Safety Data Sheet

Product Name: POTASSIUM DICHROMATE

1. Identification

GHS Product Identifier: POTASSIUM DICHROMATE
Company Name: CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)
Address: 38 - 50 Bedford Street GILLMAN
SA 5013 Australia

Telephone/Fax Number:
Tel: (08) 8440-2000
Fax: (08) 8440-2001

Recommended use of the chemical and restrictions on use:
Oxidising agent (chemicals, dyes, intermediates); analytical reagent; brass pickling compositions; electroplating; pyrotechnics; explosives; safety matches; textiles; dyeing and printing; chrome glues and adhesives; chrome tanning leather; wood stains; poison fly paper; process engraving and lithography; synthetic perfumes; chrome alum manufacture; pigments; alloys, ceramic products; depolarizer in dry cell batteries; bleaching fats and waxes; and laboratory reagent.

2. Hazard Identification

GHS classification of the substance/mixture:
Carcinogenicity: Category 1B
Acute Toxicity - Dermal: Category 4
Germ Cell Mutagenicity: Category 1B
Hazardous to the Aquatic Environment - Acute Hazard: Category 1
Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1
Acute Toxicity - Inhalation: Category 2
Oxidizing Solids: Category 2
Acute Toxicity - Oral: Category 3
Specific target organ toxicity - Repeated Exposure Category 1 (inhalation)
Sensitization - Respiratory: Category 1
Skin Corrosion/Irritation: Category 1A
Sensitization - Skin: Category 1
Toxic to Reproduction: Category 1B

Signal Word(s):
DANGER

Hazard Statement(s):
H272 May intensify fire; oxidiser.
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.
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.

Pictogram(s):
Corrosion, Flame over circle, Health hazard, Skull and crossbones, Environment
Precautionary statement – Prevention
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P220 Keep/Store away from clothing/hotels/.../combustible materials.
P221 Take any precaution to avoid mixing with combustibles.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response
Swallowed
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330 Rinse mouth.
P310 Immediately call a POISON CENTER or doctor/physician.
Skin
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P310 Immediately call a POISON CENTER or doctor/physician.
Inhaled
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.
Eyes
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.
Health
P308+P313 IF exposed or concerned: Get medical advice/attention.
Fire
P370+P378 In case of fire: Use flooding quantities of water for extinction.
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 site.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical Characterization Ingredients</th>
<th>Name</th>
<th>CAS</th>
<th>Proportion</th>
<th>Hazard Symbol</th>
<th>Risk Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>Potassium dichromate</td>
<td>7778-50-9</td>
<td>90-100 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. First-aid measures

First Aid Measures
Inhalation
If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discoloration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Immediately medical attention is required.

Ingestion
Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical attention.

Skin
If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Seek urgent medical assistance. Decontaminate clothing, shoes and leather goods before re-use, or discard.

Eye contact
If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until...
Safety Data Sheet

classified as hazardous

First Aid Facilities
Maintain eyewash fountain and safety shower in work area.

Advice to Doctor
Treat symptomatically based on judgement of doctor and individual reactions of the patient.

Other Information
For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor at once.

5. Fire-fighting measures

Hazardous Combustion Products
Oxygen, irritating and toxic fumes and gases, oxides of potassium, chrome oxides.

Specific Methods

SMALL FIRE: Use flooding quantities of water. DO NOT use dry chemical, CO2 or foam. If safe to do so, move undamaged containers from fire area. Do NOT move cargo if cargo has been exposed to heat.

LARGE FIRE: Flood fire area with water from a protected position. Cool containers with flooding quantities of water until well after the fire is out. If impossible, withdraw from area and let fire burn. Avoid getting water inside containers: a violent reaction may occur. Dam fire control water for later disposal. ALWAYS stay away from tank ends.

Specific hazards arising from the chemical
Will accelerate burning when involved in a fire. May ignite combustibles (wood, paper, clothing, and so on). Fire may produce irritating, toxic, and/or corrosive gases. Containers may explode when heated. Runoff may create fire or explosion hazard.

