1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Potassium dichromate
Product Number : 207802
Brand : Sigma-Aldrich
Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Oxidizer, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Highly toxic by skin absorption, Respiratory sensitiser, Corrosive, Teratogen, Mutagen

Target Organs
Lungs, Kidney, Blood

GHS Classification
Oxidizing solids (Category 2)
Acute toxicity, Oral (Category 2)
Acute toxicity, Dermal (Category 1)
Acute toxicity, Inhalation (Category 1)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Respiratory sensitisation (Category 1)
Germ cell mutagenicity (Category 1B)
Carcinogenicity (Category 1B)
Reproductive toxicity (Category 1B)
Specific target organ toxicity - repeated exposure, Inhalation (Category 1)
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 4)

GHS Label elements, including precautionary statements

Pictogram

Signal word : Danger

Hazard statement(s)
H272 May intensify fire; oxidiser.
H300 + H310 Fatal if swallowed or in contact with skin
H314 Causes severe skin burns and eye damage.
H330 Fatal if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
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 if inhaled.
H400 Very toxic to aquatic life.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)
P201 Obtain special instructions before use.
P220 Keep/Store away from clothing/ combustible materials.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
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 or doctor/ physician.

HMIS Classification
   Health hazard: 4
   Chronic Health Hazard: *
   Flammability: 0
   Physical hazards: 0
   Reactivity: 3

NFPA Rating
   Health hazard: 4
   Fire: 0
   Reactivity Hazard: 3
   Special hazard.: OX

Potential Health Effects
   Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
   Skin May be fatal if absorbed through skin. Causes skin burns.
   Eyes Causes eye burns.
   Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

   Synonyms: Potassium bichromate
   Formula: \( \text{Cr}_2\text{K}_2\text{O}_7 \)
   Molecular Weight: 294.18 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium dichromate</td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>7778-50-9</td>
</tr>
<tr>
<td>EC-No.</td>
<td>231-906-6</td>
</tr>
<tr>
<td>Index-No.</td>
<td>024-002-00-6</td>
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</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Potassium oxides, Chromium oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. Keep away from heat and sources of ignition. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium dichromate</td>
<td>7778-50-9</td>
<td>CEIL</td>
<td>0.1 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.0050 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEIL</td>
<td>0.0010 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.05 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks
Confirmed human carcinogen
Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form crystalline
Colour no data available

Safety data
pH 3.5 - 5.0 at 29.4 g/l at 25 °C (77 °F)
Melting point/freezing point Melting point/range: 398 °C (748 °F) - lit.
Boiling point no data available
Flash point not applicable
Ignition temperature no data available
Auto-ignition temperature  no data available
Lower explosion limit  no data available
Upper explosion limit  no data available
Vapour pressure  no data available
Density 2.680 g/cm³
Water solubility ca.29.4 g/l at 20 °C (68 °F)
Partition coefficient: n-octanol/water log Pow: 5
Relative vapour density  no data available
Odour  no data available
Odour Threshold  no data available
Evaporation rate  no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Organic materials, Do not store near acids., Powdered metals, Hydrazine

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Potassium oxides, Chromium oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
LD50 Oral - rat - male - 168 mg/kg
LD50 Oral - rat - female - 90.5 mg/kg

Inhalation LC50
LC50 Inhalation - rat - female - 4 h - 0.088 mg/l

Dermal LD50
LD50 Dermal - rabbit - 14 mg/kg
Remarks: Lungs, Thorax, or Respiration:Acute pulmonary edema. Diarrhoea Prolonged skin contact may cause skin irritation and/or dermatitis.

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitisation
May cause allergic respiratory reaction.

Germ cell mutagenicity
May alter genetic material.
In vivo tests showed mutagenic effects

Carcinogenicity
This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.
Possible human carcinogen

IARC: 1 - Group 1: Carcinogenic to humans (Potassium dichromate)
NTP: Known to be human carcinogen (Potassium dichromate)
OSHA: 1910.1026 (Potassium dichromate)

Reproductive toxicity

no data available

Teratogenicity

Presumed human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
Inhalation - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
no data available

Potential health effects

Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion May be fatal if swallowed.
Skin May be fatal if absorbed through skin. Causes skin burns.
Eyes Causes eye burns.

Signs and Symptoms of Exposure
Ulceration, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Synergistic effects
no data available

Additional Information
RTECS: HX7680000

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to fish LC50 - Lepomis macrochirus - 0.131 mg/l - 96.0 h
mortality NOEC - Pimephales promelas (fathead minnow) - 6 mg/l - 7.0 d

Toxicity to daphnia and other aquatic invertebrates mortality NOEC - Daphnia - 0.016 - 0.064 mg/l - 7 d

EC50 - Daphnia magna (Water flea) - 0.035 mg/l - 48 h
Toxicity to algae
EC50 - Pseudokirchneriella subcapitata - 0.31 mg/l - 72 h

Persistence and degradability

Bioaccumulative potential
Bioaccumulation: Oncorhynchus mykiss (rainbow trout) - 180 d
Bioconcentration factor (BCF): 17.4

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 3086  Class: 6.1 (5.1)  Packing group: I
Proper shipping name: Toxic solids, oxidizing, n.o.s. (Potassium dichromate)
Reportable Quantity (RQ): 10 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 3086  Class: 6.1 (5.1)  Packing group: I  EMS-No: F-A, S-Q
Proper shipping name: TOXIC SOLID, OXIDIZING, N.O.S. (Potassium dichromate)
Marine pollutant: Marine pollutant

IATA
UN number: 3086  Class: 6.1 (5.1)  Packing group: I
Proper shipping name: Toxic solid, oxidizing, n.o.s. (Potassium dichromate)
IATA Passenger: Not permitted for transport

15. REGULATORY INFORMATION

OSHA Hazards
Oxidizer, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Highly toxic by skin absorption, Respiratory sensitisers, Corrosive, Teratogen, Mutagen

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1993-04-24

SARA 311/312 Hazards
Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard
Massachusetts Right To Know Components

Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1993-04-24

Pennsylvania Right To Know Components

Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1993-04-24

New Jersey Right To Know Components

Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1993-04-24

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.
Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1987-02-27

California Prop. 65 Components

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Potassium dichromate
CAS-No. 7778-50-9
Revision Date 1987-02-27

16. OTHER INFORMATION

Further information
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