SAFETY DATA SHEET	In accordance with Regulation 1907/2006 (REACH), amended by Regulation 2015/830	
POTASSIUM DICHROMATE	3.01 / 20200430	

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1. Product identifier

Name:	Potassium dichromate
Synonyms :	Potassium bichromate
CLP Annex I, index nr.	024-002-00-6
EC/EINECS No. :	231-906-6
CAS No.	7778-50-9
Registration nr :	01-2119454792-32-0007

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

1.2.1 Intended use:

Use of the substance is limited to the authorisation numbers:

REACH/20/2/0; Formulation of mixtures for surface treatment of metals (such as aluminium, steel, zinc, magnesium, titanium, alloys), composites and sealings of anodic films intended exclusively for use REACH/20/2/1

REACH/20/2/1;Surface treatment of metals (such as aluminium, steel, zinc, magnesium, titanium, alloys), composites and sealings of anodic films for the aerospace sector in surface treatment processes in which any of the key functionalities, listed in the Annex (see end of this MSDS), is required

1.2.2 Uses advised against — no information available

1.3 Details of the supplier of the safety datasheet

Supplier :

GENTROCHEMA BV
Lage Ham 190, NL-5102 AE Dongen, The Netherlands
Tel. : +31.162.249020
E-mail : wl@gentrochema.nl Website : www.gentrochema.nl

1.4 Emergency telephone nr :

during office hours (08:30 - 17:00) :	+31.162.249020
After office hours (*only for health professionals*) :	+44.844.892.01

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1. Classification according to Regulation 1272/2008 EC

Endpoint	Hazard category	Hazard statement
Oxidising solids	Oxid. Solid 2	H272: May intensify fire; oxidiser
Acute toxicity - oral:	Acute Tox. 3	H301: Toxic if swallowed.
Acute toxicity - dermal:	Acute Tox. 4	H312: Harmful in contact with skin.
Acute toxicity - inhalation:	Acute Tox. 2	H330: Fatal if inhaled.

Skin corrosion / irritation:	Skin Corr. 1B	H314: Causes severe skin burns and eye damage.
Respiration sensitization:	Resp. Sens. 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitation:	Skin Sens. 1	H317: May cause an allergic skin reaction.
Reproductive Toxicity:	Repr. 1B	H360: May damage fertility or the unborn child
Germ cell mutagenicity:	Muta. 1B	H340: May cause genetic defects
Carcinogenicity:	Carc. 1B	H350: May cause cancer
Specific target organ toxicity - repeated:	STOT Rep. Exp. 1	H372: Causes damage to organs through prolonged or repeated exposure Affected organs: cardiovascular/hematological: hematopoiesis Route of exposure: inhalation

Specific concentration limits:

Concentration (%)	Classification
>= 5.0	STOT SE3 / H335

Endpoint	Hazard category	Hazard statement
Hazards to the aquatic environment (acute/short-term):	Aquatic Acute 1	H400: Very toxic to aquatic life.
Hazards to the aquatic environment (long-term):	Aquatic Chronic 1	H410: Very toxic to aquatic life with long lasting effects.

2.1.2. Classification according to Regulation 67/548/EC

Endpoint	Classification
Oxidising properties:	O; R8 Contact with combustible material may cause fire
Acute toxicity:	T+; R26 Very toxic by inhalation. Xn; R21 Harmful in contact with skin. T; R25 Toxic if swallowed.
Repeated dose toxicity:	T; R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Irritation / Corrosion:	C; R34 Causes burns.
Sensitisation:	R42/43 May cause sensitisation by inhalation and skin contact.
Carcinogenicity:	Carc. Cat. 2; R45 May cause cancer.
Mutagenicity - Genetic Toxicity:	Muta. Cat. 2; R46 May cause heritable genetic damage.
Toxicity to reproduction - fertility:	Repr. Cat. 2; R60 May impair fertility.
Toxicity to reproduction - development:	Repr. Cat. 2; R61 May cause harm to the unborn child.
Environment:	N; R50/53 Dangerous for the environment; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Specific concentration limits:

Concentration (%)	Classification
>= 10.0	C; R34 Causes burns.
>= 5.0 — < 10.0	Xi; R36/37/38 Irritating to eyes, respiratory system and skin.

