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## Material Safety Data Sheet

### Chromic Acid MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Chromic acid

**Catalog Codes:** Not applicable

**CAS#:** 1333-82-0

**RTECS:** GB6650000.

**TSCA:** TSCA 8(b) inventory: Chromium Trioxide

**CI#:** Not available

**Synonym:** Chromium (VI) Oxide; Chromic anhydride;

Chromium (6+) Trioxide; Monochromium trioxide

**Chemical Name:** Chromium Trioxide

**Chemical Formula:** CrO<sub>3</sub>

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#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS # %	By Weight
Chromium Trioxide	1333-82-0	≥ 100.0%

**Toxicological Data on Ingredients:** Chromium Trioxide: ORAL (LD50): Acute: 80 mg/kg [Rat]. 127 mg/kg [Mouse].

### Section 3: Hazards Identification

#### Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive). Slightly hazardous in case of skin contact (sensitizer). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

#### Potential Chronic Health Effects:

Hazardous in case of skin contact (irritant), of eye contact (irritant). CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to kidneys, liver, gastrointestinal tract, upper respiratory tract, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

### Section 4: First Aid Measures

#### 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.

#### 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. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

#### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

#### Serious Inhalation:

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. If the victim is not breathing, perform mouth-to-mouth resuscitation.

WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion:**

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.

**Serious Ingestion:** Not available.

**Section 5: Fire and Explosion Data**

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** of combustible materials of organic materials

**Explosion Hazards in Presence of Various Substances:**

Explosive in presence of open flames and sparks, of heat, of organic materials. Non-explosive in presence of shocks.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:**

Arsenic reacts with Chromium trioxide with incandescence. A violent reaction or flaming is likely in the reaction of chromium oxide and aluminum powder. Benzene ignites on contact with chromium trioxide. Reacts with Sodium or Potassium with incandescence. A mixture of chromium trioxide, and sulfur ignites on warming. Ignites on contact with alcohols, acetic anhydride + tetrahydronaphthalene, acetone, butanol, chromium (II) sulfide, cyclohexanol, dimethyl formamide, ethanol, ethylene glycol, methanol, 2-propanol, pyridine. Contact with combustible or organic materials may cause fire.

**Special Remarks on Explosion Hazards:**

An explosion can occur when Chromium trioxide is mixed with potassium ferricyanide when dust is ignited by a spark. Chromium trioxide + potassium permanganate will explode. Can react explosively with acetic anhydride + heat, acetic acid + heat, ethyl acetate, isoamyl alcohol, benzaldehyde, benzene, benzylthylaniline, butraldehyde, 1,3- dimethylhexahydropyrimidone, diethyl ether, ethyl acetate, isopropyl acetate, methyl dioxane, pelargonic acid, pentyl acetate, phosphorus + heat, propionaldehyde, and other organic materials or solvents.

**Section 6: Accidental Release Measures**

**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. Corrosive solid. 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. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as combustible materials, organic materials, metals, acids, alkalis.

### Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### Personal Protection:

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 0.05 (mg(Cr)/m) from ACGIH (TLV) [United States] Inhalation CEIL: 0.1 (mg(Cr)/m) from OSHA (PEL) [United States] Inhalation TWA: 0.001 (mg(Cr)/m) from NIOSH [United States] Inhalation Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Flakes solid. Powdered solid.)

**Odor:** Odorless.

**Taste:** Not available.

**Molecular Weight:** 99.99 g/mole

**Color:** Red. (Dark.)

**pH (1% soln/water):** 1.1 [Acidic.]

**Boiling Point:** Decomposes.

**Melting Point:** 197°C (386.6°F)

**Critical Temperature:** Not available.

**Specific Gravity:** Density: 2.7 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, diethyl ether.

**Solubility:**

Easily soluble in cold water, hot water. Soluble in diethyl ether. Soluble in ethyl alcohol, nitric acid, acetic acid, acetone, and sulfuric acid. Solubility in water: 61.7 g/100 ml water @ 0 deg. C; 67.45 g/100 ml water @ 100 deg. C

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, dust generation, excess heat

**Incompatibility with various substances:** Reactive with combustible materials, organic materials, metals, acids, alkalis.

