



CHROMIC ACID (FLAKES)

MATERIAL SAFETY DATA SHEET

Print date: 15-Feb-2007

Revision Number: 3

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

Product code: 1666049-0100-5-000
Product name: CHROMIC ACID (FLAKES)
Synonyms: Chromium Trioxide. Chromic Anhydride.
Chemical characterisation: Metal oxide.
Supplier: ATOTECH USA INC, ATOTECH CANADA LTD.
1750 OVERVIEW DRIVE, 1180 CORPORATE DRIVE
ROCK HILL, SC 29730, BURLINGTON, ONTARIO L7L 5R6
TELEPHONE: 803-817-3500, TELEPHONE: 905-332-0111
HOURS: 9:00am - 5:00pm EST, HOURS: 9:00am - 5:00pm EST

Emergency telephone number

SPILLS AND TRANSPORT CHEMTREC: 800-424-9300
CANUTEC: 613-996-6666
TRANSPORT MEDICAL ROCKY MOUNTAIN POISON CONTROL CENTER: 303-623-5716

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
DANGER
OXIDIZER
CORROSIVE
TOXIC
CARCINOGEN

This material is considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
This material is a controlled product under WHMIS.

Potential health & environmental effects

Properties affecting health: The product causes burns of eyes, skin and mucous membranes. Toxic by inhalation. Toxic in contact with skin. Also toxic if swallowed. Possible carcinogen.
Principle routes of exposure: Eyes. Skin. Respiratory system. Gastrointestinal tract.
Skin contact: Corrosive. Causes severe irritation and burns. Toxic in contact with skin. Large exposures may be fatal. May cause systemic poisoning. May cause sensitization by skin contact.
Eye contact: Corrosive to the eyes and may cause severe damage including blindness.
Inhalation: Corrosive. Causes severe irritation and burns. Very toxic by inhalation. Can cause ulceration of mucous membranes. May cause bronchospasms. May cause sensitization by inhalation.
Ingestion: Corrosive. Causes severe irritation and burns. Toxic if swallowed. May cause systemic poisoning. Liver and kidney injuries may occur.
Physico-chemical properties: Contact with combustible material may cause fire.
Potential environmental effects: Dangerous for the environment

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Product name: CHROMIC ACID (FLAKES)

<b>3. COMPOSITION/INFORMATION ON INGREDIENTS</b>
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**INGREDIENTS (BY WEIGHT PERCENT)**

Components	CAS-No	Weight %
Chromium trioxide (CrO <sub>3</sub> )	1333-82-0	90 - 100

This product may contain component (s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above de minimus disclosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS regulations and or guidelines. Please refer to other sections of the MSDS for information on safety, health and environmental guidelines and precautions.

<b>4. FIRST AID MEASURES</b>
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<b>General advice:</b>	Immediate medical attention is required.
<b>Skin contact:</b>	Immediate medical attention is required. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove and wash contaminated clothing before re-use.
<b>Inhalation:</b>	Immediate medical attention is required. Move to fresh air. Artificial respiration and/or oxygen may be necessary.
<b>Eye contact:</b>	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
<b>Ingestion:</b>	Immediate medical attention is required. Call a physician or Poison Control Center immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
<b>Notes to physician:</b>	Overexposure to this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents; however death has been avoided in several such cases through the use of early renal dialysis. Ascorbic acid by mouth or intravenously has been shown to be effective (converting Chrome VI to Chrome III) in preventing renal tubular failure. Skin ulcers may be treated by removal from exposure, daily cleaning, debridement, and application of antibiotic cream and dressing. Continue to monitor for respiratory distress for 72 hours.
<b>Protection of first-aiders:</b>	Wear personal protective equipment.

<b>5. FIRE-FIGHTING MEASURES</b>
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<b>Suitable extinguishing media:</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use dry chemical, CO <sub>2</sub> , water spray or "alcohol" foam.
<b>Extinguishing media which must not be used for safety reasons:</b>	DO NOT use combustible materials such as sawdust.
<b>Special protective equipment for firefighters:</b>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA / NIOSH (approved or equivalent) and full protective gear. Use personal protective equipment.
<b>Specific hazards:</b>	Oxidizing agent. , In the event of fire, the following can be released, chromium oxides, oxygen, Contact with combustible material may cause fire.
<b>Unusual hazards:</b>	Containers may explode when involved in fire. Chromic acid reacts strongly with materials which are readily oxidized. May sustain a fire involving easily oxidizable material.
<b>Specific methods:</b>	Water mist may be used to cool closed containers. Dike and collect water used to fight fire. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
<b>Flash Point:</b>	Not flammable.

