SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Potassium dichromate

Stock number: A18722
CAS Number: 7778-50-9
EC number: 231-906-6
Index number: 024-002-00-6

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

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Alfa Aesar
Avocado Research Chemicals, Ltd.
Shore Road
Port of Heysham Industrial Park
Heysham Lancashire LA3 2XY
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608
Email: uktech@alfa.com
www.alfa.com

Informing department: Product safety department.

1.4 Emergency telephone number: Call Carechem 24 at +44 (0) 1865 407333 (English only); +44 (0) 1235 239670 (Multi-language)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS03 flame over circle
Ox. Sol. 2 H272 May intensify fire; oxidiser.

GHS06 skull and crossbones
Acute Tox. 3 H301 Toxic if swallowed.
Acute Tox. 2 H330 Fatal if inhaled.

GHS08 health hazard
Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Muta. 1B H340 May cause genetic defects.
Carc. 1B H350 May cause cancer.
Repr. 1B H360FD May damage fertility. May damage the unborn child.
STOT RE 1 H372 Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system through prolonged or repeated exposure. Route of exposure: Oral.

GHS05 corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.

GHS09 environment
Aquatic Acute 1 H400 Very toxic to aquatic life.
Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

GHS07
Acute Tox. 4 H312 Harmful in contact with skin.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Other hazards that do not result in classification No information known.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

Signal word: Danger

Hazard statements
H272 May intensify fire; oxidiser.
H301 Toxic if swallowed.
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H340 May cause genetic defects.
H350 May cause cancer.
H360FD May damage fertility. May damage the unborn child.
H372 Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system through prolonged or repeated exposure. Route of exposure: Oral.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements
P221 Take any precaution to avoid mixing with combustibles.
SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation:
7778-50-9 Potassium dichromate
Identification number(s):
EC number: 231-906-6
Index number: 024-002-00-6

SECTION 4: First aid measures

4.1 Description of first aid measures
General information
Instantly remove any clothing soiled by the product.
Remove breathing apparatus only after soiled clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.

After skin contact
Instantly wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing
Do not induce vomiting; instantly call for medical help.

4.2 Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes serious eye damage.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
For safety reasons unsuitable extinguishing agents Halocarbon extinguisher

5.2 Special hazards arising from the substance or mixture
This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.
If this product is involved in a fire, the following can be released:
Potassium oxide
Chromium oxides

5.3 Advice for firefighters
Protective equipment:
Wear self-contained breathing apparatus.
Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

6.2 Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.

6.3 Methods and material for containment and cleaning up:
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Prevention of secondary hazards:
Acts as an oxidizing agent on organic materials such as wood, paper and fats
Keep away from combustible material.

6.4 Reference to other sections
See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Open and handle container with care.

Information about protection against explosions and fires:
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.

7.2 Conditions for safe storage, including any incompatibilities
Store away from flammable substances.
Store away from reducing agents.
Do not store with organic materials.
Store away from metal powders.
Do not store together with acids.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in a locked cabinet or with access restricted to technical experts or their assistants.

7.3 Specific end use(s)
No further relevant information available.
SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:

Property operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:

BMGV: Chromium VI; 10 µmol chromium/mol creatine in urine (sample post shift)

7778-50-9 Potassium dichromate (100.0%)

WEL () Long-term value: 0.05 mg/m³

as Cr; Carc, Sen

Ingredients with biological limit values:

7778-50-9 Potassium dichromate (100.0%)

BMGV () 10 µmol/mol creatinine

Medium: urine

Sampling time: post shift

Parameter: chromium

Additional information: No data

8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures should be adhered to in handling the chemicals.

Keep away from foodstuffs, beverages and food.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment:

Respiratory protection equipment should be worn and maintained according to the suppliers specifications. Fit testing must be conducted at regular intervals.

Use self-contained respiratory protective device in emergency situations.

Recommended filter device for short term use:

Use an air-purifying respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

Protection of hands:

Check protective gloves prior to each use for their proper condition.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Material of gloves: Nitrile rubber, NBR

Penetration time of glove material (in minutes) 480

Glove thickness 0.11 mm

Eye protection:

Tightly sealed safety glasses.

Full face protection

Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form: Crystalline powder

Colour: Orange

Smell: Odourless

Odour threshold: Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range: 398 °C

Sublimation temperature / start: Not determined

Inflammability (solid, gaseous) Contact with combustible material may cause fire.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Self-inflammability: Not determined.