**Corrosivity:** Not available.

**Special Remarks on Reactivity:**

Hygroscopic. Incompatible with alcohol, spirit nitrous ether, almost every organic substance, bromides, chlorides, iodides, hypophosphites, sulfites, sulfides, methanol, furfuryl, ethylene glycol, glycerol, bromine pentafluoride, hydrogen sulfide, butanol, isobutanol, acetaldehyde, propionaldehyde, butylaldehyde, benzaldehyde, benzene, perlargonic acid, isopropyl acetate, pentyl acetate, methyldioxane, dimethyldioxane, acetone, benzylethylaniline, oils, greases or any easily oxidizable material. Acetylene is oxidized violently. Reacts violently with diethyl ether. It will react violently with naphthalene, camphor, glycerol, or turpentine. It will ignite ethy alcohol. Selenium reacts violently with Chromium Trioxide. Can react violently with most metal powders, ammonia, ammonium salts, phosphorus, sulfur, acids, finely divided organic compounds, flammable liquids.

**Special Remarks on Corrosivity:**

Corrosive because of oxidizing potency. Corrosive to some metals

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 80 mg/kg [Rat].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC.

MUTAGENIC

EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, gastrointestinal tract, upper respiratory tract, skin, eyes.

**Other Toxic Effects on Humans:**

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (irritant), of ingestion, . Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive). Slightly hazardous in case of skin contact (sensitizer).

**Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Dose LDL [Rat] - Route: Skin; Dose: 55 mg/kg

**Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects (effects on fertility: fetotoxicity or post-implantation mortality) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic). Epidemiological studies indicate long term exposure to dusts and mists at levels above the current PEL in chrome processing is associated with increases in respiratory tract cancer in man.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Causes skin irritation and possible burns. Contact with broken skin may lead to formation of firmly marginated "chrome sores." May cause allergic contact dermatitis. Dermal absorption of large amounts may affect behavior and may result in kidney failure Eyes: Causes eye irritation. May cause severe damage including burns and blindness. Inhalation: Causes irritation of the respiratory tract. May cause severe burns of the nasal septum and respiratory tract, perforation of the nasal septum, congestion, and pulmonary edema. Ingestion: Causes gastrointestinal tract irritation with violent epigastric pain, nausea, vomiting and severe diarrhea. May cause tissue destruction resulting in hemorrhaging, circulatory collapse, unconsciousness and possible death. May affect respiration (cyanosis), blood (anemia, thrombocytopenia) May cause kidney failure and liver damage. Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause "chrome sores" on skin (especially broken skin). Eyes: Repeated or prolonged eye contact may cause conjunctivitis. Inhalation: Repeated or prolonged inhalation may cause chronic respiratory tract irritation with chronic rhinitis, hyperemia, chronic catarrh, congestion of the larynx, inflammation of the larynx, polyps of the upper respiratory tract, chronic inflammation of the lungs, emphysema, tracheitis, chronic bronchitis, chronic pharyngitis, bronchopneumonia, ulceration and perforation of the nasal septum. Ingestion: Repeated or prolonged ingestion may cause nausea, vomiting, loss of appetite, kidney damage, inflammation of the liver or even hepatitis with jaundice, leukocytosis, leukopenia, monocytosis, and eosinophilia

**Section 12: Ecological Information**

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations**

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:**

CLASS 5.1: Oxidizing material. Class 8: Corrosive material

**Identification:** : Chromium Trioxide, Anhydrous UNNA: 1463 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Chromium Trioxide  
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Chromium Trioxide  
Connecticut hazardous material survey.: Chromium Trioxide  
Rhode Island RTK hazardous substances: Chromium Trioxide  
Pennsylvania RTK: Chromium Trioxide  
Massachusetts RTK: Chromium Trioxide  
Massachusetts spill list: Chromium Trioxide  
New Jersey: Chromium Trioxide  
New Jersey spill list: Chromium Trioxide  
TSCA 8(b) inventory: Chromium Trioxide  
TSCA 6 final risk management: Chromium Trioxide  
TSCA 8(a) IUR: Chromium Trioxide  
TSCA 12(b) annual export notification: Chromium Trioxide

### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

### Other Classifications:

#### WHMIS (Canada):

CLASS C: Oxidizing material. CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS

D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive solid.

#### DSCL (EEC):

R8- Contact with combustible material may cause fire. R25- Toxic if swallowed. R35- Causes severe burns. R43- May cause sensitization by skin contact. R49- May cause cancer by inhalation. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S53- Avoid exposure - obtain special instructions before use. S60- This material and its container must be disposed of as hazardous waste. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

#### HMIS (U.S.A.):

**Health Hazard:** 3

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** j

#### National Fire Protection Association (U.S.A.):

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Specific hazard:**

**Protective Equipment:**

Gloves. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

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