

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Revision Date 09/17/2018

Version 1.6

SECTION 1. Identification**Product identifier**

Product number	104865
Product name	Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO
CAS-No.	7778-50-9

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
-----------------	----------------------

Details of the supplier of the safety data sheet

Company	Millipore (Canada) Ltd 109 Woodbine Downs Blvd. Unit 5 Etobicoke Ontario M9W 6Y1 Canada General Inquiries: +1 800-645-5476 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
---------	---

Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
----------------------------	--

SECTION 2. Hazards identification**GHS Classification**

Oxidizing solid, Category 2, H272
Acute toxicity, Category 3, Oral, H301
Acute toxicity, Category 2, Inhalation, H330
Acute toxicity, Category 4, Dermal, H312
Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318
Respiratory sensitization, Category 1, H334
Skin sensitization, Category 1, H317
Germ cell mutagenicity, Category 1B, H340
Carcinogenicity, Category 1B, H350
Reproductive toxicity, Category 1B, H360
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335
Specific target organ systemic toxicity - repeated exposure, Category 1, H372
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Hazard pictograms



Signal Word

Danger

Hazard Statements

H340 May cause genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

H272 May intensify fire; oxidizer.

H301 Toxic if swallowed.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H330 Fatal if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat.

P220 Keep/Store away from clothing/ combustible materials.

P221 Take any precaution to avoid mixing with combustibles.

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P284 Wear respiratory protection.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P320 Specific treatment is urgent (see supplemental first aid instructions on this label).

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula $K_2Cr_2O_7$ $Cr_2K_2O_7$ (Hill)

Molar mass 294.19 g/mol

Hazardous ingredients

Chemical name (Concentration)

CAS-No.

potassium dichromate (>= 90 % - <= 100 %)

7778-50-9

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

Skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

Ingestion

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Allergic reactions, Cough, Shortness of breath

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Chromium(VI) is highly toxic. It is absorbed via both the lungs and the gastrointestinal tract. Being strong oxidizers, chromates/ bichromates can cause burns and ulcerations on the skin and mucous membranes and also irritations in the upper respiratory tract. Poorly healing ulcers occur after wound contact. In predisposed persons the substance rapidly leads to sensitization and allergic reactions of the respiratory tract (risk of pneumonia!) and damage to nasal mucous membranes (under given circumstances perforation of the septum). After swallowing severe symptoms in the gastrointestinal tract such as bloody diarrhea, vomiting (aspiration pneumonia!), spasms, circulatory collapse, unconsciousness, formation of methemoglobin. Absorption may result in hepatic and renal damage. Inhalable chromium(VI) compounds gave clear evidence to be carcinogenic in animal experiments. Lethal dose (man): 0.5g. Antidotes: chelating agents such as EDTA, DMPS (Demaval(R)).
Risk of blindness!

Indication of any immediate medical attention and special treatment needed

Carefully clean wounds and cover with sterile dressing material.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Not combustible.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapors.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number 104865 Version 1.6
Product name Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

No metal containers.

Dry.

Tightly closed. Do not store near combustible materials. Keep locked up or in an area accessible only to qualified or authorized persons.

Store below +30°C (+86°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>potassium dichromate 7778-50-9</i>			
CAD AB OEL	Time Weighted Average (TWA):	0.01 mg/m ³	Expressed as: as Cr
	Time Weighted Average (TWA):	0.05 mg/m ³	Expressed as: as Cr
CAD BC OEL	Ceiling Limit Value:	0.1 mg/m ³	Expressed as: as Cr
	Time Weighted Average (TWA):	0.025 mg/m ³	Expressed as: as Cr
CAD MB OEL	Time Weighted Average (TWA):	0.05 mg/m ³	Expressed as: as Cr
CAD ON OEL	Time Weighted Average (TWAEV):	0.05 mg/m ³	Expressed as: as Cr
OEL (QUE)	Time Weighted Average (TWA):	0.05 mg/m ³	Exposure must be minimized. Expressed as: as Cr
	Time Weighted Average (TWA):	0.01 mg/m ³	Exposure must be minimized. Expressed as: as Cr
			Recirculation prohibited Expressed as: as Cr
			Recirculation prohibited Expressed as: as Cr

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment:

protective clothing

Respiratory protection

required when dusts are generated.

Recommended Filter type: Filter P 3 (acc. to DIN 3181) for solid and liquid particles of toxic and very toxic substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer. These measures have to be properly documented.

SECTION 9. Physical and chemical properties

Physical state	crystalline
Color	orange
Odor	odorless
Odor Threshold	Not applicable

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

pH	3.6 at 100 g/l
Melting point	ca. 748 °F (398 °C) Method: OECD Test Guideline 102
Boiling point/boiling range	> 932 °F (> 500 °C) at 1,013 hPa
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	not auto-flammable Relative self-ignition temperature for solids The product is not flammable. Test N.1: Test method for readily combustible solids
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor pressure	Not applicable
Relative vapor density	No information available.
Density	ca.2.7 g/cm ³ at 68 °F (20 °C) Method: OECD Test Guideline 109
Relative density	No information available.
Water solubility	ca.115 g/l Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	ca.932 °F (500 °C)
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	The substance or mixture is classified as oxidizing with the category 2.
Ignition temperature	Not applicable

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Bulk density

1,250 kg/m³

SECTION 10. Stability and reactivity

Reactivity

See below

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Risk of explosion with:

