1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
Product name: Chromium(VI) oxide, powder
Product code (SDS NO): 16981E-1

Details of the supplier of the safety data sheet
Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
Address: 3-1, Honmachibashi, Chuo-ku, Osaka 540-0029, JAPAN
Division: Safety Management Dept. of Chemicals
Telephone number: +81-6-6946-8061
FAX: +81-6-6946-1607
e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture
PHYSICAL AND CHEMICAL HAZARDS
Oxidizing solids: Category 2

HEALTH HAZARDS
Acute toxicity (Oral): Category 3
Acute toxicity (Dermal): Category 2
Acute toxicity (Inhalation): Category 2
Skin corrosion/irritation: Category 1
Serious eye damage/eye irritation: Category 1
Respiratory sensitization: Category 1
Skin sensitization: Category 1
Germ cell mutagenicity: Category 1B
Carcinogenicity: Category 1A
Reproductive toxicity: Category 1B
Specific target organ toxicity – single exposure: Category 1 (CNS; respiratory apparatus; CVS; blood/blood system; liver; kidney)
Specific target organ toxicity – repeated exposure: Category 1 (Respiratory apparatus)

ENVIRONMENT HAZARDS
Hazardous to the aquatic environment (Acute): Category 1
Hazardous to the aquatic environment (Long-term): Category 1
(Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

Label elements

Signal word: Danger

HAZARD STATEMENT
May intensify fire; oxidizer
Toxic if swallowed
Fatal in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
Causes serious eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May damage fertility or the unborn child
Causes damage to organs after single exposure
Causes damage to organs through prolonged or repeated exposure
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention
Avoid release to the environment.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Keep/Store away from clothing/combustible materials.
Take any precaution to avoid mixing with combustibles and/or other incompatible materials.
Do not breathe dust/fume/gas/mist/vapors/spray.
In case of inadequate ventilation wear respiratory protection. (as specified by the manufacturer/supplier or the competent authority.)
Use only outdoors or in a well-ventilated area.
Do not get in eyes, on skin, or on clothing.
Wash contaminated parts thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing or face protection.
Wear eye protection/face protection.
Do not eat, drink or smoke when using this product.

Response
In case of fire: Use appropriate media other than water for extinction.
Collect spillage.
Get medical advice/attention if you feel unwell.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation or rash occurs: Get medical advice/attention.
Take off immediately all contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage
Store in a well-ventilated place. Keep container tightly closed.

Disposal
Dispose of contents/container in accordance with local/national regulation.

Specific Physical and Chemical hazards
Oxidizing material. Organic or combustible material may catch fire in contact with it.
3. Composition/information on ingredients
Mixture/Substance selection:
<table>
<thead>
<tr>
<th>Substance</th>
<th>Ingredient name: Chromium(VI) oxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content (%)</td>
<td>98 (min)</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>CrO₃</td>
</tr>
<tr>
<td>Chemicals No., Japan</td>
<td>1–284</td>
</tr>
<tr>
<td>CAS No.</td>
<td>1333–82–0</td>
</tr>
<tr>
<td>MW</td>
<td>99.99</td>
</tr>
<tr>
<td>ECNO</td>
<td>215–607–8</td>
</tr>
</tbody>
</table>

Note: The figures shown above are not the specifications of the product.

4. First-aid measures
Descriptions of first-aid measures
General measures
- Get medical attention/advice if you feel unwell.

IF INHALED
- Remove person to fresh air and keep comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- Call a POISON CENTER or doctor/physician if you feel unwell.

IF ON SKIN (or hair)
- Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Wash with plenty of soap and water.
- If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES
- Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

IF SWALLOWED
- Rinse mouth. Do NOT induce vomiting.
- Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire-fighting measures
Extinguishing media
- Use appropriate extinguishing media suitable for surrounding facilities.

Specific hazards arising from the substance or mixture
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.

Advice for firefighters
Specific fire-fighting measures
- Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters
- Wear fire/flame resistant/retardant clothing.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Firefighters should wear self-contained breathing apparatus with full face peace operated positive pressure mode.
6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
   Ventilate area until material pick up is complete.
   Wear proper protective equipment.
   Methods and materials for containment and cleaning up
   Sweep up, place in a bag and hold for waste disposal.
   Preventive measures for secondary accident
   Collect spillage.

