



MATERIAL SAFETY DATA SHEET STRONTIUM CHROMATE L203E

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According to the ISO 11014-1 norm, the 91/155/EEC and 67/548/EEC directives.

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Trade Name : STRONTIUM CHROMATE L203E

Type of use : Anticorrosive pigment.

Manufacturer : SOCIETE NOUVELLE DES COULEURS ZINCIQUES

Plant	Sales department
BP 59	45/49 Chaussée Jules César
59111 Bouchain	95250 Beauchamp
FRANCE	FRANCE

Tel : INT + 33 (0)1 30 40 57 57
Fax : INT + 33 (0)1 39 60 78 34
E.mail : sncz@sncz.net

Europe emergency contact : INT + 33 (0)1 30 40 57 57 (SNCZ - France).
24-hour emergency number (USA) : 800 424 9300 (CHEMTREC - USA).
24-hour international emergency number : INT + 1 703 527 3887 (CHEMTREC - USA).

2. COMPOSITION / DATA ON COMPONENTS

Chemical composition : Strontium chromate, SrCrO₄.
CAS N° : 7789-06-2 **EINECS N°** : 232-142-6

Yellow 32 pigment.
Colour Index : 77389.

Impurity, hazardous components :

CAS N°	Annex I Index N°	Name	%	Symbol	Phrase
7789-06-2	024-009-00-4	SrCrO ₄	97	T, N	R 45-22-50/53 S 53-45-60-61
10294-40-3	056-002-00-7	BaCrO ₄	3	Xn	R 20/22 S 28

3. HAZARDS IDENTIFICATION

Danger :  Toxic,  Dangerous for the environment.
T N

Labelling according to 67/548/EEC : R45, R49, R43, R20/22, R50/53.

Inhalation risk : A hazardous concentration of particles in the air can be quickly achieved by dispersion.

Environmental Risk : This substance is very dangerous for the aquatic organisms. It is highly recommended not to let this product contaminate the Environment.



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4. FIRST AID MEASURES

Get immediately medical attention.

After inhaling : Immediately remove from exposure area to fresh air. If respiration has stopped, perform artificial respiration. Keep person warm and at rest. Treat symptomatically and supportively.

After skin contact : Immediately remove contaminated clothing and shoes. Wash contaminated area with soap or mild detergent and large amount of water until no evidence of chemicals remains. Lesions can be scrubbed with a 20 % solution of sodium hyposulfite or treated with a calcium-disodium EDTA ointments. Freshly prepared and promptly applied 10 % ascorbic acid solution may speed healing of ulcers (Gosselin Clinical Toxicology of Commercial Products , 5th Ed.). As will 1 % solution of aluminium acetate (Arena, Poisoning 4th Ed.)

After eye contact : Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Continue irrigating with normal saline until pH has returned to normal (30-60 minutes) cover with sterile bandages. Get immediately ophthalmologist attention.

After ingestion : If the person is conscious and not convulsing, induce vomiting by giving syrup of ipecac (keeping the head below the hips to prevent aspiration), followed by water. Repeat in 20 minutes if not effective initially. For patients with depressed respiration or if vomiting has not worked out, perform gastric lavage cautiously (Dreisbach, Handbook of Poisoning, 12th Ed.). Treat symptomatically and supportively. Gastric lavage should be performed by qualified medical personnel. Get immediately medical attention.

NOTE TO PHYSICIAN

ANTIDOTE : the following antidote has been recommended. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel.

CHROMIUM POISONING : use of dimercaprol has been suggested on the basis of findings on animals. Give 3 mg/kg (or 0.3 ml/10 kg) every 4 hours, intramuscularly for the first 2 days and then 2 mg/kg every 12 hours for a total of 10 days (Dreisbach Handbook of Poisoning, 12th Ed.). Antidote should be administered by qualified medical personnel.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media : CO₂, dry chemical, regular foam.

Not recommended : Water spray (chromate slightly soluble in water). Do not let this material and its solution contaminate the Environment.

Specific hazards : Negligible hazard when exposed to flames. Keep away from dust. Keep away from reducers (ex hydrazine, wood, sulphur, paper, aluminium).

Special personal protection equipment : Wear an air respirator beyond dust limits, gloves and appropriate clothing and equipment to prevent a prolonged skin contact with substance.

Conduct of fire fighting : Avoid dusting. Keep away unprotected people. Move container from fire area if possible do it without risk. Do not scatter spilled material with high-pressure water streams. Dig a fire-control water dike. Convey the waste water into this dike (chromate slightly soluble in water). Eliminate waste waters according to local regulations : see chapter 6.

6. ACCIDENTAL RELEASE MEASURES

Personal protective measures : Avoid dusting. Wear appropriate mask (minimum type FFP2 (EN 149)), glasses and gloves and appropriate clothing equipment to prevent from a prolonged skin contact with this substance. Keep unnecessary people away.