Iron, magnesium, hydrazine and derivatives, hydroxylamine, ammonium nitrate, Boron, Acetic anhydride, oxidizable substances, Reducing agents, sulfuric acid, silicon

Exothermic reaction with:

anhydrides, phosphides, Sulfides, nitrides, Fluorine

Risk of ignition or formation of inflammable gases or vapors with:

organic combustible substances, glycerol, Powdered metals, hydrides, alkali compounds

Acetone, with, sulfuric acid

Generates dangerous gases or fumes in contact with:

hydrochloric acid

Conditions to avoid

no information available

Incompatible materials

no information available

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact, Ingestion

Acute oral toxicity

LD50 Rat: 90.5 mg/kg

OECD Test Guideline 401

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity

LC50 Rat: 0.083 mg/l; 4 h ; dust/mist

OECD Test Guideline 403

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages: , damage of respiratory tract

Acute dermal toxicity

LD50 Rat: 1,170 mg/kg
(IUCLID)

Skin irritation

Rabbit

Result: Causes burns.

OECD Test Guideline 404

Causes burns.

Eye irritation

Causes serious eye damage.

Risk of blindness!

Sensitization

Sensitization test (Magnusson and Kligman):

Result: positive

(IUCLID)

Patch test: human

Result: positive

(IUCLID)

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: positive

(National Toxicology Program)

CMR effects

Mutagenicity: May cause genetic defects.

Carcinogenicity: May cause cancer.

Teratogenicity / Reproductive toxicity: May damage fertility or the unborn child.

Specific target organ systemic toxicity - single exposure

May cause respiratory irritation.

Target Organs: Respiratory system

Specific target organ systemic toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC

Group 1: Carcinogenic to humans

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number 104865 Version 1.6
Product name Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

OSHA	potassium dichromate	7778-50-9
NTP	potassium dichromate	7778-50-9
	Known carcinogen.	
ACGIH	potassium dichromate	7778-50-9
	A1: Confirmed human carcinogen	
	potassium dichromate	7778-50-9

Further information

Chromium(VI) is highly toxic. It is absorbed via both the lungs and the gastrointestinal tract. Being strong oxidizers, chromates/ bichromates can cause burns and ulcerations on the skin and mucous membranes and also irritations in the upper respiratory tract. Poorly healing ulcers occur after wound contact. In predisposed persons the substance rapidly leads to sensitization and allergic reactions of the respiratory tract (risk of pneumonia!) and damage to nasal mucous membranes (under given circumstances perforation of the septum). After swallowing severe symptoms in the gastrointestinal tract such as bloody diarrhea, vomiting (aspiration pneumonia!), spasms, circulatory collapse, unconsciousness, formation of methemoglobin. Absorption may result in hepatic and renal damage. Inhalable chromium(VI) compounds gave clear evidence to be carcinogenic in animal experiments. Lethal dose (man): 0.5g. Antidotes: chelating agents such as EDTA, DMPS (Demaval(R)). Other dangerous properties can not be excluded. This substance should be handled with particular care.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 Lepomis macrochirus (Bluegill sunfish): 0.131 mg/l; 96 h (External MSDS)

Toxicity to daphnia and other aquatic invertebrates

Immobilization EC50 Daphnia magna (Water flea): 0.62 mg/l; 48 h
OECD Test Guideline 202

Toxicity to algae

EC50 Pseudokirchneriella subcapitata (green algae): 0.31 mg/l; 72 h (External MSDS)
IC50 Chlorella vulgaris (Fresh water algae): 0.16 - 0.59 mg/l; 96 h (IUCLID)

Toxicity to bacteria

microtox test EC50 Photobacterium phosphoreum: 58 mg/l; 30 min

Toxicity to fish (Chronic toxicity)

NOEC Pimephales promelas (fathead minnow): 6 mg/l; 7 d
(External MSDS)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

NOEC Daphnia: 0.016 - 0.064 mg/l; 7 d
(External MSDS)

Persistence and degradability

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number 104865 Version 1.6
Product name Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number UN 3086
Proper shipping name TOXIC SOLID, OXIDIZING, N.O.S. (POTASSIUM DICHROMATE)
Class 6.1 (5.1)
Packing group II
Environmentally hazardous --

Air transport (IATA)

UN number UN 3086
Proper shipping name TOXIC SOLID, OXIDIZING, N.O.S. (POTASSIUM DICHROMATE)
Class 6.1 (5.1)
Packing group II
Environmentally hazardous --
Special precautions for user no

Sea transport (IMDG)

UN number UN 3086
Proper shipping name TOXIC SOLID, OXIDIZING, N.O.S. (POTASSIUM DICHROMATE)
Class 6.1 (5.1)
Packing group II
Environmentally hazardous --
Special precautions for user yes
EmS F-A S-Q

SECTION 15. Regulatory information

United States of America

TSCA 12b

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

104865

Version 1.6

Product name

Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO

Ingredients

potassium dichromate

7778-50-9

Canada

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H272 May intensify fire; oxidizer.

H301 Toxic if swallowed.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H330 Fatal if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H340 May cause genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention

P201 Obtain special instructions before use.

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number	104865	Version 1.6
Product name	Potassium dichromate for analysis (max. 0.000001% Hg) EMSURE® ACS,ISO	

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Restricted to professional users.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 09/17/2018

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.