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**Flash point test method:** Not applicable.  
**Autoignition temperature:** Not applicable.

**Flammability Limits in Air:**  
**- Lower:** Not applicable.  
**- Upper:** Not applicable.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions:** Use personal protection recommended in Section 8. Isolate area and deny entry to unauthorized and/or unprotected personnel.

**Environmental precautions:** Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Discharge to a public sewerage authority should coincide with all applicable local permits and notification requirements. May be hazardous to aquatic life if released to open waters.

**Methods for containment:** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up:** Spills should be cleaned up immediately to prevent dispersion of airborne mists and dusts. For a spill involving a solid material, clean up promptly by scoop or vacuum. Avoid dust formation. Do not dry sweep. Clean spills using wet clean up methods (i.e., misting, etc.) or with a HEPA vacuum. Dike spilled liquid material with suitable inert absorbent (ex: sand, soil, vermiculite) and place in a clean dry container for later recycle or disposal. Keep in suitable, closed containers for disposal. Run off water may be corrosive and / or toxic. Dispose of in accordance with all local, state, provincial, and federal regulations.

**7. HANDLING AND STORAGE**

**Handling**

**Technical measures/precautions:** Use only in area provided with appropriate exhaust ventilation.

**Safe handling advice:** Handle in accordance with good industrial hygiene and safety practice. Do not contact with skin, eyes, or clothing. Do not breathe vapors/dust. Do not ingest. Avoid dust formation. Remove and wash contaminated clothing before re-use. Keep away from combustible material.

**Storage**

**Technical measures/storage conditions:** Keep tightly closed in a dry, cool and well-ventilated place. Store away from ignition sources, combustible, organic, or other readily oxidizable materials. Protect from moisture.

**Incompatible products:** Combustible, organic, other readily oxidizable materials. Corrosive in contact with metals. Bases. Cyanides.

**Shelf Life (days):** 730

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering measures to reduce exposure:**  
Ensure adequate ventilation, especially in confined areas.

**Personal Protective Equipment**

**Respiratory protection:** Use NIOSH approved respiratory equipment when airborne concentrations are equal to or may exceed exposure limits. For emergency or other conditions where exposure levels are not known or may be uncontrolled, use a positive pressure air-supplied or self-contained breathing apparatus (SCBA).

**Hand protection:** Consult glove manufacturer to determine the most suitable chemical resistant glove for user's application. Consideration must be given to durability and permeation resistance.

**Product name: CHROMIC ACID (FLAKES)**

**Skin and body protection:** Usual safety precautions while handling the product will provide adequate protection against this potential effect. Impervious clothing. Chemical resistant apron. Boots. Consult glove/clothing manufacturer to determine the most suitable chemical resistant glove/clothing for user's application. Consideration must be given to durability and permeation resistance.

**Eye protection:** Tightly fitting safety goggles. Face-shield. An emergency eye wash must be readily accessible to the work area.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.



Exposure limits	ACGIH			OSHA			NIOSH			
	Components	TWA	STEL	Ceilings	TWA	STEL	Ceilings	TWA	STEL	Ceilings
Chromium trioxide (CrO <sub>3</sub> ) 1333-82-0				5 µg/m <sup>3</sup>		0.1 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>			

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b>	Solid	<b>Color:</b>	RED BROWN
<b>Odor:</b>	Characteristic	<b>Specific gravity:</b>	>1
<b>pH:</b>	<2	<b>Boiling point:</b>	Not applicable.
<b>Melting point:</b>	384.8 °F / 196 °C	<b>Bulk density:</b>	100 lbs/cf
<b>Evaporation rate:</b>	Not applicable.	<b>Vapor density:</b>	Not applicable.
<b>Vapor pressure:</b>	Not applicable.	<b>VOC content(%):</b>	Not applicable.
<b>Solubility in water:</b>	Complete	<b>Solubility in other solvents:</b>	No information available

<b>Flash Point:</b>	Not flammable.	<b>Flash point test method:</b>	Not applicable.
<b>Autoignition temperature:</b>	Not applicable.	<b>Decomposition temperature:</b>	384.8 °F / 196 °C

**Explosion limits:**

- Upper: Not applicable.
- Lower: Not applicable.

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under recommended storage conditions.

**Materials to avoid:** Readily oxidizable or combustible material. Metals. Bases. Cyanides.

**Conditions to avoid:** Incompatible products. Extremes of temperature and direct sunlight. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moisture.

**Hazardous decomposition products:** Thermal decomposition can lead to the release of irritating gases and vapors which may include (but are not limited to), chromium oxides, oxygen.

