SODIUM DICHROMATE DIHYDRATE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

SODIUM DICHROMATE DIHYDRATE

OTHER NAMES

Cr2-O7.2Na.2H2O, Na2-Cr2-O7.2H2O, "dichromic acid sodium salt dihydrate", "bichromate of soda hydrated", "chromic acid disodium salt", "chromium sodium oxide", "disodium chromate", "disodium dichromate", "sodium bichromate", "sodium dichromate (VI)", "sodium dichromate (VI)"

PROPER SHIPPING NAME

OXIDIZING SOLID, TOXIC, N.O.S.

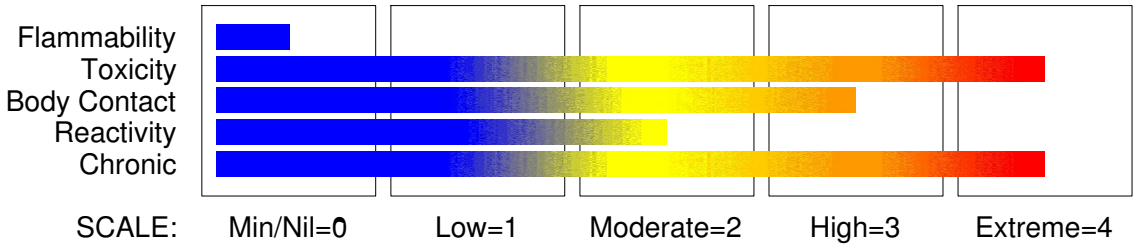
PRODUCT USE

Oxidizing agent used in manufacture of dyes, many other synthetic organic chemicals, inks etc. Used in chrome-tanning of hides. Bleaching of fats, oils, sponges and refining petroleum; Manufacturing chromic acid, other chromates and chrome pigments. In corrosion inhibitors, corrosion inhibiting paints; in many metal treatments. Electroengraving of copper; mordant in dyeing. Also used for hardening gelatin. Defoliation of cotton plants and other plants and shrubs.

SUPPLIER

Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Dermal) Category 4
Acute Toxicity (Inhalation) Category 2
Acute Toxicity (Oral) Category 3
Carcinogen Category 1B
Chronic Aquatic Hazard Category 1
Germ Cell Mutagen Category 1A
Organ Damage Category 1
Oxidizing Solid Category 3
Reproductive Toxicity Category 1B
Respiratory Sensitizer Category 1
Skin Corrosion/Irritation Category 1C
Skin Sensitizer Category 1

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H272 H330 H301 H312 H334 H317 H340 H350 H360 H360 H372 H314 H410
May intensify fire; oxidizer
Fatal if inhaled
Toxic if swallowed
Harmful in contact with skin
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled
May cause allergic skin reaction
May cause genetic defects
May cause CANCER
May damage fertility
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure by inhalation.
Causes severe skin burns and eye damage
Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear protective gloves/clothing and eye/face protection.
Use only outdoors or in a well ventilated area.
Wear protective gloves/clothing
Do not breathe dust/fume/gas/mist/vapours/spray.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.

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Contaminated clothing should not be allowed out of the workplace.
Wash thoroughly after handling.
Do not breathe dust or mist.
In case of inadequate ventilation wear respiratory protection.
Wash hands thoroughly after handling.
Keep away from heat.
Do not eat, drink or smoke when using this product.
Take any precaution to avoid mixing with combustible or incompatible materials.

Response

If skin irritation or rash occurs, seek medical advice/attention.
Wash contaminated clothing before reuse.
If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.
IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment: refer to Label or MSDS.
IF ON SKIN: Gently wash with plenty of soap and water.
If exposed or concerned: Get medical attention advice.
Get medical advice/attention if you feel unwell.
Call a POISON CENTER or doctor/physician if you feel unwell.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Keep container tightly closed.
Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Storage

Store locked up.
Store away from combustibles and incompatible materials

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium dichromate, dihydrate	7789-12-0	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following

continued...

observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Immediately flush body and clothes with large amounts of water, using safety shower if available.
· Quickly remove all contaminated clothing, including footwear.
· Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
· Transport to hospital, or doctor.