Hazchem Code
2W

Decomposition Temp.
500 °C

Precautions in connection with Fire
Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal
Do not contaminate. Keep combustibles (wood, paper, clothing, oil, and so on) away from spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use water spray to knock down vapours or divert vapour clouds. Prevent entry into waterways, drains or confined areas. Prevent exposure to heat.

Dry spill: Use clean non-sparking tools to transfer material to a clean, dry plastic container and cover loosely. Move container from spill area.

Small liquid spill: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place in a loosely-covered container for later disposal.

Large liquid spill: SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

Personal Precautions
Evacuate the area of all non-essential personnel. Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

Personal Protection
Wear protective clothing specified for normal operations (see Section 8)

7. Handling and storage

Precautions for Safe Handling
Avoid contact with eyes, skin or clothing. Avoid breathing dust, vapour, or spray mist. Do not ingest. If ingested seek immediate medical advice. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Ensure good ventilation/exhaustion at the workplace. In case of insufficient ventilation, wear suitable respiratory equipment. Wear special protective equipment (Sec. 8) when handling. If you feel unwell, seek medical attention and show the label when possible. Under no circumstances eat, drink or smoke while handling this material. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid cross-contamination of street clothes. Discard contaminated shoes. Use only in a chemical fume hood. Open and handle container with care. Keep container dry. Keep away from heat and all sources of ignition. Keep away from combustible material. Substance/product can reduce the ignition temperature of flammable substances. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Keep away from incompatibles such as reducing agents, combustible materials, organic materials. Remove and dispose of any spilled dichromates; do not return to original containers. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Safety Data Sheet

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Product Name: POTASSIUM DICHROMATE

Classified as hazardous

Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well-ventilated area in suitable tightly closed containers. Keep well closed and protected from direct sunlight and moisture. Avoid wood floors. Keep away from heat, sparks, open flame and all sources of ignition. Store separate from combustible, organic or other readily oxidizable materials, flammables and reducing substances, food and feedstuffs. Protect against physical damage. Oxidizing materials should be stored in a separate safety storage cabinet or room. Store in an area without drain or sewer access. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Storage Regulations
Refer Australian Standard AS/NZS 4452:1997 'The storage and handling of toxic substances'. Refer Australian Standard AS 4326-1995 'The storage and handling of oxidizing agents'.

Storage Temperatures
Store at room temperature (15 to 25 °C recommended).

Unsuitable Materials
Organic material.

8. Exposure controls/personal protection

Other Exposure Information
A time weighted average (TWA) has been established for Chromium (VI) compounds (as Cr), water soluble (Safe Work Australia) of 0.05 mg/m³. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. Note: Substance is known to act as sensitiser. The substance can cause a specific immune response in some people. An affected individual may subsequently react to minute levels of that substance.

Appropriate engineering controls
In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

Respiratory Protection
Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1717 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

Eye Protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate.

Hand Protection
Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Vinyl gloves. Neoprene or nitrile rubber gloves. Good: NR latex. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.

Personal Protective Equipment
Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.

Footwear
Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection
Flame retardant protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hygiene Measures
Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form
Solid

Appearance
Orange-red crystals or powder.

Odour
Odourless.

Decomposition Temperature
500 °C

Melting Point
398 °C

Boiling Point
500 °C, decomposes.

Solubility in Water
Very soluble (12 g/100 ml at 20 °C).

Solubility in Organic Solvents
Insoluble in alcohol.

Specific Gravity
2.676 @ 25 °C
POTASSIUM DICHROMATE

1.7.2

Safety Data Sheet

Product Name: POTASSIUM DICHROMATE

Classified as hazardous

pH
Weakly acidic in water: pH of 1% soln: 4.04; pH of 10% soln: 3.57.

Flammability
Strong oxidising agent. Dangerous fire risk in contact with organic materials.

Explosion
Risk of fire and explosion on contact with combustible substances. Reacts explosively with hydrazine, and anydrous hydroxylamine.

Molecular Weight
294.18

Oxidising Properties
Strong oxidiser.