2.2 Label elements

2.2.1. Labelling according to Regulation 1272/2008

Product identifier : Potassium dichromate

Index Nr : 024-002-00-6

Hazard Pictogram(s):

Signal word : 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. (FD)
H372: Causes damage to organs through prolonged or repeated exposure
H410: Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P202: Do not handle until all safety precautions have been read and understood
P281: Use personal protective equipment as required
P308+P313: IF exposed or concerned: Get medical advice/attention
P501: Dispose of contents/container to…..
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
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

2.3. Other hazards

PBT/vPvB criteria: Not relevant (inorganic substance)

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical characterization: Potassium dichromate, min. 99,7 % $K_2Cr_2O_7$, with non hazardous additions

Composition/information on ingredients :

EINECS nr : 231-906-6
CAS nr : 7778-50-9
Index No. 024-002-00-6
Substance of Very High Concern : yes

4. FIRST AID MEASURES

4.1 Description of first aid measures

- General information : In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.

- After inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately. Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation as the inhaled material is toxic and corrosive. Seek immediate medical attention.

- After skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Get medical attention immediately.

- After eye contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

- After swallowing : If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed

Breathing difficulty. Asthma attacks. Allergic reactions.
Danger of hyperglycaemia. Danger of impaired breathing

4.3 Indication of any immediate medical attention and special treatment needed

If swallowed, gastric irrigation. Medical supervision for at least 48 hours

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Non-suitable extinguishing media : Not known

5.2 Special hazards arising from the substance

In certain fire conditions, toxic gases may occur.

5.3 Advice for fire-fighters

May intensify fire; oxidiser.
Wear self contained breathing apparatus and fully protective suit.
Avoid release of the extinguishing media to the environment.

5.4 Further information

The substance is non-flammable but may ignite combustible material on contact.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid causing dust. Wear protective equipment.

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill: Oxidizing material. Poisonous solid. Stop leak if without risk. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing). Keep substance damp using water spray. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate.

6.2 Environmental precautions

This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Effluents are treated before they are discharged to STP with any remaining chromium (VI) remaining reduced to insoluble chromium (III) salts by the addition of sodium bisulphite, ferrous sulphate and chloride. The salts are precipitated and disposed of in landfill or recycled.

6.3 Methods and materials for containment and cleaning up

Pick up spilled product, keep in a closed container and hold for waste.

6.4 Reference to other sections

For safe use : refer to section 7
For personal protection : refer to section 8.
For disposal : refer to section 13

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Do not ingest. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, it is advised to use respiratory protection of APF = 4 or greater such as a filtering/valve half mask (see Annex/ e-SDS). If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

7.2 Conditions for safe storage, including any incompatibilities

Keep locked up. Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from: combustible material, incompatibles such as combustible materials, organic materials. Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles.

7.3 Specific end uses

No additional information

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits (OELs) for EU Member States, from human health RRS (HSE, 2007)

Country	Compound	Limit (mg/m_3 as Cr)	Type of Limit	Notations
UK	Cr VI compounds	0.05	8-hr TWA (WEL)	Sen, BMGV
Germany	Production of soluble Cr VI compounds	0.1	8-hr TWA (TRK)	Sh, EKA

Country	Compound	Limit (mg/m_3 as Cr)	Type of Limit	Notations
	Other Cr VI compounds	0.05		
Netherlands	Soluble Cr VI compounds	0.025 0.05	8-hr TWA STEL	
Sweden	Chromates and Chromic acid	0.02 0.06	8-hr TWA STEL	
Finland	Cr VI compounds	0.05	TWA	
France	Cr VI compounds	0.05 0.1	8-hr TWA STEL	

WEL Workplace exposure limit
STEL Short term exposure limit
TRK Technical exposure limit
TWA Time weighted average
Sen Indication that the substance can cause occupational asthma
BMGV Biological monitoring guidance value is available
Sh Notation to indicate a skin sensitiser
EKA Exposure equivalent values for biological monitoring