INHALED

· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to dichromates and chromates:
· Absorption occurs from the alimentary tract and lungs.
· The kidney excretes about 60% of absorbed chromate within 8 hours of ingestion. Urinary excretion may take up to 14 days.
· Establish airway, breathing and circulation. Assist ventilation.
· Induce emesis with Ipecac Syrup if patient is not convulsing, in coma or obtunded and if the gag reflex is present.
· Otherwise use gastric lavage with endotracheal intubation.
· Fluid balance is critical. Peritoneal dialysis, haemodialysis or exchange transfusion may be effective although available data is limited.
· British Anti-Lewisite, ascorbic acid, folic acid and EDTA are probably not effective.
· There are no antidotes.
· Primary irritation, including chrome ulceration, may be treated with ointments comprising calcium-sodium-EDTA. This, together with the use of frequently renewed dressings, will ensure rapid healing of any ulcer which may develop.
The mechanism of action involves the reduction of Cr (VI) to Cr(III) and subsequent chelation; the irritant effect of Cr(III)/ protein complexes is thus avoided. [ILO Encyclopedia]
[Ellenhorn and Barceloux: Medical Toxicology].

continued...

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Flooding quantities of water only.
Water spray or fog.
Foam.
Dry agent.
Carbon dioxide.

FIRE FIGHTING
· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water course.
· Consider evacuation (or protect in place).
· Fight fire from a safe distance, with adequate cover.
· Extinguishers should be used only by trained personnel.
· Use water delivered as a fine spray to control fire and cool adjacent area.
· Avoid spraying water onto liquid pools.
· Do not approach containers suspected to be hot.
· Cool fire exposed containers with water spray from a protected location.
· If safe to do so, remove containers from path of fire.
· If fire gets out of control withdraw personnel and warn against entry.
· Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
· Will not burn but increases intensity of fire.
· Heating may cause expansion or decomposition leading to violent rupture of containers.
· Heat affected containers remain hazardous.
· Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.
· May emit irritating, poisonous or corrosive fumes.
Decomposes on heating and produces toxic fumes of: metal oxides.

FIRE INCOMPATIBILITY
Oxidising agents as a class are not necessarily combustible themselves, but can increase the risk and intensity of fire in many other substances.

Personal Protective Equipment
Gas tight chemical resistant suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
· Clean up all spills immediately.
· No smoking, naked lights, ignition sources.
· Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
· Avoid breathing dust or vapours and all contact with skin and eyes.
· Control personal contact by using protective equipment.
· Contain and absorb spill with dry sand, earth, inert material or vermiculite.
· DO NOT use sawdust as fire may result.
· Scoop up solid residues and seal in labelled drums for disposal.

continued...

· Neutralise/decontaminate area.

MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear full body protective clothing with breathing apparatus.
· Prevent spillage from entering drains or water courses.
· Consider evacuation (or protect in place).
· DO NOT use water on spill.
· No smoking, flames or ignition sources.
· Increase ventilation.
· Contain with DRY sand, earth or other clean, dry inert material.
· NEVER use organic absorbents such as sawdust, paper, cloth or wet materials.
· Use spark-free and explosion-proof equipment.
· Collect recoverable product in labelled containers for possible recycling.
· To avoid risk of contamination, DO NOT mix recovered with fresh material.
· Absorb remaining product with dry sand, earth or vermiculite.
· Collect residues and seal in labelled drums for disposal.
· Use flooding quantities of water to wash area.
· Prevent runoff into drains.
· If contamination of drains or waterways occurs advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)
The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
sodium dichromate, dihydrate 35 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
sodium dichromate, dihydrate 25 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:
sodium dichromate, dihydrate 0.25 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:
sodium dichromate, dihydrate 0.125 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
· Avoid personal contact and inhalation of dust, mist or vapours.
· Provide adequate ventilation.
· Always wear protective equipment and wash off any spillage from clothing.

continued...