7. Handling and storage
   Precautions for safe handling
   Preventive measures
      (Exposure Control for handling personnel)
      Do not breathe dust/fume/gas/mist/vapors/spray.
      (Protective measures against fire and explosion)
      Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
      Keep/Store away from clothing/combustible materials.
   Exhaust/ventilator
      Exhaust/ventilator should be available.
   Safety treatments
      Avoid contact with skin.
      Avoid contact with eyes.
   Safety Measures/Incompatibility
      Take any precaution to avoid mixing with combustibles/incompatible materials.
      Use only outdoors or in a well-ventilated area.
      Wear protective gloves, protective clothing or face protection.
      Wear eye protection/face protection.
      When using do not eat, drink or smoke.
   Conditions for safe storage, including any incompatibilities
   Recommendation for storage
      Keep container tightly closed.
      Store in a cool, dry place. Do not store in direct sunlight.
      Keep under lock and key.

8. Exposure controls/personal protection
   Control parameters
      Adopted value
      (Chromium(VI) oxide)
      ACGIH(2017) TWA: 0.0002mg-Cr(VI)/m3(I);
      STEL: 0.0005mg-Cr(VI)/m3(I) (Lung & sinonasal cancer; resp tract irr; asthma)
      OSHA–PEL
      Chromium(VI) oxideTWA: 1mg-Cr/m3 (soluble salts)
   Exposure controls
      Appropriate engineering controls
      Do not use in areas without adequate ventilation.
      Eye wash station should be available.
      Washing facilities should be available.
   Individual protection measures
      Respiratory protection
      Wear respiratory protection.
      Hand protection
Wear protective gloves.
Eye protection
Wear eye/face protection.
Safety and Health measures
Do not get in eyes, on skin, or on clothing.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Take off immediately all contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties
Information on basic physical and chemical properties
Physical properties
Appearance: Powder
Color: Dark red purple
Odor: Odorless
pH data N.A.
Phase change temperature
Initial Boiling Point/Boiling point: (decomposes) 250°C
Boiling range data N.A.
Melting point/Freezing point: 197°C
Decomposition temperature data N.A.
Flash point data N.A.
Auto-ignition temperature data N.A.
Explosive properties data N.A.
Vapor pressure data N.A.
Specific gravity/Density: 2.7 g/cm³
Solubility
Solubility in water: Easily soluble (61.7 g/100ml)
n-Octanol/water partition coefficient data N.A.

10. Stability and Reactivity
Reactivity
N.A.
Chemical stability
Hygroscopic (absorbs moisture from the air).
Possibility of hazardous reactions
Decomposes above 250°C. This produces chromic oxide and oxygen. This increases fire hazard. The substance is a strong oxidant. It reacts violently with combustible and reducing materials. This generates fire and explosion hazard. The solution in water is a strong acid. It reacts violently with bases and is corrosive. (ICSC 1194)
Conditions to avoid
Contact with incompatible materials.
Contact with fire source.
Incompatible materials
Bases, Reducing agents, Combustible materials
Hazardous decomposition products
Chromic oxide
11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
rat LD50=52 - 113mg/kg (EU-RAR, 2005)

Acute toxicity (Dermal)
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
rabbit LD50=57.7mg/kg (cal.) (CICAD 78, 2013)

Acute toxicity (Inhalation)
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
mist: rat LC50=0.217mg/L/4hr (EU-RAR, 2005)

Irritant properties

Skin corrosion/irritation
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
corrosive (ATSDR, 2012)

Serious eye damage /irritation
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
human conjunctival injection, necrosis, corneal edema and corneal opacity (EU-RAER, 2005)

Sensitization

Respiratory sensitization
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
cat. 1: ATSDR, 2012

Skin sensitization
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
cat. 1: ATSDR, 2012

Germ cell mutagenicity
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
cat. 1B; EU-RAR, 2005

Carcinogenicity
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
cat. 1A: IARC Gr.1 (IARC, 1990 (Cr(VI) compounds) et al.)
(IARC-VI oxide)
IARC-Gr.1 : Carcinogenic to humans
(Cr(VI) oxide)
ACGIH–A1(2017) : Confirmed Human Carcinogen
(Cr(VI) oxide)
EU–Category 1A; Substances known to have carcinogenic potential for humans

Reproductive toxicity
[Chromium(VI) oxide] (GHS Cat. Japan, base data)
cat. 1B; Water-soluble chromium (VI)