DMEL

Route	Type of effect	Hazard conclusion	Most sensitive endpoint
Inhalation	Local effects - Long-term	DMEL (Derived Minimum Effect Level): 0.01 mg/m^3 (Cr VI) = 0.028 mg/m_3 $K2Cr2O7$	carcinogenicity
Inhalation	Local effects - Acute	DMEL (Derived Minimum Effect Level): 0.01 mg/m^3 (Cr VI) = 0.028 mg/m_3 $K2Cr2O7$	carcinogenicity

PNEC

Compartment	Hazard conclusion
Freshwater	The PNEC value for Cr (VI) is 3.4 µg/L The PNEC value for Cr (III) is 4.7 µg/L
Marine water	The PNEC value for Cr (III) is 0.47 µg/L
Intermittent releases to water	-
Sediments (freshwater)	PNEC sediment (freshwater): 31 mg/kg sediment ww as Cr (III) 1.5 mg/kg ww as Cr(VI)
Sediments (marine water)	PNEC sediment (marine water): 3.1 mg/kg sediment ww as Cr (III)
Sewage treatment plant	PNEC STP: 10 mg/L as Cr (III)

Compartment	Hazard conclusion
	0.21 mg/L as Cr (VI)
Soil	PNEC soil: 3.3 mg/kg ww as Cr (III) 0.031 mg/kg ww as Cr(VI)
Air	Not relevant
Secondary poisoning	PNEC oral: 17 mg/kg food (Cr (VI))

8.2 Exposure controls

Do not breathe dust.
Avoid contact with skin, eyes or clothes.
Wash thoroughly after handling.
Only use in a well-ventilated place.
Safety shower and eye bath should be present.

Loss of the substance as aerosols is controlled by process containment, mist suppressants and waste air scrubber systems. During formulation, oxidising and surface treatment the following PPE is worn: washable/disposable overalls, safety boots/wellingtons, face shield and suitable gloves. When using an aqueous form of potassium dichromate, no respiratory protection is required. If using a solid form of potassium respiratory protection of APF = 4 or greater such as a filtering/valve half mask is required (see Annex/E-SDS). Impermeable protective gloves – chemical resistant and compliant with Standard EN 374-1. Acid-resistant (PVC) long protective gloves, which go over the sleeves. Protective gloves must be selected according to the function of the industrial installation – the other chemicals being handled, whether physical protection is required, and the degree of dexterity required.

Personal protection :

- Hand protection : Use chemical resistant neoprene gloves. See standard : EN-374-3:2003.
- Eye/face protection : Use tight fitting goggles. See standard: EN 166:2001.
- Skin/body protection : Wear appropriate protective clothing.
- Respiratory protection : Wear appropriate respirator, Filter P3 (white).

Environmental protection:

Effluents are treated before they are discharged to STP with any remaining chromium (VI) remaining reduced to insoluble chromium (III) salts by the addition of sodium bisulphite, ferrous sulphate and chloride. The salts are precipitated and disposed of in landfill or recycled. In addition, for release via air scrubbers/ventilation with an efficiency of 99% have to be used.

Other information :

After handling, take a shower. Working clothes should not be taken home.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 information on basic physical and chemical properties

Appearance: solid, reddish to bright orange crystals
Odour: odourless
Odour threshold: Not determined
PH-value : Not determined
Alkalinity or acidity : Not determined

Boiling point :	Substance decomposes (>500 °C) before boiling
Melting point :	approx. 398 °C
Flash point:	Not relevant. (inorganic solid substance)
Evaporation rate:	Not relevant. (inorganic solid substance)
Flammability :	Non flammable (according to UN Test Procedure N.1)
Vapour pressure :	Not relevant (high melting point solid)
Vapour density :	Not relevant
Relative Density :	2.7
Solubility in water :	approx. 115 g/l (at 20°C)
Solubility in other solvents :	Not relevant.(inorganic substance)
Partition coefficient n-octanol/water:	Not relevant.(inorganic substance)
Auto ignition temperature:	Potassium (VI) dichromate is classified as not undergoing spontaneous combustion when tested according to the EC Test Procedure A16.
Decomposition temperature :	Not relevant
Viscosity :	Not relevant. (inorganic solid substance)
Explosive properties	on the basis of theoretical evaluation of structure, there are no chemical groups that are considered to be explosive
Oxidising properties :	oxidiser. May intensify fire

9.2. other information

No additional information

10. STABILITY AND REACTIVITY

10.1 Reactivity

Contact with combustible material may cause fire.
Reacts violently with reducing substances.