· Keep material away from light, heat, flammables or combustibles.
· Keep cool, dry and away from incompatible materials.
· Avoid physical damage to containers.
· DO NOT repack or return unused portions to original containers. Withdraw only sufficient amounts for immediate use.
· Contamination can lead to decomposition leading to possible intense heat and fire.
· When handling NEVER smoke, eat or drink.
· Always wash hands with soap and water after handling.
· Use only good occupational work practice.
· Observe manufacturer's storing and handling directions.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
· Check that containers are clearly labelled.
Glass container.
Multi-ply woven plastic or paper bag with sealed plastic liner
NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
Metal pail.
Metal drum.

STORAGE INCOMPATIBILITY

Store away from incompatible materials.
Avoid contact with aluminium, magnesium, charcoal, fluorine, sulfur, many combustible substances and reducing agents.
Keep storage area free of debris, waste and combustibles.

STORAGE REQUIREMENTS

Keep dry.
· Store in original containers.
· Keep containers securely sealed as supplied.
· No smoking, naked lights, heat or ignition sources.
· Store in a cool, dry, well ventilated area.
· Store under cover and away from sunlight.
· Store below safe storage (control) temperature.
· Store away from flammable or combustible materials, debris and waste.
· Contact may cause fire or violent reaction.
· Store away from incompatible materials.
· Store away from foodstuff containers
· DO NOT stack on wooden floors or wooden pallets.
· Protect containers against physical damage, FRICTION or SHOCK.
· Check regularly for spills and leaks.
· Observe manufacturer's storage and handling recommendations.
· Restrictions may apply on quantities and to other material permitted in the same location.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	X	X	X	0

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• sodium dichromate, dihydrate: CAS:7789- 12- 0 CAS:10588- 01- 9

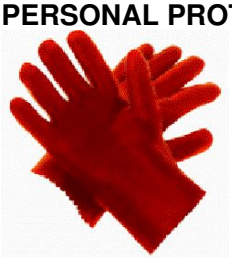
MATERIAL DATA

Some jurisdictions require that health surveillance be carried on workers occupationally exposed to inorganic chromium. Such surveillance should emphasise

· demography, occupational and medical history and health advice
· physical examination with emphasis on the respiratory system and skin
· weekly skin inspection of hands and forearms by a "responsible person".

WARNING: This substance is classified by the NOHSC as Category 2 Probable Human Carcinogen.

PERSONAL PROTECTION



EYE

· Safety glasses with side shields; or as required,
· Chemical goggles.
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Impervious gloves.
PVC gloves.
Rubber gloves.
Safety footwear.

OTHER

Overalls.
· Impervious apron.
· Eyewash unit.
Ensure there is ready access to a safety shower.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2

continued...

100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult
your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.
None required when handling small quantities.
OTHERWISE:.
General exhaust is adequate under normal operating conditions.
If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator.
Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Red/orange solid; soluble in water. Available as crystal or flake
Powerful oxidising agent & corrosive. Cause severe burns,
Contact with many organic materials may cause a fire.

PHYSICAL PROPERTIES

Solid.
Mixes with water.

Molecular Weight: 298
Melting Range (°C): 357 loses water
Solubility in water (g/L): Miscible
pH (1% solution): 4.0
Volatile Component (%vol): Not applicable
Relative Vapour Density (air=1): Not applicable
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not applicable
State: Divided solid

Boiling Range (°C): 400 decomposes
Specific Gravity (water=1): 2.52 @ 13 C
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable
Evaporation Rate: Not applicable
Flash Point (°C): Not combustible
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials.
Stable under normal storage conditions.
Hazardous polymerisation will not occur.

continued...

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
Ingestion may result in nausea, abdominal irritation, pain and vomiting.
Considered an unlikely route of entry in commercial/industrial environments.

EYE
The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.

SKIN
Skin contact with the material may be harmful; systemic effects may result following absorption.
The material can produce chemical burns following direct contact with the skin.
Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

INHALED
Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.
Not normally a hazard due to non-volatile nature of product.
Respiratory sensitisation may result in allergic/asthma like responses; from coughing and minor breathing difficulties to bronchitis with wheezing, gasping.

