
MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS NUMBER : M4824 ISSUE DATE : 01-01-98

PRODUCT NAME : CHROMIC ACID-FLAKE

Manufacturer's Name and Address : Occidental Chemical Corporation, Occidental Tower
5005 LBJ Freeway, P.O. Box 809050
Dallas, TX 75380 (972) 404-3800

24 HOUR EMERGENCY TELEPHONE : 1-800-733-3665 OR 972-404-3228

TO REQUEST AN MSDS : 1-800-699-4970

CUSTOMER SERVICE : 1-800-752-5151

PRODUCT USE : Wood Treating, Metal Finishing, Plating, Pigments,
Catalysts

CHEMICAL NAME : Chromium Trioxide

CHEMICAL FORMULA : CrO₃SYNONYMS/COMMON NAMES : Chromic Acid
Chromium (VI) Oxide
Chromic Anhydride

2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS NUMBER / NAME
1333-82-0 Chromium oxide (CrO₃)

EXPOSURE LIMITS	PERCENTAGE
PEL:0.1 mg/m ³ Ceiling as CrO ₃	VOL ND
TLV:0.05 mg/m ³ , TWA, A1 as Cr	WT 99-100

COMMON NAMES:
CHROMIC ACID
CHROMIUM COMPOUND#
CHROMIUM TRIOXIDEListed On(List Legend Below):
00 02 06 08 11 14 21 22 25 50 51

2. COMPOSITION/INFORMATION ON INGREDIENTS (Continued)

Chemical name used in the SARA Section 313 List of Toxic Chemicals (40 CFR - Section 372.65) if different from CAS name.

LIST LEGEND

00 TSCA INVENTORY	02 SARA TOXIC CHEM, SECTION 313
06 NTP "KNOWN HUMAN CARCINOGEN"	08 IARC HUMAN CARCINOGEN, GROUP 1
11 CA PROP 65 - CARCINOGEN	14 PA SPECIAL HAZ SUBSTANCE
21 NJ SPECIAL HEALTH HAZ SUB	22 CANADIAN DOMESTIC SUB LIST
25 TSCA SEC12 EXPORT NOTIFICATION	50 PHILIPPINES INVENTORY (PICCS)
51 EINECS	

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****

*
* STRONG OXIDIZER. CORROSIVE TO RESPIRATORY TRACT, EYES, SKIN AND *
* DIGESTIVE TRACT. CONTACT WITH BROKEN SKIN MAY RESULT IN ULCERS. *
* CONTACT CAN CAUSE SEVERE DAMAGE INCLUDING BURNS AND BLINDNESS. *
* MAY CAUSE KIDNEY AND LIVER DAMAGE. PROLONGED OR REPEATED *
* INHALATION MAY CAUSE ULCERATION OR PERFORATION OF NASAL SEPTUM. *
* MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. *
* POTENTIAL CANCER HAZARD. CONTAINS MATERIAL WHICH MAY CAUSE *
* CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE. *
*
* Solid dark red flakes or powder; no odor *

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY:

Inhalation, Eyes, Skin, Ingestion.

TARGET ORGANS:

Kidneys, Liver, Nasal Septum, Eyes, Skin, Respiratory Tract, Gastrointestinal Tract.

IRRITANCY:

All routes of exposure, Severe.

SENSITIZING CAPABILITY:

May cause skin sensitization.

REPRODUCTIVE EFFECTS:

None known.

CANCER INFORMATION:

Contains a listed carcinogen. See Sections 2 & 11.

3. HAZARDS IDENTIFICATION (Continued)

SHORT-TERM EXPOSURE (ACUTE)

INHALATION:

Inhalation of vapor, mist or liquid may cause severe burns of the nasal septum and respiratory tract.

May cause kidney and liver damage.

EYES:

Contact can cause severe damage including burns and blindness.

SKIN:

Contact can cause severe 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 result in kidney failure and death.

INGESTION:

Can cause severe tissue destruction. Kidney failure may follow and result in death. May cause liver damage.