**Polymerization:** None under normal processing.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity****Component Information**

**Product name: CHROMIC ACID (FLAKES)**

Components	LD50/oral/rat	LC50/inhalation/8h/rat	LD50/dermal/rabbit
Chromium trioxide (CrO3) - 1333-82-0	50 mg/kg	0.217 mg/L	20 mg/kg

**Product Information**LC50/inhalation/4h/rat = 217 mg/m<sup>3</sup>

LD50/dermal/rabbit = 57 mg/kg

LD50/oral/rat = 51 mg/kg

**Local effects**

- Skin irritation:** Corrosive. Causes burns. Toxic in contact with skin. Chrome VI penetrates undamaged skin and reduces to Chrome III which forms a skin allergen by combining with proteins or other skin components. Chrome sores most commonly occur at breaks in the skin, nailroots, creases over knuckles, finger webs, backs of hands, and on forearms. Direct contact can cause sensitization, severe burns, and external ulcers (chrome sores). Liver and kidney injuries may occur.
- Eye irritation:** Corrosive to the eyes and may cause severe damage including blindness. Can cause chronic conjunctival inflammation. May cause discoloration of cornea.
- Inhalation:** Corrosive. Causes severe burns. Inhaled corrosive substances can lead to a toxic edema of the lungs. Can cause ulceration of mucous membranes. May cause bronchospasms. Repeated or prolonged inhalation may cause ulceration and perforation of the nasal septum.
- Ingestion:** Corrosive. Ingestion causes burns of the upper digestive and respiratory tracts. Toxic if swallowed. Harmful or fatal if swallowed.
- Sensitization:** May cause sensitization by inhalation and skin contact.
- Chronic toxicity:** Repeated inhalation of chromic acid causes nasal perforation, skin ulceration, chronic rhinitis, pharyngitis, kidney and liver damage, inflammation of the larynx, changes in the blood and lung cancer. Transfer to the eyes from the fingers or droplets in the air can cause chronic conjunctival inflammation and occasionally a brown band in the cornea. This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**Specific effects**

- Carcinogenic effects:** The National Toxicology Program (NTP) has designated Hexavalent Chromium Compounds as Known Human Carcinogens. The International Agency for Research on Cancer (IARC) has identified Hexavalent Chromium Compounds as Carcinogenic to Humans (group 1). The American Conference of Governmental Industrial Hygienists (ACGIH) has identified Water-Soluble Hexavalent Chromium Compounds as Confirmed Carcinogens.
- Mutagenic effects:** No information available
- Reproductive toxicity:** No information available
- Target organ effects:** Eyes. Skin. Kidneys. Respiratory system. Liver.

**Carcinogens**

Components	NTP:	IARC:	OSHA	ACGIH
Chromium trioxide (CrO3)	Listed	1	Listed	

**12. ECOLOGICAL INFORMATION****Environmental Hazards**

- Ecotoxicity effects:** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Toxic to wildlife and domestic animals.

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**Aquatic toxicity:** Hexavalent chromium may remain unchanged or change slowly in many natural waters due to the low concentration of reducing matter  
Hexavalent chrome in water will eventually be reduced to trivalent chrome by organic matter  
The residence time of chromium in lake water has been estimated to be 4.6 to 18 years

**Mobility:** This product is soluble in water. Chromium may be transported from soil through runoff and leaching of water and through aerosol formation. The organic matter present in soil is expected to reduce soluble chromate to insoluble chromic oxide.

**Bioaccumulative potential:** Bioaccumulation from soil to above ground parts of plants is unlikely. There is no indication of biomagnification along the terrestrial food chain (soil-plant-animal).

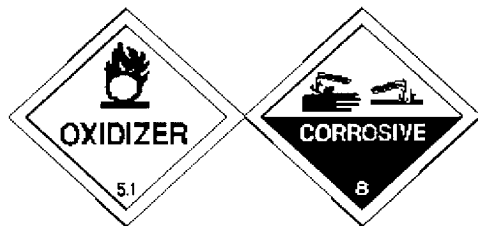
Components	Freshwater Algae	Freshwater Fish Species
Chromium trioxide (CrO <sub>3</sub> ) - 1333-82-0		96 h LC50 (Pimephales promelas) = 36.2 mg/L 96 h LC50 (Colisa fasciatus) = 40 mg/L 96 h LC50 (Oncorhynchus mykiss) = 7.6 mg/L

Components	Microtoxicity	Water Flea
Chromium trioxide (CrO <sub>3</sub> ) 1333-82-0		24 h EC50 = 435 µg/L

**13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products:** Dispose of in accordance with federal, provincial, state, and local regulations.

