

Material Safety Data Sheet

Chromium(VI) oxide

ACC# 95984

Section 1 - Chemical Product and Company Identification

MSDS Name: Chromium(VI) oxide

Catalog Numbers: AC196610000, AC196610010, AC196610250, AC196612500, AC214100000, AC214100010, AC214100050, AC214101000, AC405230000, AC405230025, 40523-5000, A100-100, A100-212, A100-500, A98-212, A98-500, NC9210244

Synonyms: Chromic acid; Chromic anhydride; Chromium(VI) oxide; Chromium trioxide.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|-----------|-------------------|---------|---------------|
| 1333-82-0 | Chromium trioxide | >98 | 215-607-8 |

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: dark red to purple solid.

Danger! Toxic if swallowed, inhaled or absorbed through the skin. Strong oxidizer. Contact with other material may cause a fire. Causes burns by all exposure routes. May cause allergic respiratory and skin reaction. Harmful if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Cancer hazard. Possible risk of impaired fertility. May cause heritable genetic damage.

Target Organs: Blood, kidneys, liver, lungs, respiratory system, gastrointestinal system, eyes, skin, mucous membranes.

Potential Health Effects

Eye: Causes severe eye burns. May cause irreversible eye injury. Causes redness and pain. May cause permanent corneal opacification.

Skin: Harmful if absorbed through the skin. Causes skin burns. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May cause deep, penetrating ulcers of the skin. Causes redness and pain. Chronic exposure to water insoluble hexavalent chromium compounds has been shown to be associated with lung cancer and gastrointestinal tract tumors. Substance is readily absorbed through the skin.

Ingestion: Harmful if swallowed. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause liver and kidney damage. Exposure may cause anemia and other blood abnormalities. May cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). May cause systemic effects.

Inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. May cause asthmatic attacks due to allergic sensitization of the respiratory tract. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Prolonged exposure

to dusts, vapors, or mists may result in the perforation of the nasal septum. May cause systemic effects. **Chronic:** Prolonged or repeated inhalation may cause nosebleeds, nasal congestion, erosion of the teeth, perforation of the nasal septum, chest pain and bronchitis. Prolonged or repeated eye contact may cause conjunctivitis. Prolonged or repeated skin contact may cause sensitization dermatitis and possible destruction and/or ulceration. Chronic ingestion may cause effects similar to those of acute ingestion. May cause liver and kidney damage. Chronic exposure to water insoluble hexavalent chromium compounds has been shown to be associated with lung cancer and gastrointestinal tract tumors. Adverse reproductive effects have been reported in animals. Possible risk of harm to the unborn child. Confirmed Human Carcinogen. May impair fertility.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with other material may cause fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Containers may explode in the heat of a fire. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out. May require flooding with water in order to eliminate hazardous reactions since the materials generate their own oxygen.

Flash Point: 250 deg C (482.00 deg F)

Autoignition Temperature: None available.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Provide ventilation. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a

well-ventilated area. Do not breathe dust, mist, or vapor. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Use with adequate ventilation. Discard contaminated shoes.

Storage: Do not store near combustible materials. Keep container closed when not in use. Store in a cool, dry, well-ventilated location. Separate from combustible materials, halogens, sulfides, metals. See also NFPA 430, Code for the Storage of Liquid and Solid Oxidizers.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|-------------------|---|--|---|
| Chromium trioxide | 0.05 mg/m ³ TWA (as Cr) (listed under Chromium (VI) compounds- water soluble). | 0.001 mg/m ³ TWA (as Cr) 15 mg/m ³ IDLH (as Cr(VI)) | 5 æg/m ³ TWA (listed under Chromium (VI) compounds).2.5 æg/m ³ Action Level (as Cr.); 5 æg/m ³ TWA (as Cr, Cancer hazard - See 29 CFR 1910.1026) (listed under Chromium (VI) compounds). |

OSHA Vacated PELs: Chromium trioxide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear a chemical apron. Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear a chemical apron. Wear appropriate protective gloves to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: dark red to purple

Odor: odorless

pH: <1.0 (50g/l aq. sol.)