10.2 Chemical stability

Stable under circumstances as advised in section 7.

10.3 Possibility of hazardous reactions

Do not mix with reducing substances, acids and organic substances.

10.4 Conditions to avoid

Keep away from combustible materials, heat, sparks and open flames. Keep away from sources of ignition - No smoking.

10.5 Incompatible materials

Do not mix with reducing substances, acids and organic substances.

10.6. Hazardous decomposition products

Toxic metal oxide smoke

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Endpoint	Route	Dose descriptor or qualitative effect characterisation; test type
Acute toxicity	oral	LD50: 168 mg/kg bw
Acute toxicity	dermal	LD50: 1860 mg/kg bw
Acute toxicity	inhalation	LC50: 217 mg/m³
Irritation / Corrosivity	skin	Adverse effect observed corrosive
Irritation / Corrosivity	eye	Adverse effect observed corrosive
Irritation / Corrosivity	respiratory tract	Adverse effect observed irritating
Sensitisation	skin	Adverse effect observed (sensitising)
Sensitisation	respiratory tract	Adverse effect observed (sensitising)
Repeated dose toxicity	oral	LOAEL = 1.7 mg/kg bw/d Target organs: cardiovascular / hematological: hematopoiesis
Repeated dose toxicity	dermal (systemic effects)	Irritation/corrosivity likely
Repeated dose toxicity	inhalation (systemic effects)	LOAEC = 1.8 mg/m3 Target organs: respiratory: other
Mutagenicity	in vitro / in vivo	Adverse effect observed (positive)
Reproductive toxicity: effects on fertility	oral	NOAEL = 40 mg/kg bw/d, No relevant effects
Reproductive toxicity: developmental toxicity	oral	LOAEL = 20 mg/kg bw/d, Significant developmental effects

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)

Carc. Cat. 1B, Muta. Cat. 1B, Repr. Cat. 1B

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Species	Results
Daphnia magna	EC50 (24 h): 1.5 mg/L,based on:

Species	Results
	mortality (potassium dichromate ring test, equivalent to 0.53 mg Cr/l)
Range of species (fish)	LC50 (96 h): 13 — 100 mg/L (Range of LC50 values reported for freshwater species) LC50 (96 h): 21.4 — 84.8 mg/L (Range of LC50 values reported for saltwater species) Test material: Several Cr-compounds
(aquatic plants)	
Lemna gibba	NOEC (8 d): 0.1 mg/L based on: growth rate
Lemna minor	NOEC (7 d): 0.11 mg/L based on: growth rate
Spirodela polyrhiza	NOEC (8 d): 0.1 mg/L based on: growth rate
Spirodela punctata	NOEC (8 d): 0.5 mg/L based on: growth rate
(bacteria)	
Chilomonas paramecium	NOEC 1.0 mg/L
Colpidium campylum	IC50 2.8 mg/L
Microregma heterosoma	NOEC 0.21 mg/L
Activated sludge	IC50 30 mg/L

Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

No additional information

12.3 Bio accumulative potential

No additional information

12.4 Mobility in soil

No additional information

12.5 Results of PBT and vPvB assessment

Not relevant (inorganic substance)

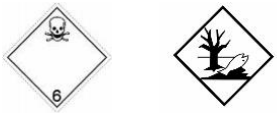
13. DISPOSAL CONSIDERATIONS

Product/packing :

Observe all federal, state and local environmental regulations.
See directives 75/442/EEC and 2006/12/EC.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment. Refer to special instructions/ Safety data sheets.

