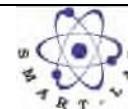


MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

Section 1 - Chemical Product and Company Identification

- 1.1 Product Name** : **CHROMIUM TRIOXIDE**
Synonyms : Chromic anhydride, chromic acid, chromium (VI) Oxide
CAS No. : 1333-82-0
HS Code : 2819 10 00
Molecular Weight : 99.99 g/mol
Chemical Formula : CrO₃
Product Code : A 2553, A 2554
Brand : SMART-LAB
- 1.2 Manufacturer** : **PT.Smart-Lab Indonesia**
Address : Ruko Boulevard Taman Tekno Blok E No.10-11,BSD Sektor XI Serpong, Tangerang - Indonesia
Website : www.smartlabid.com
Email : sales@smartlabid.com
For information : Telp: +62 21- 7588 0205(Hunting) , fax:+62-21-7588 0198
- 1.3 Application** : General Chemical reagent
Emergency Telephone: +62-21-7588 0205(Hunting)

Section 2 - Hazards Identification

2.1 Classification of the substance or mixture**Classification according to Regulation (EC) No 1272/2008**

Oxidizing solids (Category 1), H271
 Acute toxicity, Oral (Category 3), H301
 Acute toxicity, Inhalation (Category 2), H330
 Acute toxicity, Dermal (Category 3), H311
 Skin corrosion (Sub-category 1A), H314
 Respiratory sensitisation (Category 1), H334
 Skin sensitisation (Category 1), H317
 Germ cell mutagenicity (Category 1B), H340
 Carcinogenicity (Category 1A), H350
 Reproductive toxicity (Category 2), H361f
 Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
 Specific target organ toxicity - repeated exposure (Category 1), H372
 Short-term (acute) aquatic hazard (Category 1), H400
 Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



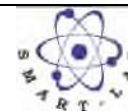
Signal word

danger

Hazard statement(s)

H271

May cause fire or explosion; strong oxidizer.

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

| | |
|-----------------------------------|--|
| H301 + H311 | Toxic if swallowed or 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. |
| H335 | May cause respiratory irritation. |
| H340 | May cause genetic defects. |
| H350 | May cause cancer. |
| H361f | Suspected of damaging fertility. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| Precautionary statement(s) | |
| P201 | Obtain special instructions before use. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P220 | Keep away from clothing and other combustible materials. |
| P260 | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P301 + P310 + P330 | IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. |
| P304 + P340 + P310 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |
| P370 + P378 | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. |
| P371 + P380 + P375 | In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. |
| P391 | Collect spillage. |
| P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |
| Supplemental Hazard Statements | none |
| Restricted to professional users. | |

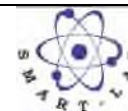
2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Section 3 - Composition, Information on Ingredients

3.1 Substances**Synonyms**

: Chromic anhydride, chromic acid, chromium (VI) Oxide

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

Formula : CrO₃
 Molecular weight : 99.99 g/mol
 CAS-No. : 1333-82-0
 EC-No. : 215-607-8
 Index-No. : 024-001-00-0

Hazardous ingredients according to Regulation (EC) No 1272/2008

| Component | Classification | Concentration |
|---------------------|--|---------------|
| Chromium (VI) oxide | Ox. Sol. 1; Acute Tox. 3; Acute Tox. 2; Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; Resp. Sens. 1; Skin Sens. 1; Muta. 1B; Carc. 1A; Repr. 2; STOT SE 3; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H271, H301, H330, H311, H314, H318, H334, H317, H340, H350, H361f, H335, H372, H400, H410 Concentration limits: >= 1 %: 6.9 3, H335; M-Factor - Aquatic Acute: 1 - Aquatic Chronic: 1 | <=100 % |

For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4 - First Aid Measures

4.1 Description of first aid measures**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

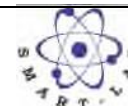
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

Section 5 - Firefighting Measures

5.1 Extinguishing media**Suitable extinguishing media**

Dry powder Dry sand

5.2 Special hazards arising from the substance or mixture

Chromium oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 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.

6.3 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.

6.4 Reference to other sections

For disposal see section 13.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. For precautions see section 2.2.

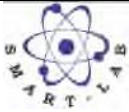
7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Store in cool place. hygroscopic Heat sensitive.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

Section 8 - Exposure Controls, Personal Protection

| | | |
|-----------------------------------|------------------|---|
| MATERIAL SAFETY DATA SHEET | |  |
| CHROMIUM TRIOXIDE | | |
| Revision : 00 | Date: 28.05.2019 | MSDS Number : 0431 |

8.1 Control parameters**8.2 Exposure controls****Appropriat engineering controls**

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

Personal protective equipmen**Eye/face 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 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.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material: Chloroprene
Minimum layer thickness: 0,6 mm
Break through time: 480 min
Material tested:Camapren®

Splash contact

Material: Nature latex/chloroprene
Minimum layer thickness: 0,6 mm
Break through time: 60 min
Material tested:Lapren®

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.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK (EN 14387) 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).