Delayed and immediate effects and also chronic effects from short- and long-term exposure
STOT—single exposure
[cat.1]
[GHS Cat. Japan, base data]
(Chromium(VI) oxide)
CNS; respiratory apparatus; CVS; blood/blood system; liver; kidney (ATSDR, 2012)

STOT—repeated exposure
[cat.1]
[GHS Cat. Japan, base data]
(Chromium(VI) oxide)
Respiratory apparatus (CICAD 78, 2013)

No Aspiration hazard data available

Additional data
May cause lung disorders by massive inhalation of powdered substance.
- e.g. fibrosis of lung tissue, cough, sputum, breath shortness, dyspnea, decline of lung function, interstitial lung disease, pneumothorax

12. Ecological Information
Ecotoxicity
Aquatic toxicity
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Aquatic acute toxicity component(s) data
[GHS Cat. Japan, base data]
(Chromium(VI) oxide)
Crustacea (Ceriodaphnia dubia) LC50=0.145mg/L/48hr (Aquire, 2015)

Water solubility
(Chromium(VI) oxide)
good (ICSC, 2013)

No Persistence and degradability data available
No Bioaccumulative potential data available
No Mobility in soil data available
Ozone depleting chemical data not available

13. Disposal considerations
Waste treatment methods
Avoid release to the environment (~ if this is not the intended use).
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
UN No.: 1463
Proper Shipping Name: CHROMIUM TRIOXIDE, ANHYDROUS
Class or division: 5.1
Subsidiary risk(s): 6.1;8
Packing group: II
ERG GUIDE No.: 141

IMDG Code (International Maritime Dangerous Goods Regulations)
UN No.: 1463
Proper Shipping Name: CHROMIUM TRIOXIDE, ANHYDROUS
Class or division: 5.1
Subsidiary risk(s) : 6.1;8
Packing group : II

IATA Dangerous Goods Regulations
UN No.: 1463
Proper Shipping Name : CHROMIUM TRIOXIDE, ANHYDROUS
Class or division : 5.1
Subsidiary risk(s) : 6.1;8
Hazard labels : Oxidizer & Toxic & Corrosive
Packing group : II

Environmental hazards
MARPOL Annex III – Prevention of pollution by harmful substances
Marine pollutants (yes/no) : yes
MARPOL Annex V – Prevention of pollution by garbage discharge
Germ cell mutagenicity: cat.1, 1A, 1B
Chromium(VI) oxide
Carcinogenicity: cat.1, 1A, 1B
Chromium(VI) oxide
Reproductive toxicity: cat.1, 1A, 1B
Chromium(VI) oxide
Specific target organ toxicity – repeated exposure: cat.1
Chromium(VI) oxide
Hazardous to the aquatic environment – acute hazard: cat.1
Chromium(VI) oxide
Hazardous to the aquatic environment – long-term hazard: cat.1, 2
Chromium(VI) oxide

15. Regulatory Information
Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA
Chromium(VI) oxide
Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information
GHS classification and labelling
Ox. Sol. 2: H272 May intensify fire; oxidizer
Acute Tox. 3: H301 Toxic if swallowed
Acute Tox. 2: H310 Fatal in contact with skin
Acute Tox. 2: H330 Fatal if inhaled
Skin Corr. 1: H314 Causes severe skin burns and eye damage
Eye Dam. 1: H318 Causes serious eye damage
Resp. Sens. 1: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
Skin Sens. 1: H317 May cause an allergic skin reaction
Muta. 1B: H340 May cause genetic defects
Carc. 1A: H350 May cause cancer
Repr. 1B: H360 May damage fertility or the unborn child
STOT SE 1: H370 Causes damage to organs after single exposure
STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure
Aquatic Acute 1: H400 Very toxic to aquatic life
Aquatic Chronic 1: H410 Very toxic to aquatic life with long lasting effects

Reference Book
Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2018 TLVs and BEIs. (ACGIH)
http://monographs.iarc.fr/ENG/Classification/index.php
Supplier’s data/information

General Disclaimer
This information contained in this data sheet represents the best information currently
available to us. However, no warranty is made with respect to its completeness and we
assume no liability resulting from its use. It are advised to make their own tests to
determinate the safety and suitability of each such product or combination for their own
purposes.
The data given here is based on current knowledge and experience. The purpose of this
Safety Data Sheet is to describe the products in terms of their safety requirements. The
data does not signify any warranty with regard to the products’ properties.
The GHS classification data given here is based on current Japan official data (NITE published in
2017).