14. TRANSPORT INFORMATION

Landtransport (RID/ADR) :



ADR/GGVSEB class:	6.1 (T5), toxic substances
GEVI Nr.:	60
Label :	skull / fish and tree
Packing group:	III
UN nr. :	3288
Tunnel restriction code	E

TOXIC SOLID, INORGANIC, N.O.S. (potassium dichromate)
ENVIRONMENTALLY HAZARDOUS

Sea transport (IMDG) :

IMDG class:	6.1
UN nr. :	3288
Label :	6.1
Packing group :	III
EMS:	F-A, S-A
Segregation group:	1, ACIDS
Marine Pollutant :	yes

TOXIC SOLID, INORGANIC, N.O.S. (potassium dichromate)

Air transport (ICAO-IATA):

ICAO/IATA class:	6.1
UN/ID Number:	3288
Label:	6.1
Packing group:	III

TOXIC SOLID, INORGANIC, N.O.S. (potassium dichromate)

15. REGULATORY INFORMATION

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

State regulations

Observe all federal, state and local regulations.

Information about employment restrictions

Employment restrictions for young workers (94/33/EC)
Employment restrictions concerning pregnant and lactating women must be observed. (92/85/EC)
Employment restrictions concerning women of child-bearing age must be observed

Water hazard class :

4A (Netherlands)

additional regulations and restrictions

Listed as Substances of Very High Concern (SVHC) according to REACH, Article 57

15.2 Chemical Safety report

A Chemical Safety Assessment has been carried out

16. OTHER INFORMATION

relevant Hazard statements & R Phrases

Not applicable

Consulted literature:	European Union Risk Assessment Report (EUR 21508 EN).
Version :	Nr. 3.01 of 30.04.2020 (Replaces all preceding versions.)
Changes per section compared to last version :	# 1.2 (uses and authorisation numbers),
Name of composer and manager in charge :	Mr W. van Loon. (wl@gentrochema.nl./tel +31 162 249020)
Printing date :	07-05-2020

Used abbreviations

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PNEC: Predicted No-Effect Concentration (REACH)
DMEL: Derived Minimum Effect Level
LOAEC: lowest observed adverse effect concentration
NOEC: No Observed Effect Concentration
NOEL: No observed Effect Level
IC50: Inhibitory concentration, 50 percent
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

EC50: Effect concentration, 50 percent

EUROPEAN
COMMISSION

Brussels, 14.4.2020
C(2020) 2085 final

ANNEX

ANNEX

to the

COMMISSION IMPLEMENTING DECISION
of 14.4.2020

partially granting an authorisation for certain uses of potassium dichromate under Regulation (EC) No 1907/2006 of the European Parliament and of the Council (Gentrochema BV)

ANNEX

Potassium dichromate-based surface treatment processes and required key functionalities

Type of process	Process	Key functionalities
Pre-treatment	Cleaning	These processes are pre-treatment processes used in conjunction with a main or post-treatment process. The key functionalities are defined by the subsequent processes.
	Pickling/Etching	
	Deoxidising	
	Desmutting	
	Stripping	
Main treatment	Chemical / Chromate Conversion Coating CCC – **Aluminium CCC**	Corrosion resistance
		Adhesion to subsequent layer
		Chemical resistance
		Active corrosion inhibition
		Resistivity
	Chromate Conversion Coating CCC – **Magnesium CCC**	Corrosion resistance
		Active corrosion inhibition
		Layer thickness
		Adhesion to subsequent layer
		Chemical resistance
		Resistivity
	Passivation of stainless steel	Corrosion resistance
		Adhesion to subsequent layer
		Embrittlement / heat treatment
	Electroplating processes	Hardness
		Layer thickness
		Corrosion resistance
		Abrasion / wear resistance
Post-treatment	Sealing after anodizing (with subsequent paint or unpainted)	Corrosion resistance
		Layer thickness
		Adhesion to subsequent layer
		Chemical resistance
	Chromate Rinsing after phosphating	Corrosion resistance
		Adhesion to subsequent layer
	Passivation of metallic coatings	Corrosion resistance
		Layer thickness
		Adhesion to subsequent layer
		Chemical resistance
		Temperature resistance
		Resistivity