10. Stability and reactivity

Chemical Stability
Stable under ordinary conditions of use and storage.

Conditions to Avoid
Heat, incompatibles, dust generation.

Incompatible Materials
Reducing agents, acids, acetone + sulfuric acid, boron + silicon, ethylene glycol + heat, hydrazine and derivatives, hydroxylamine, combustible, organic or other readily oxidizable material (paper, wood, sulfur, aluminium or plastics), finely powdered metals, boron, iron, magnesium, tungsten, anhydrides, anhydrous base, alkalis, glycerol, sulfides/water, conc. sulfuric acid, sulfuric acid + acetone, boron + silicon.

Decomposition Products
Irritating and toxic fumes and gases, oxides of potassium, chrome oxides.

Reacts with reducing agents. Reacts with flammable substances. Reacts explosively with hydrazine. When in powdered form, reacts violently or explosively with anhydrous hydroxylamine. Reacts and ignites with acetone when splashed into a sulfuric acid-dichromate solution. Reacts explosively with sulfuric acid after several months in storage. Reacts explosively when in contact with air above 70 °C. Reacts violently or explosively with anhydrous base. Reacts violently or ignites with ethylene glycol (above 100 °C). Reacts with sulfuric acid to form the strong oxidant chromic acid.

Decomposition Products
Reacts with reducing agents. Reacts with flammable substances. Reacts explosively with hydrazine.

Acute Toxicity - Oral
LD50 (rat): 25 mg/kg.

Acute Toxicity - Dermal
LD50 (rabbit): 14 mg/kg.

Acute Toxicity - Inhalation
LD50 (rat): 1170 mg/kg.

Acute Toxicity - Inhalation
LC50 (rat): 0.094 mg/l /4 h.

LD50 (rat): 1170 mg/kg.

LD50 (rabbit): 14 mg/kg.

LD50 (rat): 25 mg/kg.

LD50 (rabbit): 14 mg/kg.

Inhaling LD50 (rat): 0.094 mg/l /4 h.

Ingestion
Toxic if swallowed. Corrosive. Swallowing can cause severe burns of the mouth, throat, gastrointestinal tract and stomach, leading to death. May cause severe and permanent damage to the digestive tract. May cause perforation of the digestive tract. Can cause sore throat, vomiting, diarrhea. May cause violent gastroenteritis, peripheral vascular collapse, dizziness, intense thirst, muscle cramps, shock, coma, abnormal bleeding, fever, liver damage and acute renal failure. May cause methaemoglobinemia, convulsions, and death. Methaemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown coloured blood. Highly absorbed through the membrane in the digestive system. Lethal dose (man): 0.5g.

Inhalation
Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Causes chemical burns to the respiratory tract. Symptoms may include sore throat, coughing, shortness of breath, and labored breathing. May produce pulmonary sensitization or allergic asthma due to allergic sensitization of the respiratory tract. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. Higher exposures and aspiration may cause pulmonary edema. Risk of airways sensitisation. Highly absorbed through the membrane in the lungs.

Skin
May be toxic by skin absorption. Corrosive. Causes severe skin burns, with redness and pain. Dusts and strong solutions may cause severe irritation. Contact with broken skin may cause ulcers (chrome sores), penetrating lesions of the skin, occur chiefly on the hand and forearm where there has been a break in the epidermis and absorption, which may cause systemic poisoning, affecting kidney and liver functions. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Highly Toxic! May be absorbed through the skin; symptoms may parallel ingestion.

Eye
Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. May cause chemical conjunctivitis, corneal injury or blindness. Risk of serious damage to eyes.

Skin Sensitisation
In animal experiments: Sensitizer.

Experience in man: Patch test (humans): positive.
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Carcinogenicity
Chromium[VI] is evaluated in the IARC Monographs (Vol. 49; 1990) as Group 1: Carcinogenic to humans.
Listed as a carcinogen, category 2 in List of Designated Hazardous Substances, - NOHSC.
Substances that should be regarded as if they are carcinogenic to man. There is sufficient evidence to provide a strong presumption that human exposure to a substance may result in the development of cancer, generally on the basis of:
• appropriate long-term animal studies,
• other relevant information.