Environmental protection conduct : Do not get rid of waste waters, neither in discharge, nor in sewers, but according to local regulations.

Occupational spill : Avoid dusting. Sweep up in suitable clean, dry container or absorb material avoiding dusting. Do not flush spilled materials into sewer. Keep unnecessary people away.

Soil spill : Dig a holding area such as pit, pond or lagoon to contain spilled material. Use protective cover such as plastic sheet to prevent dissolving in fire-fighting water or rain. Dusting is prohibited.

Water spill : For total elimination. Detoxication of Cr⁶⁺ is recommended (Cr⁶⁺ in waste water is prohibited according to local regulations). For this purpose add FeSO₄ for the chromium reduction and then proceed to Cr³⁺ flocculation by neutralisation (pH 8-9) with sodium carbonate, lime. Use mechanical dredges or lifts to extract immobilised masses of pollution and precipitates.

Air spill : A hazardous concentration of particles in suspension in the air can quickly be reached by dispersion. Keep unnecessary and unprotected people away. Let the particles suspension fall down and go into the place with appropriate individual protection equipment : respirator (or dust mask) and protective (impervious) clothing. Prevent any contact with food and animal feeding stuff.

7. HANDLING AND STORAGE

EC : The directive 90/394/EC dealing with the prevention of exposition risks to carcinogenic agents in workhouses applies to this substance (see Chapter 15). The directive 98/24/EC deals with the workers health and security protection against chemical risks in workhouses.

Handling : Avoid dust breathing and use adequate ventilation. Protection is required to keep exposure below permissible limit (see Chapter 8 and 15). Refer to Chapter 8 to know the protection means you have to wear.

Protection against fire and explosion : The product is non-flammable. It may reduce the ignition temperature of flammable substances.

Storage : Store in roofed place at room temperature. Keep containers tightly sealed. Do not store with or close to food and animals feeding stuff (see Chapter 15).

Material/chemical incompatibility : Do not store close to reducers (ex-hydrazine, aluminium powder...)

Technical incompatibility : Chromate can be reduced (slight change of the strontium chromate colour which becomes greenish - reduction of Cr⁶⁺ in Cr³⁺ -). This colour change is more sensitive with alcohols from 50°C and up. This reaction does not occur at room temperature.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSITION LIMIT VALUE (Occupational Exposure Limits) :

SrCrO₄, Strontium chromate, 97 %

CAS N° : 7789-06-2 EC N° : 024-009-00-4

European Union	: Chromium VI compounds	0.05 mg Cr/m ³
Denmark	: Chromates	0.005 mg Cr/m ³
France	: Chromium VI compounds	0.05 mg Cr/m ³
Germany	: Chromium VI compounds except insolubles. Carc. Cat. 2	0.05 mg Cr/m ³
Japan	: Chromium VI compounds	0.05 mg Cr/m ³
South Africa	: Chromium VI compounds	0.05 mg Cr/m ³
Sweden	: Chromates VI	0.02 mg Cr/m ³
UK	: Chromium VI compounds (MEL)	0.05 mg Cr/m ³ (Maximum Exposure Limit)
USA :		

Cancer Class : A2 (suspected human carcinogen).

∇ **Threshold Limit Value** (Permissible Exposure Limit – OSHA Feb. 2006) Chromates as Cr^{VI} : 5 µg Cr^{VI} / m³ as an 8-hour time weighted average (TWA) exposure.

Supplementary provision for aerospace painting: Working practice controls is 25 µg/m³. OSHA requires the use of engineering controls to reduce exposures, and allows the supplemental use of respirators to be used to achieve PEL.

EXPOSITION CONTROL :

Professional exposure.

This substance belongs to the alkaline chromate's family for which biological exposure indices exist. These indices are a mean to assess the workers' exposure to chemical substances and can be complementary to the measurements of exposition threshold values in the air (table below).

CrO ₂ concentration in the air without protection (µg/m ³)	Chromium content in erythrocytes (µl/l blood)	Chromium in urine (µg/l)
0.03	9	12
0.05	17	20
0.08	25	30
0.1	35	40

A direct relationship exists between the exposure on a workhouse of compounds belonging to the alkaline chromate's family and the chromium concentration in blood and urine. Results of such analyses allow to assess workers' health (table above).

Additional notes for design of plant equipment : No further detail. See chapter 7.

PERSONAL PROTECTION

Respiratory protection : Wear a specific respirator or dust mask (at least a type FFP2) adapted to contamination level found on site beyond dust exposure limits.

Hand protection : Employee must wear appropriate protective gloves to prevent from contact with this substance.

