shock, weak and rapid pulse.

Carcinogenic Effects: This product may cause cancer.

ACGIH:	Sulfuric Acid:	A2 – Suspected human carcinogen
	Potassium Dichromate:	A1 – Confirmed human carcinogen
IARC:	Sulfuric Acid:	Group 1 – Carcinogenic to humans
	Potassium Dichromate:	Group 1 – Carcinogenic to humans
OSHA HCS:	Potassium Dichromate:	Carcinogen
NTP:	Potassium Dichromate:	Known human carcinogen

12. ECOLOGICAL INFORMATION

Ecotoxicological Data: Water: Not applicable.

Sulfuric Acid:		
LC ₅₀ , Western Mosquitofish (<i>Gambusia affinis</i>):		42 mg/L 96 h
EC ₅₀ , Water Flea (<i>Daphnia magna</i>):		29 mg/L 24 h
Potassium Dichromate:		
EC ₅₀ , Water Flea (<i>Daphnia magna</i>):		0.035 mg/L 48 h
Sodium Chloride:		
EC ₅₀ , Water Flea (<i>Daphnia magna</i>):		> 1000 mg/L 48 h
LC ₅₀ , Fathead Minnow (<i>Pimphales promelas</i>):		7650 mg/L 96 h

Persistence and Degradability: Expected to be readily biodegradable. Some components may bioaccumulate.

Bioconcentration Factor: Potassium Dichromate: 17.4

Environmental Effects: Very toxic to aquatic organisms with long-lasting effects. May affect pH of aquatic ecosystems. May leach into groundwater. Avoid release to the environment.

13. DISPOSAL INFORMATION

Disposal Instructions: Dispose of this material and its container to hazardous or special waste collection point. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers. All wastes must be handled in accordance with local, state, and federal regulations.

Contaminated Packaging: Because emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Waste Codes: D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel)

14. TRANSPORT INFORMATION

DOT:

UN Number: UN3289

Proper Shipping Name: Toxic liquid, corrosive, inorganic, n.o.s. (Potassium dichromate, Sulfuric acid)

Hazard Class: 6.1, 8

Packing Group: II

ERG Number: 154

Other Transport Precautions: DOT Reportable Quantity: Sulfuric Acid: 1000 lb
Potassium Dichromate: 10 lb

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: Sulfuric Acid: Reportable Quantity: 1000 lb
Threshold Planning Quantity: 1000 lb

Sections 311/312:

Hazard Category	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	Yes
Delayed Hazard	Yes
Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	Yes

Section 313: De Minimis Concentration: Sulfuric Acid: 1.0 %
Potassium Dichromate: No information found.

CERCLA Reportable Quantities: Sulfuric Acid: 1000 lb
Potassium Dichromate: 10 lb

International Inventories:

Country or Region	Inventory Name	On Inventory (Yes/No)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*A "Yes" indicates that the listed component(s) of this product comply with the inventory requirements administered by the governing country or region.

16. OTHER INFORMATION

Disclaimer: Rocky Mountain Reagents, Inc. provides the information in this Safety Data Sheet in the belief that it is reliable but assumes no responsibility for its completeness or accuracy. The physical properties reported in this SDS are obtained from literature and do not constitute product specifications. Rocky Mountain Reagents, Inc. makes and gives no representations or warranties with respect to the information contained herein or the product to which it refers, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose. No warranty against infringement of any patent, copyright or trademark is made or implied. This SDS is intended only as a guide to the appropriate handling of the material by a properly trained person. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. Accordingly, Rocky Mountain Reagents, Inc. assumes no liability whatsoever for the use of or reliance upon this information including results obtained, incidental or consequential damages, or lost profits.

Issue Date: June 8, 2016

Reason for Revision: Not applicable.