REPEATED EXPOSURE (CHRONIC)

Prolonged or repeated contact may cause conjunctivitis, "chrome sores" on skin (especially broken skin), or ulceration and perforation of the nasal septum. Epidemiological studies indicate long term exposure to dusts and mists in chrome processing industry is associated with increases in respiratory tract cancer in man; the causative agent is not known. Epidemiological studies have not demonstrated any increased risk of cancer at exposure levels below the current PEL.

SYNERGISTIC MATERIALS:

None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing disorders affecting target organs.

4. FIRST AID MEASURES

EYES:

IMMEDIATELY FLUSH EYES WITH A DIRECTED STREAM OF WATER for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

4. FIRST AID MEASURES (Continued)

SKIN:

Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air. If breathing is difficult, have a trained person administer oxygen. If breathing has stopped, have a trained person administer artificial respiration. If conscious, irrigate nasal passages and mouth with water. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY. Accident victims should be given 5-10 gm ascorbic acid (not effervescent tablets) dissolved in water. This dose can be repeated several times.

NOTES TO PHYSICIAN:

Massive overexposure to solutions of this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents, however, ascorbic acid administered intravenously and locally is an effective antidote (converting Cr6 to Cr3) in preventing renal tubular failure. Skin ulcers may be treated by removal from exposure, daily cleansing, debridement, and application of antibiotic cream and dressing. Dialysis may be necessary as indicated. Up to 10 grams Ascorbic Acid in stomach. Plus I.V. Ascorbic Acid 1 gram in divided doses. Monitor blood chemistries, force fluids for diuresis (of chrome). Do not attempt chelation! Protect renal tubules.

5. FIRE FIGHTING MEASURES

Flash Point: Non-flammable

Method: Not applicable

Autoignition Temperature: Not combustible

FLAMMABLE LIMITS IN AIR, BY % VOLUME

Upper: Not applicable
Lower: Not applicable

EXTINGUISHING MEDIA:

Non-flammable / Non-combustible.

Use agents appropriate for surrounding fire.

5. FIRE FIGHTING MEASURES (Continued)

FIRE FIGHTING PROCEDURES:

Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing.

Under fire conditions, decomposing material may form a hot, viscous foam.

FIRE AND EXPLOSION HAZARD:

Oxidizer. Avoid contact with organic materials (see Section 10).

SENSITIVITY TO MECHANICAL IMPACT:

Not sensitive.

SENSITIVITY TO STATIC DISCHARGE:

Not sensitive.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Evacuate unnecessary personnel.

Follow protective measures provided under Personal Protection in Section 8.

People performing the cleanup should have full protective equipment including a NIOSH/MSHA approved positive pressure self-contained breathing apparatus.

ENVIRONMENTAL PRECAUTIONS:

Do not allow entry into sewers and waterways.

Spills or releases should be reported, if required, to the appropriate local, state and federal agencies.

METHODS FOR CLEANING UP:

Stop leaks. Remove as much as possible (e.g. vacuum truck or shovel into steel container). Then treat the spill area with a reducing agent to convert the hexavalent chromium to the trivalent form (sodium bisulfite, sodium sulfite, ferrous sulfate or ferrous chloride). Neutralize with a weak base (sodium bicarbonate, soda ash or lime). Following neutralization, soak up with inert absorbent material (e.g. sand) and place in a closed, labelled container and store in a safe place to await disposal.

7. HANDLING AND STORAGE

HANDLING:

Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the MSDS.

Do not get in eyes, on skin or clothing.

Avoid prolonged or repeated exposure.

Avoid breathing airborne particulates; wear respiratory protection when exposure is possible.

Wash contaminated clothing before reuse.

Wash thoroughly with soap and water after handling.

SPECIAL MIXING AND HANDLING INSTRUCTIONS:

Do not allow contact with materials as noted in Section 10.

STORAGE:

Store in tightly closed, labelled containers away from combustible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

The work area should be isolated and contained and provided with adequate local exhaust ventilation or other controls where dust or fumes may be generated. The number of persons exposed should be minimized.