Eye protection : Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent from contact with this substance.



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8. EXPOSURE CONTROLS / PERSONAL PROTECTION (Cont.)

Clothing : Employee must wear appropriate protective (impervious) clothing and equipment to prevent from any possibility of skin contact with this substance.

Skin protection : Wear appropriate clothing to avoid any contact with skin.

Other recommendations : Showering is recommended after work according to local regulations. Do not drink and eat on site.

ENVIRONMENT EXPOSITION CONTROL :

Avoid any dust generation. No data are available as to the Environment exposure. However, emissions have to conform to the authorised limits (see Chapter 15).

Given the lack of data, this compound is considered as trivalent chromium in soils. Little quantities of hexavalent chromium are quickly converted into trivalent chromium in the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : solid
Odour and appearance : odourless yellow powder

Change in physical state

Decomposition : Around 500°C (air) *
Melting : non melting

* Temperature may be reduced of 200°C by reducers

Flash-point : NA.
Flammable properties : not flammable, may enhance flammability of other materials
Explosion risks : NA.
Vapour pressure : NA.
Specif gravity : 3.9 g/cm³ ISO 787/10
Solubility (water 20°C) : 0.4 - 0.8 g/l ISO 2040
pH : 6 - 9 ISO 787/9
Other information : very soluble in acids and ammonia salts.
slightly soluble in alkali.
Coef.water/n octanol : not available.

10. STABILITY AND REACTIVITY

Chromates are soluble in water.

Conditions to avoid : Flammability. This product may burn, but does not ignite readily.

Materials to avoid : Avoid contact with strong reducers (Al, hydrazine...), excessive heat, sparks or open flame.

Hazardous decomposition products : stable under normal temperatures and pressures. At high temperature, may release Cr⁶⁺. After reduction of the strontium chromate in trivalent chromium salts, these are converted in CrO₃ in oxidising conditions.



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11. TOXICOLOGICAL PROPERTIES

Toxicity Data

ROUTE	ORGANISM	DOSE
Oral	Rat	LD 50 3118 mg/kg
Intratracheal	Rat	LD 50 16.60 mg/kg
Oral	Mammal (unspecified species)	LD 50 >1500 mg/kg

Carcinogen status

- EC classified as Carcinogen Class C2 (EC) , MAK2 (Germany), Cancer Class A2 (USA) : suspected to be carcinogenic for the human being (USA), by dust inhalation.
- Animal Sufficient Evidence (IARC Group 1 for hexavalent chromium compounds). An excess risk for lung and sinonasal cancer has been reported on workers in the chromate and chromate pigment production and chromium plating industries. Two samples of strontium were tested on rats by intrabronchial implantation, producing a high incidence of bronchial carcinomas ; intrapleural and intramuscular injection of strontium chromate produced local sarcomas.

INHALATION

Acute Toxicity : 30 mg (Cr⁶⁺/m³ immediately dangerous to Life or Health). May cause sore throat, coughing, dispnea, laboured breathing. At high levels : depression, damage to deep lung tissue and delayed pulmonary oedema may occur.

Chronic Toxicity : Repeated or prolonged exposure may cause nasal irritation from rhinitis to painless ulceration of the mouth and nose mucous membranes with bleeding and perforation of the nasal septum and a foul smelling nasal discharge. Hepatitis, with our without jaundice, gastritis, ulcers of the stomach and intestine, nausea, vomiting, anorexia fatigue, lassitude rheumatic pain, and liver and kidney damage are possible. Extended exposure to chromates have caused leucocytosis, leukopenia, monocytosis, eosinophilia, and other blood changes. An excess risk for lung and sinonasal cancer has been reported on workers in the chromate and chromate pigment production and chromium plating industries.

Long term : Suspected to be carcinogen (EC : C2 class)

Local effect : Corrosive by inhalation

SKIN CONTACT

Acute toxicity : Direct contact with skin may cause irritation, corrosion, forming ulcers with hard edges which heal slowly

Chronic Toxicity : Repeated or prolonged exposure may cause sensitisation dermatitis or severe eczematous dermatitis with oedema and slow healing ulcers.

Local effects : dermatitis.

EYE CONTACT

Acute toxicity : Direct contact may cause irritation, pain, blurred vision, severe burns, severe corneal injury with corneal opacity, and possible loss of vision.

Chronic toxicity : Repeated or prolonged exposure may cause chronic conjunctivitis, lacrimation and rarely, brown staining of the cornea.

11. TOXICOLOGICAL PROPERTIES (Cont.)

INGESTION

Acute toxicity : High concentrations may cause dizziness, intense thirst, abdominal pain, vomiting, shock, oliguria, anuria, severe circulatory collapse and death due to uraemia. The approximate human lethal dose is 1-16g in one uptake.