Reproductive Toxicity
Animal tests show that this substance possibly causes toxicity to human reproduction or development.
Oral, rat: TDL0 = 525 mg/kg (female 21 day(s) after conception) Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea) and Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).

Chronic Effects
Chromium salts are recognised carcinogens of the lungs, nasal cavity and paranasal sinus.
Repeated or prolonged exposure can cause ulceration and perforation of the nasal septum, respiratory irritation, liver and kidney damage and ulceration of the skin. Ulcers at first may be painless, but may penetrate to the bone producing ‘chrome holes.’ Repeated or prolonged contact may cause skin sensitization and sensitization dermatitis. Repeated or prolonged inhalation exposure may cause asthma. Known to be a human carcinogen. May cause respiratory tract cancer. May cause heritable genetic damage to human germ cells. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects. Repeated or prolonged exposure may cause erosion and discolouration of the teeth.
Absorption may result in hepatic and renal damage.

Serious eye damage/irritation
Listed as a mutagen, category 2 in List of Designated Hazardous Substances, - NOHSC.
Substances that should be regarded as if they are mutagenic to man.
There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in the development of heritable genetic damage, generally on the basis of:
• appropriate animal studies,
• other relevant information.

Mutagenicity
Classified as a cause of asthma using EU criteria.

Respiratory Irritation
Skin corrosion/irritation
Animal experiments performed under conditions comparable with the workplace situation have shown the substance to be carcinogenic.
A mutagenic effect has been demonstrated in animal studies on mammals, justifying the assumption that exposure of humans to the substance produces hereditary damage.

12. Ecological information

Ecological Information
Chromium probably occurs as the insoluble (CrIII) oxide (Cr2O3.nH2O) in the soil, as the organic matter in the soil is expected to reduce any soluble chromate to insoluble chromic oxide (Cr2O3). Chromium in the soil can be transported to the atmosphere by way of aerosol formation. Chromium is also transported from the soil through runoff and leaching of water. Most of the chromium in surface waters may be present in particulate from as sediment. Some of the particulate chromium would remain as suspended matter and ultimately be deposited in the sediments. Chromium present usually as (CrIII) in the soil and is characterized by its lack of mobility, except in cases where Cr(VI) is involved. Chromium (VI) of natural origin is rarely found.

Ecotoxicity
Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Persistence and degradability
Biologic degradation: Methods for the determination of biodegradability are not applicable to inorganic substances.
Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Bioaccumulative Potential
Biocentrification factor for Salmo gairdneri (rainbow trout) of 2.8 (muscle), 180 days duration.

13. Disposal considerations

Disposal Considerations
Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.
14. Transport information

**Transport Information**

Dangerous Goods of Class 6 (Toxic and Infectious Substances) are incompatible in a placard load with any of the following: Class 1, Class 3, if the Class 3 dangerous goods are nitromethane, Class 8, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids; and are incompatible with food and food packaging in any quantity.

**U.N. Number**

3086

**UN proper shipping name**

TOXIC SOLID, OXIDIZING, N.O.S.

**Transport hazard class(es)**

6.1

**Sub.Risk**

5.1

**Hazchem Code**

2W

**Packaging Method**

3.8.6.1

**Packing Group**

II

**EPG Number**

6A6

**IERG Number**

31

15. Regulatory information

**Regulatory Information**

Listed in the Australian Inventory of Chemical Substances (AICS).

**Poisons Schedule**

S6

16. Other Information

**Literature References**

'Standard for the Uniform Scheduling of Medicines and Poisons No. 6', Commonwealth of Australia, February 2015.


Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.

Safe Work Australia, 'Hazardous Substances Information System, 2005'.

Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.


Paul McCarthy Ph. (08) 8440 2000

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**Empirical Formula & Structural Formula**

Empirical Formula: K2 Cr2 O7.

...End Of MSDS...