Certain processes like chrome pigment production, high temperature welding or cutting, etc., may form materials more hazardous to humans than this product. The materials may be the formation of slightly soluble salts (barium, zinc, calcium or other chromates) or fumes of chromium/chromic acid, respectively which are known to be human carcinogens. Engineering controls and local exhaust ventilation is required to ensure that worker exposure is below current PEL.

PERSONAL PROTECTION

RESPIRATORY:

Wear a NIOSH/MSHA approved respirator following manufacturer's recommendations, where dusts, mists, fumes or vapors may occur.

EYE/FACE:

Wear chemical safety goggles plus full face shield to protect against splashing when appropriate (ANSI Z87.1).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

SKIN:

Protective clothing should be worn and changed at least daily. Wash contaminated clothing with soap and water and dry before reuse. Advise the laundry of the material contaminating the clothing.

Wear chemical resistant gloves such as PVC or nitrile.

OTHER:

Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Solid dark red flakes or powder; no odor

Odor Threshold: Not applicable

Specific Gravity (Water=1): 2.70 @ 25°C

Vapor Pressure: Not applicable

Vapor Density (Air=1): Not applicable

Density: 85-90 lbs/cu.ft. (tapped)

Evaporation Rate: Not applicable

% Volatiles by Wt: Not applicable

Boiling Point: Not applicable

Freezing Point: Not applicable

Melting Point: 197°C (387°F)

Solubility in Water (% by wt.): 63% @ 25°C, highly soluble

pH: 1.1 for a 1% solution @ 25°C

Octanol/Water Partition Coefficient: Not applicable

Thermal Decomposition Temperature: Not available

Other: Not available

VOC (g/l. by wt.): Not applicable

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:

 X STABLE UNSTABLE

10. STABILITY AND REACTIVITY (Continued)

REACTS WITH:

<input type="checkbox"/>	AIR	<input type="checkbox"/>	OXIDIZERS	<input checked="" type="checkbox"/>	METALS
<input type="checkbox"/>	WATER	<input checked="" type="checkbox"/>	ACIDS	<input checked="" type="checkbox"/>	OTHER
<input checked="" type="checkbox"/>	HEAT	<input checked="" type="checkbox"/>	ALKALIS	<input type="checkbox"/>	NONE

HAZARDOUS POLYMERIZATION:

OCCURS WILL NOT OCCUR

COMMENTS:

This product is a strong oxidizing agent, even in solution. Avoid contact with strong acids, alkalis, organic materials, oils, greases, or any easily oxidizable material. Corrosive to some metals. This product is hygroscopic. DO NOT store in humid places.

HAZARDOUS DECOMPOSITION PRODUCTS:

None.

11. TOXICOLOGICAL INFORMATION

1333-82-0 Chromium oxide (CrO₃)

ACUTE ORAL LD50: (rat) 52 mg/kg (both sexes)

ACUTE DERMAL LD50: (rabbit) 57 mg/kg (both sexes)

ACUTE INHALATION LC50: (rat, 4hr) 217 mg/m³ (both sexes)

PRIMARY SKIN IRRITATION:

	Dry Solid 4 hrs	Moistened 4 hrs	Dry Solid 24 hrs	Moistened 24 hrs
Erythema	2/6	6/6		
Edema	0/6	5/6		
Necrosis	0/6	1/6		
Corrosion			1/1	1/1

NTP and IARC have determined that there is sufficient evidence for the carcinogenicity of hexavalent chromium compounds both in humans and experimental animals. However, the hexavalent chromium compounds responsible (for human carcinogenicity) cannot be specified.

Chromic acid contains hexavalent chromium and is classified as an IARC (Group 1) carcinogen, and a known carcinogen by NTP.