Vapor Pressure: Not available.

Vapor Density: 3.4

Evaporation Rate: Negligible

Viscosity: No information

Boiling Point: 250 deg C

Freezing/Melting Point: 196.1 deg C

Decomposition Temperature: 250 deg C

Solubility: Soluble.

Specific Gravity/Density: 2.7 (Water=1)

Molecular Formula: CrO₃

Molecular Weight: 99.99

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Hygroscopic: absorbs moisture or water

from the air.

Conditions to Avoid: Incompatible materials, dust generation, moisture, excess heat.

Incompatibilities with Other Materials: Metals, reducing agents, combustible materials, halogens, sulfides, pyridine, dimethyl formamide, acetic acid, acetic anhydride, acetone, diethyl ether, ethanol, methanol, camphor, glycerol, turpentine, organics, attacks metals in the presence of moisture, Aqueous solution is strongly acidic., Can ignite organic matter on contact., bases, alcohols, alkali metals, ammonia, chlorine trifluoride, finely powdered metals, diethyl formamide, phosphorus, hydrocarbons, ketones.

Hazardous Decomposition Products: Chromium fumes, possible trivalent chromium formation with liberated oxygen..

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 1333-82-0: GB6650000

LD50/LC50:

CAS# 1333-82-0:

Oral, mouse: LD50 = 127 mg/kg;

Oral, rat: LD50 = 80 mg/kg;

TDLO/TCLO-LOWEST PUBLISHED TOXIC DOSE/CONC. Human TCLO: ROUTE: Inhalation: DOSE: 110ug/m3.

Carcinogenicity:

CAS# 1333-82-0:

- **ACGIH:** A1 - Confirmed Human Carcinogen (listed as 'Chromium (VI) compounds- water soluble').
- **California:** carcinogen, initial date 2/27/87 (listed as Chromium (VI) compounds).
- **NTP:** Known carcinogen
- **IARC:** Group 1 carcinogen

Epidemiology: No data available.

Teratogenicity: No data available.

Reproductive Effects: Adverse reproductive effects have occurred in experimental animals.

Mutagenicity: See actual entry in RTECS for complete information. Mutagenic effects have occurred in experimental animals. Mutagenic effects have occurred in humans.

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: *Pseudomonas putida*:

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

| | US DOT | Canada TDG |
|-----------------------|------------------------------|------------------------------|
| Shipping Name: | CHROMIUM TRIOXIDE, ANHYDROUS | CHROMIUM TRIOXIDE, ANHYDROUS |
| Hazard Class: | 5.1 | 5.1(8) |
| UN Number: | UN1463 | UN1463 |
| Packing Group: | II | II |

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 1333-82-0 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 1333-82-0: Section 6, 0.1 % de minimus concentration [see 40 CFR 749.68]

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 1333-82-0: immediate, delayed.

Section 313

This material contains Chromium trioxide (listed as Chromium (VI) compounds), >98%, (CAS# 1333-82-0) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 1333-82-0 can be found on the following state right to know lists: New Jersey, Pennsylvania, Minnesota, (listed as Chromium (VI) compounds- water soluble), Minnesota, (listed as Chromium (VI) compounds), Massachusetts.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Chromium trioxide, listed as 'Chromium (VI) compounds', a chemical known to the state of California to cause cancer.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T+ O N

Risk Phrases:

R 22 Harmful if swallowed.

R 26 Very toxic by inhalation.

R 35 Causes severe burns.
R 42/43 May cause sensitization by inhalation and skin contact.
R 45 May cause cancer.
R 46 May cause heritable genetic damage.
R 9 Explosive when mixed with combustible material.
R 24/25 Toxic in contact with skin and if swallowed.
R 48/23 Toxic : danger of serious damage to health by prolonged exposure through inhalation.
R 62 Possible risk of impaired fertility.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 60 This material and its container must be disposed of as hazardous waste.

WGK (Water Danger/Protection)

CAS# 1333-82-0: 3

Canada - DSL/NDSL

CAS# 1333-82-0 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of C, D1B, D2A, E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 1333-82-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/02/1998

Revision #12 Date: 2/18/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.