Danger of explosion: Not determined.

Critical values for explosion:

Lower: Not determined

Upper: Not determined

Steam pressure at 20 °C: 0 hPa

Density at 20 °C: 2.676 g/cm³

Relative density Not determined.

Vapour density Not applicable.

Evaporation rate Not applicable.

Solubility in / Miscibility with

Water at 20 °C: 125 g/l

Partition coefficient (n-octanol/water) Not determined.

Viscosity:

dynamic: Not applicable.

kinematic: Not applicable.

9.2 Other information

No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

May intensify fire; oxidizer.

10.2 Chemical stability

Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

Reacts with reducing agents

Reacts with flammable substances

10.4 Conditions to avoid

No further relevant information available.

10.5 Incompatible materials:

Acids

Reducing agents

Flammable substances

Organic materials

Metal powders

10.6 Hazardous decomposition products:

Potassium oxide

(Contd. on page 4)
**SECTION 11: Toxicological information**

11.1 Information on toxicological effects

**Acute toxicity:**
- Fatal if inhaled.
- Toxic if swallowed.
- Danger by skin resorption.

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

**LD/LC50 values that are relevant for classification:**

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50 (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>20 (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>14 (rabbit)</td>
</tr>
</tbody>
</table>

**Skin irritation or corrosion:** Causes severe skin burns.

**Eye irritation or corrosion:** Causes serious eye damage.

**Sensitization:**
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- May cause an allergic skin reaction.

**Germ cell mutagenicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

**Carcinogenicity:**
- IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.
- ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.
- NTP-K: Known to be carcinogenic: sufficient evidence from human studies.
- [oral] EPA-ABD: Cargenic potential cannot be determined.

**Reproductive toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.

**Specific target organ system toxicity - repeated exposure:**
- Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system system through prolonged or repeated exposure. Route of exposure: Oral.

**Subacute to chronic toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**SECTION 12: Ecological information**

12.1 Toxicity

**Aquatic toxicity:** No further relevant information available.

12.2 Persistence and degradability No further relevant information available.

12.3 Bioaccumulative potential No further relevant information available.

12.4 Mobility in soil No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Very toxic for fish

**Additional ecological information:**

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects No further relevant information available.

**SECTION 13: Disposal considerations**

13.1 Waste treatment methods

**Recommendation**
Hand over to disposers of hazardous waste.

Must be specially treated under adherence to official regulations.

Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

---

**SECTION 14: Transport information**

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN3087</td>
<td></td>
</tr>
</tbody>
</table>

14.2 UN proper shipping name

**ADR**

3087 OXIDIZING SOLID, TOXIC, N.O.S. (Potassium dichromate)

**IMDG, IATA**

OXIDIZING SOLID, TOXIC, N.O.S. (Potassium dichromate)

14.3 Transport hazard class(es)

**ADR**

**Class** 5.1 (OT2) Oxidising substances.

**Label** 5.1+6.1

**IMDG, IATA**

**Class** 5.1 Oxidising substances.

**Label** 5.1+6.1

**Packing group** II

(Contd. on page 5)
SECTION 14: Transport information

14.5 Environmental hazards: Environmentally hazardous substance, solid

14.6 Special precautions for user Warning: Oxidising substances.

Kemler Number: 56
EMS Number: F-A-S-Q

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

ADR
Exempted quantities (EQ): E2
Limited quantities (LQ): 1 kg
Transport category 2
Tunnel restriction code E
UN "Model Regulation": UN3087, OXIDIZING SOLID, TOXIC, N.O.S. (Potassium dichromate), 5.1 (6.1), I

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Australian Inventory of Chemical Substances Substance is listed.

Standard for the Uniform Scheduling of Drugs and Poisons Substance is not listed.

National regulations

Information about limitation of use:
Workers should not be exposed to this hazardous material. Exceptions can be made by the authorities in certain exceptional cases.
Employment restrictions concerning young persons must be observed.
Employment restrictions concerning women of child-bearing age must be observed.
For use only by technically qualified individuals.

Classification according to VbF: Not applicable

Water hazard class: Water danger class 3 (Assessment by list): extremely hazardous for water.

Other regulations, limitations and prohibitive regulations

ELINCS (European List of Notified Chemical Substances) Substance is not listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LD50: Lethal dose, 50 percent
LC50: Lethal concentration, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)