12. ECOLOGICAL INFORMATION

1333-82-0 Chromium oxide (CrO3)

AQUATIC ECOTOX DATA

Fish:

LC50 (96 hr.)	(Sheepshead minnow)	39	mg/L
LC50 (96 hr.)	(Bluegill sunfish)	44	mg/L
LC50 (96 hr.)	(Rainbow trout)	28	mg/L
MATC (35 day)	(Fathead minnow, growth)	2	mg/L

BCF (22 day) (Rainbow trout) < 1*

* based on concentration in muscle as chrome (VI)

Invertebrates:

EC50 (48 hr.)	(Water flea)	0.8	mg/L
EC50 (48 hr.)	(Mysid shrimp)	5.9	mg/L
EC50 (48 hr.)	(Quahog clam)	4.3	mg/L
MATC (21 day)	(Water flea, repro.)	4.7	ug/L
BCF (84 day)	(Oyster)	125	**
BCF (84 day)	(Blue mussel)	192	**

** as chrome (VI)

Plants:

EC50 (96 hr.)	(Green algae, growth)	183	ug/L **
BCF (Benthic algae, phytoplankton)		1600 & 2300	**

** as chrome (VI)

TERRESTRIAL ECOTOX DATA

Wildlife:

LD50 (14 day)	(Mouse, oral)	127	mg/Kg
LD50 (14 day)	(Quail, oral)	93.5	mg/Kg
LC50 (8 day)	(Quail, dietary)	> 3,203	ppm
LC50 (8 day)	(Duck, dietary)	> 3,203	ppm

ENVIRONMENTAL FATE DATA

Biotic:

Biodegradation Inorganic, not subject to biodegradation

Abiotic:

(1/2 life) Persists as Cr(VI) or Cr(III)

12. ECOLOGICAL INFORMATION (Continued)

There is a significant amount of information concerning the environmental fate and effects of chromium oxide (chromic acid or anhydride). Chromium oxide and chromium have been found to exhibit moderate to high toxicity to aquatic and terrestrial organisms. Chromium oxide will persist primarily as chrome (III) and chrome (VI) in water and soil systems. Material released to the atmosphere is subject to deposition with particulates or rainfall. Under certain environmental conditions chromium may be subject to low levels of bioaccumulation in both aquatic and terrestrial plants and animals. There is no indication of biomagnification in the food chain. Precautions should be taken to prevent the accidental release of this material to the environment.

13. DISPOSAL CONSIDERATIONS

Treat with a reducing agent to convert hexavalent chromium to trivalent chromium, then neutralize with a weak base. The solid material meeting treatment standards may be disposed of via an approved chemical waste landfill in accordance with all federal, state and local requirements. (See Section 6 of the MSDS).

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: CHROMIUM TRIOXIDE, ANHYDROUS

DOT HAZARD CLASS: 5.1 (8)

DOT IDENTIFICATION NO: UN1463

DOT PACKING GROUP: II

DOT HAZARDOUS SUBSTANCE: RQ 10 LBS (CHROMIC ACID)

DOT MARINE POLLUTANT(S): NA

ADDITIONAL DESCRIPTION REQUIREMENT: TOXIC

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. See Section 2, List Legend 02.

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.

15. REGULATORY INFORMATION (Continued)

To aid our customers in complying with regulatory requirements, SARA Title III Hazard Categories for this product are indicated below. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40.CFR.370. Please consult those regulations for details.

TSCA:

All components of this product that are required to be on the TSCA inventory are listed on the inventory.

SARA/TITLE III HAZARD CATEGORIES:

Immediate(Acute) Health:	<u>YES</u>	Reactive Hazard	<u>NO</u>
Delayed(Chronic) Health:	<u>YES</u>	Sudden Release of Pressure	<u>NO</u>
Fire Hazard:	<u>YES</u>		

HMIS HAZARD RATINGS:

HEALTH HAZARD: 3* FIRE HAZARD: 0 REACTIVITY: 1

STATE REGULATIONS:

See Section 2. COMPOSITION/INFORMATION ON INGREDIENTS list legend for applicable state regulation.

Consult local laws for applicability.

State of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING: This product contains a chemical known to the State of California to cause cancer.

INTERNATIONAL REGULATIONS:

Consult the regulations of the importing country.