Chronic toxicity : May cause kidney and liver damage with yellow jaundice, leukopenia, leucocytosis, oesinophilia and monocytosis.

12. ECOLOGICAL INFORMATION

Ecotoxicity : Strontium chromate is dangerous for the environment.

Mobility : substance slightly soluble in water (Cr⁶⁺) See chapter 6. No specific data available for strontium chromate. This compound is considered as alkaline dichromate.

Persistence/Degradability : Cr⁶⁺ needs to be reduced for elimination. See chapter 6 & 9. Avoid infiltration into waste water draining or soils.

13. DISPOSAL CONSIDERATIONS

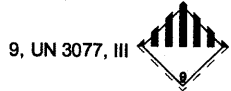
Product : dispose in accordance with state or local regulations.

Contaminated package and containers : empty bags can be either destroyed, or recycled according to the international norms that apply. Spoiled and unclean packaging are regulated by the ADR.

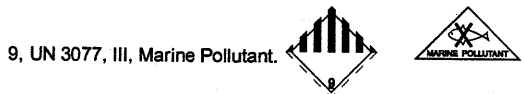
This substance meets the definition of the hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).


14. TRANSPORT INFORMATION

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (strontium chromate),



IMDG : Environmentally hazardous substance, solid, n.o.s. (strontium chromate),



IATA : Environmentally hazardous substance, solid, n.o.s. (strontium chromate), 9, UN 3077, III 

Packing instruction : Y911 if gross weight < 30 kg, 911 if gross weight ≥ 30 kg.

15. REGULATORY INFORMATION

Labelling in accordance with 91/155/EEC and 67/548/EEC directives.

Symbol of danger :  Toxic,  Dangerous for the environment.

EC : strontium chromate storage is likely to be regulated by the SEVESO II directive ; it would be considered as a dangerous substance for the aquatic environment.

16. OTHER INFORMATION

EC LABELLING

 Toxic,  Dangerous for the environment.

R phrases :

- R45 : May cause cancer.
- R49 : May cause cancer by inhalation.
- R43 : May cause sensitisation by skin contact.
- R20/22 : Also harmful by inhalation and if swallowed.
- R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic Environment.

S phrases :

- S28 : After skin contact, immediately wash with plenty of water.
- 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 off as hazardous waste.
- S61 : Avoid release to the environment. Refer to special instructions / safety data sheets.

For industrial use only (97/10/EC).

Preparation labelling : (Directive 1999/45/EC)

1. If the concentration of this substance exceeds 0.1%, the preparation is labelled « carcinogen » and sentences R45 and/or R49 are mandatory depending on the case.
2. If the concentration of this substance
 - exceeds 25% on a weight basis : « N/Dangerous for the environment », R50/53;
 - is between 2.5 and 25% on a weight basis : « N/Dangerous for the environment », R51/53;
 - is between 0.25 and 2.5% on a weight basis : R52/53.

Germany

- **Wassergefährdungsklasse WGK (VwVwS)** : WGK 3



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16. OTHER INFORMATION (Cont.)

USA

- **RTECS number** : GB 3240000 (Register of Toxical Effects of Chemical Substances)
- Substance included in the EPA TSCA inventory.
- **SARA** (Superfund Amendments and Reauthorization Act) : strontium chromate is listed under SARA 313.
- **CERCLA RQ** (Reportable quantity) = 10 lbs (4.54 kg). CFR 172.101.
- **Cercla Rating (scale 0-3)** : Health 3 - Fire 0 - Reactivity 0 - Persistence 3.
- **Proposition 65 Warning** : This product contains chemicals known to the State of California to cause cancer (hexavalent chromium Cr^{VI}).
- **NFPA Rating (scale 0-4)** : Health 3 - Fire 0 - Reactivity 0.
- **Pennsylvania Department of Labor and Industry** : Hexavalent chromium compounds are on the Right to Know List as E (Environmental Hazard) and S (Special Hazardous Substance).
- **Substance labelled and classified HMIS third edition** : H = 3* - F = 0 - PH = 1.
HMIS III : The HMIS III ratings are from the HMIS Third Edition. There have been significant changes made to the system. "PH" stands for "Physical Hazard" as defined in the OSHA Haz Com Standard and replaces the former code "R" for "Reactivity". For a more detailed explanation of the system and the ratings, please contact our Offices at INT = 33 1 30 40 57 57.

International status of the product :

- **Australia** : Listed in the AICS.
- **Canada** : Domestic Substance List (DSL).
- **Japan** : Listed in the MITI.
- **South Korea**: NCIS: KE-32217 Toxic (97-1-271)

*This information contained herein is based on the present state of our knowledge.
The above data is given without liability.*

Modifications compare to the former version : : Addition. ∇ : Text modification.