



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 11/04/2014

Version 2.0

SECTION 1. Identification

Product identifier

Product number	100229
Product name	Chromium(VI) oxide for analysis EMSURE®
CAS-No.	1333-82-0

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis, Chemical production
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Oxidizing solid, Category 1, H271
Acute toxicity, Category 3, Oral, H301
Acute toxicity, Category 2, Inhalation, H330
Acute toxicity, Category 3, Dermal, H311
Skin corrosion, Category 1A, H314
Serious eye damage, Category 1, H318
Respiratory sensitization, Category 1, H334
Skin sensitization, Category 1, H317
Germ cell mutagenicity, Category 1B, H340
Carcinogenicity, Category 1A, H350
Reproductive toxicity, Category 2, H361
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335
Specific target organ systemic toxicity - repeated exposure, Category 1, H372
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

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Hazard pictograms



Signal Word

Danger

Hazard Statements

H340 May cause genetic defects.

H350 May cause cancer.

H271 May cause fire or explosion; strong oxidizer.

H301 + H311 Toxic if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H330 Fatal if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat.

P220 Keep/Store away from clothing/ combustible materials.

P221 Take any precaution to avoid mixing with combustibles.

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P283 Wear fire/ flame resistant/ retardant clothing.

P284 Wear respiratory protection.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P306 + P360 IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P310 Immediately call a POISON CENTER or doctor/ physician.

P320 Specific treatment is urgent (see supplemental first aid instructions on this label).

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P361 Remove/ Take off immediately all contaminated clothing.

P363 Wash contaminated clothing before reuse.

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P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P371 + P380 + P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula CrO_3 (Hill)
Molar mass 99.99 g/mol

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

chromium trioxide ($\geq 90\%$ - $\leq 100\%$)

1333-82-0

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. If breathing stops: immediately apply artificial respiration, if necessary oxygen. Immediately call in physician.

Skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Allergic reactions, Irritation and corrosion, Risk of blindness!

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Chromium(VI) is highly toxic. It is absorbed via both the lungs and the gastrointestinal tract. Being strong oxidizers, chromates/ bichromates can cause burns and ulcerations on the skin and mucous membranes and also irritations in the upper respiratory tract. Poorly healing ulcers occur after wound contact. In predisposed persons the substance rapidly leads to sensitization and allergic reactions of the respiratory tract (risk of pneumonia!) and damage to nasal mucous membranes (under given circumstances perforation of the septum). After swallowing severe symptoms in the gastrointestinal tract such as bloody diarrhea, vomiting (aspiration pneumonia!), spasms, circulatory collapse, unconsciousness, formation of methemoglobin. Absorption may result in hepatic and renal damage. Inhalable chromium(VI) compounds gave clear evidence to be carcinogenic in animal experiments. Lethal dose (man): 0.5g. Antidotes: chelating agents such as EDTA, DMPS (Demaval(R)).

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Not combustible.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapors.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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SECTION 7. Handling and storage

Precautions for safe handling

Work under hood. Do not inhale substance/mixture.

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Away from combustible materials and sources of ignition and heat. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +5°C to +30°C (+41°F to +86°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>chromium trioxide 1333-82-0</i>			
ACGIH	Time Weighted Average (TWA):	0.01 mg/m ³	Expressed as: as Cr
	Time Weighted Average (TWA):	0.05 mg/m ³	Expressed as: as Cr
NIOSH/GUIDE	Recommended exposure limit (REL):	0.001 mg/m ³	Expressed as: as Cr(VI)
OSHA_TRANS	PEL:	1 mg/m ³	Expressed as: as Cr
Z1A	Time Weighted Average (TWA):	1 mg/m ³	
	Ceiling Limit Value:	0.1 mg/m ³	Expressed as: as CrO3
	Ceiling Limit Value:	0.1 mg/m ³	Expressed as: as CrO3
OSHA/Z2	Ceiling Limit Value:	0.1 mg/m ³	
	Ceiling Limit Value:	0.1 mg/m ³	

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

|| Tightly fitting safety goggles

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Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

protective clothing

Respiratory protection

required when dusts are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	solid
Color	dark red
Odor	odorless
Odor Threshold	Not applicable
pH	< 1 at 100 g/l 68 °F (20 °C)
Melting point	197 °C
Boiling point	No information available.
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor pressure	Not applicable
Relative vapor density	Not applicable
Density	2.7 g/cm ³ at 68 °F (20 °C)
Relative density	No information available.
Water solubility	1,854 g/l at 68 °F (20 °C)

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Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	above melting point
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	May cause fire or explosion; strong oxidizer.
Ignition temperature	Not applicable
Bulk density	ca. 900 kg/m ³

SECTION 10. Stability and reactivity

Reactivity

strong oxidizing agent

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Risk of explosion with:

Risk of ignition or formation of inflammable gases or vapors with:

organic combustible substances, Alkali metals, Ammonia, nonmetals, halogen-halogen compounds, hydrazine and derivatives, nitrates, Reducing agents, Nitric acid

Conditions to avoid

Strong heating.