**Contaminated packaging:** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. TRANSPORT INFORMATION****DOT**

**Proper shipping name DOT:** CHROMIUM TRIOXIDE, ANHYDROUS  
**Hazard Class (DOT):** 5.1  
**Subsidiary Class (DOT):** 8, 6.1  
**UN-No (DOT):** UN1463  
**Packing group ( DOT):** II  
**DOT RQ (kg):** 4.55  
**Description (DOT):** CHROMIUM TRIOXIDE, ANHYDROUS, 5.1(8, 6.1), UN1463, PGII, RQ

**TDG (Canada)**

**Proper shipping name TDG:** CHROMIUM TRIOXIDE, ANHYDROUS  
**Hazard Class (TDG):** 5.1  
**Subsidiary Class (TDG):** 8  
**UN-No (TDG):** UN1463  
**Packing group (TDG):** II  
**Description (TDG):** CHROMIUM TRIOXIDE, ANHYDROUS, 5.1(8), UN1463, PGII

**IMO / IMDG**

**Proper shipping name (IMDG):** CHROMIUM TRIOXIDE, ANHYDROUS  
**Hazard Class (IMO/IMDG):** 5.1

Product name: CHROMIC ACID (FLAKES)

**14. TRANSPORT INFORMATION**

Subsidiary Class (IMO/IMDG): 8  
 UN-No (IMO/IMDG): UN1463  
 Packing group (IMO/IMDG): II  
 Description (IMO/IMDG): CHROMIUM TRIOXIDE, ANHYDROUS, 5.1(8), UN1463, PGII

**IATA**

Proper shipping name (IATA): CHROMIUM TRIOXIDE, ANHYDROUS  
 Hazard Class (IATA): 5.1  
 Subsidiary Class (IATA): 8  
 UN-No (IATA): UN1463  
 Packing group (IATA): II  
 Description (IATA): CHROMIUM TRIOXIDE, ANHYDROUS, 5.1(8), UN1463, PGII

**15. REGULATORY INFORMATION****International Inventories**

All of the components in this product are on or exempt from the following inventories:

U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (ECL), China (IECSC), Japan (ENCS), Philippines (PICCS).

**International Inventory Legend**

TSCA: Toxic Substance Control Act  
 DSL: Domestic Substance List  
 NDSL: Non-Domestic Substance List  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 ELINCS: EU List of Notified Chemical Substances  
 ECL: Existing Chemicals List aka Existing and Evaluated Chemical Substances  
 AICS: Inventory of Chemical Substances  
 ENCS: Existing and New Chemical Substances  
 PICCS: Philippines Inventory of Chemicals and Chemical Substances

**U.S. Regulations:****HAZARDOUS COMPONENTS**

Components	CA PROP 65	SARA 302	SARA 313	CERCLA RQ	TSCA 12(b)	CWC	DEA
Chromium trioxide (CrO3)	X		X		X		

**U.S. Regulations Legend**

CA PROP 65: California Proposition 65 - Carcinogens List  
 TSCA 12(b): TSCA Section 12(b) - Export Notification  
 SARA 302: CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs and TPQs  
 SARA 313: CERCLA/SARA - Section 313 - Emission Reporting  
 CERCLA RQ: CERCLA/SARA - Hazardous Substances and Their Reportable Quantities  
 CWC: Chemical Weapons Convention - Annex on Chemicals  
 DEA LISTED: DEA (Drug Enforcement Administration) - DEA Controlled, Precursors, and / or Essential Chemicals

SARA 311	
Acute Health Hazard	YES
Chronic Health Hazard	YES
Fire Hazard	YES
Sudden Release of Pressure Hazard	NO
Reactive Hazard	NO

**Canada**

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**WHMIS Controlled List**

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**Product name: CHROMIC ACID (FLAKES)**

**HAZARDOUS COMPONENTS**

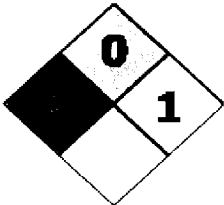
Components	CAS-No	WHMIS Call out threshold
Chromium trioxide (CrO3)	1333-82-0	0.1 %

**WHMIS hazard class:**

- C Oxidizing materials
- E Corrosive material
- D1B Toxic materials
- D2A Very toxic materials



**16. OTHER INFORMATION**



**NFPA:** Health: 3 Flammability: 0 Instability: 1 Other data: Oxy

**CAREFULLY READ THE FOLLOWING:** The identification of ingredients in this document meets or exceeds the requirements set forth in 29 CFR, 40 CFR, TDG et al. at the date of publication. Ingredients present in a mixture or solution which are generically identified or not referenced in this document are not regulatorily required to be specifically identified or referenced. The information contained herein should be provided to all those who will use, handle, store, transport, or may otherwise be exposed to this product.

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**Prepared by:** H.E.S. Department

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