CHRONIC HEALTH EFFECTS
Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population.
Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental stimuli such as automobile exhaust, perfumes and passive smoking.
Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.
On the basis, primarily, of animal experiments, the material may be regarded as carcinogenic to humans. There is sufficient evidence to provide a strong presumption that human exposure to the material may result in cancer on the basis of:
- appropriate long-term animal studies
- other relevant information.
There is sufficient evidence to provide a strong presumption that human exposure to the material may result in the development of heritable genetic damage, generally on the basis of
- appropriate animal studies,
- other relevant information.

continued...

There is sufficient evidence to provide a strong presumption that human exposure to the material may result in impaired fertility on the basis of: - clear evidence in animal studies of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary non-specific consequence of other toxic effects.
There is sufficient evidence to provide a strong presumption that human exposure to the material may result in developmental toxicity, generally on the basis of:
- clear results in appropriate animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.
Principal routes of exposure are usually by skin contact, eye contact and inhalation of generated dust.
Open cuts, abraded or irritated skin should not be exposed to this material.
The material may accentuate any pre-existing skin condition.
Sensitisation may give severe responses to very low levels of exposure, in situations where exposure may occur.
Skin contact may result in severe irritation particularly to broken skin. Ulceration known as "chrome ulcers" may develop. Chrome ulcers and skin cancer are significantly related.
Chronic inhalation exposure may result in nasal ulceration and/or perforation of nasal septum.
Chromium VI exposures have been related to higher incidence of lung cancer.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
data for sodium dichromate anhydrous
Oral (human) LDLo: 50 mg/kg Material is a corrosive irritant
Oral (human) TDLo: 250 mg/kg
Oral (rat) LD50: 50 mg/kg
WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Not Determined
Acute Aquatic Effects: (48 Hr) LC50:
Golden Orfe (minnow): 224 - 386 mg/L
Mosquito Fish: 420 mg/L
Water Flea: 1.4 mg/L
Secondary Waste Treatment Compatibility: (5 hr) IC50 44 mg/L
Chromium in the oxidation state +3 (the trivalent form) is poorly absorbed by cells found in microorganisms, plants and animals. Chromate anions (CrO4-, oxidation state +6, the hexavalent form) are readily transported into cells and toxicity is closely linked to the higher oxidation state.
Chromium Ecotoxicology:
Toxicity in Aquatic Organisms:
Chromium is harmful to aquatic organisms in very low concentrations. Fish food organisms are very sensitive to low levels of chromium. Chromium is toxic to fish although less so in warm water. Marked decreases in toxicity are found with increasing pH or water hardness; changes in salinity have little if any effect. Chromium appears to make fish more susceptible to infection. High concentrations can damage and/or accumulate in various fish tissues and in invertebrates such as snails and worms.
Reproduction of Daphnia is affected by exposure to 0.01 mg/kg hexavalent chromium/litre
Toxicity of chromium in fresh-water organisms (50% mortality)*

Compound	Category	Exposure	Toxicity Range (mg/litre)	Most sensitive species
hexavalent chrome	invertebrate	acute	0.067- 59.9	scud

continued...

		long- term	-	-
	vertebrate	acute	17.6- 249	fathead minnow
		long- term	0.265- 2.0	rainbow trout
trivalent chrome	invertebrate	acute	2.0- 64.0	cladoceran
		long- term	0.066	cladoceran
	vertebrate	acute	33.0- 71.9	guppy
	invertebrate	long- term	1.0	fathead minnow