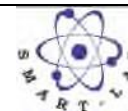
Control of environmental exposure

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

Section 9 - Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

| | |
|------------|-------------------|
| Appearance | Form: solid |
| | Colour: dark red |
| Odour | No data available |

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

| | |
|--|---|
| Odour Threshold | No data available |
| pH | < 1 at 100 g/l at 20 °C |
| Melting point/freezingpoint | Melting point/range: 196 °C - dec. |
| Initial boiling point and boiling range | No data available |
| Flash point | Not applicable |
| Evaporation rate | No data available |
| Flammability (solid, gas) | No data available |
| Upper/lower flammability or explosive limits | No data available |
| Vapour pressure | No data available |
| Vapour density | No data available |
| Relative density | 2,7 g/cm ³ at 20 °C |
| Water solubility | 1.854 g/l at 20 °C |
| Partition coefficient: noctanol/water | No data available |
| Auto-ignition temperature | No data available |
| Decomposition temperature | above melting point |
| Viscosity | No data available |
| Explosive properties | No data available |
| Oxidizing properties | May cause fire or explosion; strong oxidizer. |

9.2 Other safety information

| | |
|-------------------------|--------------------------|
| Bulk density | ca.900 kg/m ³ |
| Relative vapour density | Not applicable |

Section 10 - Stability and Reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat Avoid moisture.

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Chromium oxides

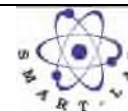
Other decomposition products - No data available

In the event of fire: see section 5

Section 11 - Toxicological Information

11.1 Information on toxicological effects**Acute toxicity**

LD50 Oral - Rat - male and female - 52 mg/kg (OECD Test Guideline 401)

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

Skin corrosion/irritation

Skin - Rabbit

Result: Corrosive - 0,5 h

Remarks: (ECHA)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes burns.

Remarks: (ECHA) Causes serious eye damage.

Respiratory or skin sensitisation

Patch test: - Human

Result: positive

Remarks: (IUCLID)

Germ cell mutagenicity

May cause genetic defects.

Ames test

Result: positive (IUCLID)

Carcinogenicity

Carcinogenicity - Carcinogenic in animal experiments. (Lit.) May cause cancer.

Positive evidence from human epidemiological studies.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation. - Respiratory system

Specific target organ toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available

Additional Information

RTECS: GB6650000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Section 12 - Ecological Information

12.1 Toxicity

Toxicity to daphnia and other aquatic invertebrates

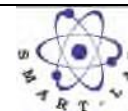
EC50 - Daphnia magna (Water flea) - 0,162 mg/l - 48 h Remarks: (ECOTOX Database)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Very toxic to aquatic life with long lasting effects

Section 13 - Disposal Considerations

13.1 Waste treatment methods**Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Contaminated packaging

Dispose of as unused product

Section 14 - Transport Information

14.1 UN number

ADR/RID: 1463

IMDG: 1463

IATA: 1463

14.2 UN proper shipping name

ADR/RID: CHROMIUM TRIOXIDE, ANHYDROUS

IMDG: CHROMIUM TRIOXIDE, ANHYDROUS

IATA: Chromium trioxide, anhydrous

14.3 Transport hazard class(es)

ADR/RID: 5.1 (6.1, 8)

IMDG: 5.1 (6.1, 8)

IATA: 5.1 (6.1, 8)

14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID: yes

IMDG Marine pollutant: yes

IATA: no

14.6 Special precautions for user**Further information**

No data available

Section 15 - Regulatory Information

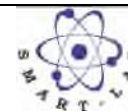
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

Section 16 - Additional Information

MATERIAL SAFETY DATA SHEET**CHROMIUM TRIOXIDE**

Revision : 00

Date: 28.05.2019

MSDS Number : 0431

Full text of H-Statements referred to under sections 2 and 3.

| | |
|-------------|--|
| H271 | May cause fire or explosion; strong oxidizer. |
| H301 | Toxic if swallowed. |
| H301 + H311 | Toxic if swallowed or in contact with skin. |
| H311 | Toxic in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. H318 Causes serious eye damage. |
| H330 | Fatal if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H340 | May cause genetic defects. |
| H350 | May cause cancer. |
| H361f | Suspected of damaging fertility. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |

NFPA Rating:

(estimated) Health: 3

Flammability: 0

Instability: 0

Revision history :

| Date | Rev | Description |
|--------------|-----|-------------|
| May 28, 2019 | 00 | - |

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. PT. Smartlab Indonesia Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.