Incompatible materials

no information available

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact, Ingestion

Target Organs

Blood

Respiratory system

Liver

Kidneys

Eyes

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Skin

Acute oral toxicity

absorption

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity

LC50 Rat: 0.217 mg/l; 4 h

US-EPA

absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:., damage of respiratory tract

Corrosive to respiratory system.

Acute dermal toxicity

absorption

Skin irritation

Rabbit

Result: Corrosive

(ECHA)

Causes severe burns.

Eye irritation

Rabbit

Result: Causes burns.

(ECHA)

Causes serious eye damage.

Risk of blindness!

Sensitization

Patch test: human

Result: positive

(IUCLID)

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Genotoxicity in vitro

Ames test

Result: positive

(IUCLID)

Carcinogenicity

Carcinogenic in animal experiments. (Lit.)

Teratogenicity

Teratogenic effect in animal experiments. (Lit.)

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CMR effects

Carcinogenicity:

May cause cancer. Positive evidence from human epidemiological studies.

Mutagenicity:

May cause genetic defects.

Reproductive toxicity:

Suspected of damaging fertility.

Specific target organ systemic toxicity - single exposure

May cause respiratory irritation.

Specific target organ systemic toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	Group 1: Carcinogenic to humans	
	chromium trioxide	1333-82-0
OSHA		
	chromium trioxide	1333-82-0
NTP	Known carcinogen.	
	chromium trioxide	1333-82-0
ACGIH	A1: Confirmed human carcinogen	
	chromium trioxide	1333-82-0

Further information

Chromium(VI) is highly toxic. It is absorbed via both the lungs and the gastrointestinal tract. Being strong oxidizers, chromates/ bichromates can cause burns and ulcerations on the skin and mucous membranes and also irritations in the upper respiratory tract. Poorly healing ulcers occur after wound contact. In predisposed persons the substance rapidly leads to sensitization and allergic reactions of the respiratory tract (risk of pneumonia!) and damage to nasal mucous membranes (under given circumstances perforation of the septum). After swallowing severe symptoms in the gastrointestinal tract such as bloody diarrhea, vomiting (aspiration pneumonia!), spasms, circulatory collapse, unconsciousness, formation of methemoglobin. Absorption may result in hepatic and renal damage. Inhalable chromium(VI) compounds gave clear evidence to be carcinogenic in animal experiments. Lethal dose (man): 0.5g. Antidotes: chelating agents such as EDTA, DMPS (Demaval(R)).

This substance should be handled with particular care.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 0.162 mg/l; 48 h (ECOTOX Database)

Persistence and degradability

No information available.

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Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Additional ecological information

Biological effects:

Harmful effect due to pH shift.

Further information on ecology

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number UN 1463
Proper shipping name CHROMIUM TRIOXIDE, ANHYDROUS
Class 5.1 (6.1, 8)
Packing group II
Environmentally hazardous --

Air transport (IATA)

UN number UN 1463
Proper shipping name CHROMIUM TRIOXIDE, ANHYDROUS
Class 5.1 (6.1, 8)
Packing group II
Environmentally hazardous --
Special precautions for user no

Sea transport (IMDG)

UN number UN 1463
Proper shipping name CHROMIUM TRIOXIDE, ANHYDROUS
Class 5.1 (6.1, 8)
Packing group II
Environmentally hazardous --
Special precautions for user yes
EmS F-A S-Q

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SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

chromium trioxide	1333-82-0	100 %
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SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients

chromium trioxide

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients

chromium trioxide

DEA List I

Not listed

DEA List II

Not listed

TSCA 12b

Ingredients

chromium trioxide	1333-82-0
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US State Regulations

Massachusetts Right To Know

Ingredients

chromium trioxide

Pennsylvania Right To Know

Ingredients

chromium trioxide

New Jersey Right To Know

Ingredients

chromium trioxide

California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Ingredients

chromium trioxide

California Prop 65 Components

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

Ingredients

chromium trioxide

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Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H271 May cause fire or explosion; strong oxidizer.

H301 + H311 Toxic if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H330 Fatal if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H340 May cause genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention

P201 Obtain special instructions before use.

P210 Keep away from heat.

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

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lenses, if present and easy to do. Continue rinsing.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Restricted to professional users.

Full text of H-Statements referred to under sections 2 and 3.

H271	May cause fire or explosion; strong oxidizer.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 11/04/2014

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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