* from Environmental Health Criteria 61: WHO Publication.
Toxicity in Microorganisms:
In general, toxicity for most microorganisms occurs in the range of 0.05-5 mg chromium/kg of medium. Trivalent chromium is less toxic than the hexavalent form. The main signs of toxicity are inhibition of growth and the inhibition of various metabolic processes such as photosynthesis or protein synthesis. Gram-negative soil bacteria are generally more sensitive to hexavalent chromium (1-12 mg/kg) than the gram-positive types. Toxicity to trivalent chromium is not observed at similar levels. The toxicity of low levels of hexavalent chromium (1 mg/kg) indicates that soil microbial transformation, such as nitrification, may be affected. Chromium should not be introduced to municipal sewage treatment facilities.
Toxicity in Plants: Chromium in high concentrations can be toxic for plants. The main feature of chromium intoxication is chlorosis, which is similar to iron deficiency. Chromium affects carbohydrate metabolism and leaf chlorophyll concentration decreases with hexavalent chromium concentration (0.01-1 mg/l). The hexavalent form appears to more toxic than the trivalent species.
Biological half-life: The elimination curve for chromium, as measured by whole-body counting, has an exponential form. In rats, three different components of the curve have been identified, with half-lives of 0.5, 5.9 and 83.4 days, respectively.
Water Standards: Chromium is identified as a hazardous substance in the Federal (U.S.) Water Pollution Control Act and further regulated by Clean Air Water Act Amendments (US). These regulations apply to discharge. The US Primary drinking water Maximum Contaminant Level (MCL), for chromium, is 0.05 mg/l (total chromium).

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Treat and neutralise at an effluent treatment plant.
Reduce Cr (VI) to Cr (III) using meta-bisulfite, neutralise with lime and reclaim sludge.
Bury residue in an authorised landfill.
Decontaminate empty containers.
Return containers to drum reconditioner or recycler.

WASTE DISPOSAL PROCEDURES
• For small quantities of sodium dichromate, wear eye protection, protective clothing and nitrile rubber gloves. Work in a well ventilated area. Add the solid dichromate to a container of water (100mL/5g). Acidify with 40- 60mL of 3M
sulphuric acid. With stirring add the solid sodium thiosulphate until the solution is cloudy and blue green in colour. Neutralise with sodium carbonate. Allow a blue grey flocculent to form. Filter immediately or allow to stand for one week. Allow the remaining liquid to evaporate or filter one more time. Wash the liquid into the drain with water. Wash the solid residue with hot water to remove the sodium sulphate. Dry, package, label and send to a secured landfill site [Armour 1996].

continued...

SPILLAGE DISPOSAL
• Wear eye protection, protective clothing and nitrile rubber gloves to control personal contact from sodium dichromate. Cover and contain the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, bentonite and sand. With stirring add solid sodium thiosulphate until the solution is cloudy and blue coloured. Neutralise with sodium carbonate. Allow a blue grey flocculent to form. Filter immediately or allow to stand for one week. Allow the
remaining liquid evaporate or filter off. Empty the liquid portion into the drain with water. Wash the solid residue with hot water to remove the sodium sulfate. Dry, package, label and send to a secured landfill site [Armour 1996].

Section 14 - TRANSPORTATION INFORMATION

Labels Required: OXIDIZING AGENT,TOXIC
HAZCHEM: 2W

UNDG:

Dangerous Goods Class:	9	Subrisk:	6.1
UN Number:	3077	Packing Group:	III

Shipping Name: ENVIROMENTALLY HAZARDOUS SUBS., SOLID, N.O.S.

Air Transport IATA:

ICAO/IATA Class:	9	ICAO/IATA Subrisk:	6.1
UN/ID Number:	3077	Packing Group:	III
Special provisions:	A3		

Shipping Name: ENVIROMENTALLY HAZARDOUS SUBS., SOLID, N.O.S.

Maritime Transport IMDG:

IMDG Class:	9	IMDG Subrisk:	6.1
UN Number:	3077	Packing Group:	III
EMS Number:	F- A, S- Q	Special provisions:	223 274 944
Marine Pollutant:	Not Determined		

Shipping Name: ENVIROMENTALLY HAZARDOUS SUBS., SOLID, N.O.S.

Section 15 - REGULATORY INFORMATION

REGULATIONS

sodium dichromate, dihydrate (CAS: 7789-12-0) is found on the following regulatory lists;
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
International Agency for Research on Cancer (IARC) Carcinogens
OECD Representative List of High Production Volume (HPV) Chemicals
UNEP Montreal Protocol Ozone Depletors - Annex C

continued...

Section 16 - OTHER INFORMATION

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 16-Aug-2017