CANADA:

WHMIS Hazard Class: C, D1A, D2A, E

16. OTHER INFORMATION

For additional non-emergency health, safety or environmental information telephone (972) 404-2405 or write to:

Occidental Chemical Corporation
Product Stewardship Department
5005 LBJ Freeway
P.O. Box 809050
Dallas, Texas 75380

16. OTHER INFORMATION (Continued)

MSDS LEGEND:

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstracts Service Registry Number

CEILING = Ceiling Limit (15 Minutes)

CEL = Corporate Exposure Limit

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit (OSHA)

STEL = Short Term Exposure Limit (15 Minutes)

TDG = Transportation of Dangerous Goods (Canada)

TLV = Threshold Limit Value (ACGIH)

TWA = Time Weighted Average (8 Hours)

WHMIS = Worker Hazardous Materials Information System (Canada)

* = See Section 3 Hazards Identification - Repeated Exposure (Chronic) Information

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17. WARNING LABEL INFORMATION

SIGNAL WORD:

DANGER

HAZARD WARNINGS:

STRONG OXIDIZER.

CORROSIVE TO RESPIRATORY TRACT, EYES, SKIN AND DIGESTIVE TRACT.

CONTACT WITH BROKEN SKIN MAY RESULT IN ULCERS.

CONTACT CAN CAUSE SEVERE DAMAGE INCLUDING BURNS AND BLINDNESS.

17. WARNING LABEL INFORMATION (Continued)

MAY CAUSE KIDNEY AND LIVER DAMAGE.

PROLONGED OR REPEATED INHALATION MAY CAUSE ULCERATION OR PERFORATION OF NASAL SEPTUM.

MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

POTENTIAL CANCER HAZARD. CONTAINS MATERIAL WHICH MAY CAUSE CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE.

PRECAUTIONS:

Avoid breathing dust, vapors or mist.

Avoid contact with eyes, skin and clothing.

Wear a NIOSH/MSHA approved respirator, chemical splash goggles, full face shield, protective clothing and chemical resistant gloves.

Use with adequate ventilation to maintain exposure level below PEL.

Wash thoroughly after handling.

Avoid contact with strong acids or bases.

Avoid contact with organic materials, oils, greases or any easily oxidizable material.

Before using, read Material Safety Data Sheet (MSDS) for this material.

FIRST AID

EYES:

IMMEDIATELY FLUSH EYES WITH A DIRECTED STREAM OF WATER for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN:

Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air. If breathing is difficult, have a trained person administer oxygen. If breathing has stopped, have a trained person administer artificial respiration. If conscious, irrigate nasal passages and mouth with water. GET MEDICAL ATTENTION IMMEDIATELY.

17. WARNING LABEL INFORMATION (Continued)

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY. Accident victims should be given 5-10 gm ascorbic acid (not effervescent tablets) dissolved in water. This dose can be repeated several times.

IN CASE OF SPILL OR LEAK:

Stop leaks. Remove as much as possible (e.g. vacuum truck or shovel into steel container). Then treat the spill area with a reducing agent to convert the hexavalent chromium to the trivalent form (sodium bisulfite, sodium sulfite, ferrous sulfate or ferrous chloride). Neutralize with a weak base (sodium bicarbonate, soda ash or lime). Following neutralization, soak up with inert absorbent material (e.g. sand) and place in a closed, labelled container and store in a safe place to await disposal.

NEVER FLUSH TO SEWER.

Spills or releases should be reported, if required, to the appropriate local, state and federal agencies.

FIRE:

Use NIOSH/MSHA self-contained breathing apparatus and full protective equipment.

Use extinguishing medium as appropriate for surrounding fire.

HANDLING AND STORAGE:

Store in tightly closed, labelled containers away from combustible materials.

DISPOSAL:

Dispose of spilled or waste product after appropriate treatment in a licensed landfill in accordance with federal, state, and local regulations.

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:

This Product Contains:

CAS#	NAME
1333-82-0	Chromium oxide (CrO ₃)

HMIS RATING: HEALTH 3* FLAMMABILITY 0 REACTIVITY 1

LABEL NUMBER: 1097M4824

For Industrial Use Only