

## 1 Identification

### Product identifier

**Product name:** **Chromium(VI) oxide**

**Stock number:** 10691

**CAS Number:**

1333-82-0

**EC number:**

215-607-8

**Index number:**

024-001-00-0

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

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757  
Email: tech@alfa.com  
www.alfa.com

**Information Department:** Health, Safety and Environmental Department

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS03 Flame over circle

Ox. Sol. 1 H271 May cause fire or explosion; strong oxidizer.



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 2 H310 Fatal in contact with skin.

Acute Tox. 2 H330 Fatal if inhaled.



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Muta. 1A H340 May cause genetic defects.

Carc. 1A H350 May cause cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

STOT RE 1 H372 Causes damage to the central nervous system, the lung and the blood through prolonged or repeated exposure. Route of exposure: Inhalation.



GHS05 Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

#### Hazard pictograms



GHS03 GHS05 GHS06 GHS08

### Signal word

**Danger**

### Hazard statements

H271 May cause fire or explosion; strong oxidizer.

H301 Toxic if swallowed.

H310+H330 Fatal in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.

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

H317 May cause an allergic skin reaction.

H340 May cause genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to the central nervous system, the lung and the blood through prolonged or repeated exposure. Route of exposure: Inhalation.

### Precautionary statements

P221 Take any precaution to avoid mixing with combustibles.

P283 Wear fire/flame resistant/retardant clothing.

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

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P320 Specific treatment is urgent (see on this label).  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**WHMIS classification**

C - Oxidizing materials  
D1A - Very toxic material causing immediate and serious toxic effects  
D2A - Very toxic material causing other toxic effects  
E - Corrosive material



**Classification system**

**HMIS ratings (scale 0-4)**  
**(Hazardous Materials Identification System)**

HEALTH	3	Health (acute effects) = 3
FIRE	0	Flammability = 0
REACTIVITY	3	Physical Hazard = 3

**Other hazards**

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**3 Composition/information on ingredients**

**Chemical characterization: Substances**

**CAS# Description:**

1333-82-0 Chromium(VI) oxide

**Concentration:** ≤100%

**Identification number(s):**

**EC number:** 215-607-8

**Index number:** 024-001-00-0

**4 First-aid measures**

**Description of first aid measures**

**General information**

Immediately remove any clothing soiled by the product.  
Remove breathing apparatus only after contaminated clothing has been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Do not induce vomiting; immediately call for medical help.

**Information for doctor**

**Most important symptoms and effects, both acute and delayed**

Causes severe skin burns.

Fatal if inhaled.

Fatal in contact with skin.

Toxic if swallowed.

Causes serious eye damage.

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

May cause an allergic skin reaction.

May cause cancer.

Suspected of causing cancer by inhalation.

May cause genetic defects.

Suspected of damaging fertility or the unborn child.

Causes damage to the central nervous system, the lung and the blood through prolonged or repeated exposure. Route of exposure: Inhalation.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**5 Fire-fighting measures**

**Extinguishing media**

**Suitable extinguishing agents** Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**For safety reasons unsuitable extinguishing agents** Halocarbon extinguisher

**Special hazards arising from the substance or mixture**

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

If this product is involved in a fire, the following can be released:

**Advice for firefighters**

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.

**Methods and material for containment and cleaning up:**

Use neutralizing agent.

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

**Prevention of secondary hazards:**

Acts as an oxidizing agent on organic materials such as wood, paper and fats

Keep away from combustible material.

**Reference to other sections**

See Section 7 for information on safe handling

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**Product name: Chromium(VI) oxide**

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See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

**Protective Action Criteria for Chemicals**

**PAC-1:** 0.29 mg/m<sup>3</sup>  
**PAC-2:** 5 mg/m<sup>3</sup>  
**PAC-3:** 30 mg/m<sup>3</sup>

**7 Handling and storage**

**Handling**

**Precautions for safe handling**

Handle under dry protective gas.  
Keep container tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation at the workplace.  
Open and handle container with care.

**Information about protection against explosions and fires:**

Substance/product can reduce the ignition temperature of flammable substances.  
This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

**Conditions for safe storage, including any incompatibilities**

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:**

Store away from flammable substances.  
Store away from reducing agents.  
Do not store with organic materials.  
Store away from metal powders.  
Store away from water/moisture.

**Further information about storage conditions:**

Store under dry inert gas.  
This product is hygroscopic.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Protect from humidity and water.

**Specific end use(s)** No further relevant information available.

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

**1333-82-0 Chromium(VI) oxide (100.0%)**

PEL (USA)	Long-term value: 0.005* mg/m <sup>3</sup> Ceiling limit value: 0.1** mg/m <sup>3</sup> *as Cr(VI) **as CrO <sub>3</sub> ; see 29 CFR 1910.1026
REL (USA)	Long-term value: 0.0002 mg/m <sup>3</sup> as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0.05 mg/m <sup>3</sup> as Cr; BEI
EL (Canada)	Long-term value: 0.025 mg/m <sup>3</sup> Ceiling limit value: 0.1 mg/m <sup>3</sup> as Cr; ACGIH A1, IARC 1

**Ingredients with biological limit values:**

**1333-82-0 Chromium(VI) oxide (100.0%)**

BEI (USA)	25 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Total chromium (fume)
	10 µg/L Medium: urine Time: increase during shift Parameter: Total chromium (fume)

**Additional information:** No data

**Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.  
Keep away from foodstuffs, beverages and feed.  
Remove all soiled and contaminated clothing immediately.  
Wash hands before breaks and at the end of work.  
Store protective clothing separately.  
Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

**Recommended filter device for short term use:**

Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

**Protection of hands:**

Impervious gloves  
Check protective gloves prior to each use for their proper condition.  
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Material of gloves** Nitrile rubber, NBR

**Penetration time of glove material (in minutes)** 480

**Glove thickness:** 0.11 mm

**Eye protection:**

Tightly sealed goggles  
Full face protection

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**Product name: Chromium(VI) oxide**

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Safety glasses with side shields / NIOSH (US) or EN 166(EU)  
**Body protection:** Protective work clothing.

**9 Physical and chemical properties**

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Crystalline  
**Odor:** Not determined  
**Odor threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

**Melting point/Melting range:** 196 °C (385 °F)  
**Boiling point/Boiling range:** 250 °C (482 °F) (dec)  
**Sublimation temperature / start:** Not determined

**Flash point:** Not determined  
**Flammability (solid, gaseous)** Contact with combustible material may cause fire.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Auto igniting:** Not determined.

**Danger of explosion:** Explosive when mixed with combustible material.

**Explosion limits:**

**Lower:** Not determined  
**Upper:** Not determined  
**Vapor pressure:** Not applicable.  
**Density at 20 °C (68 °F):** 2.7 g/cm<sup>3</sup> (22.532 lbs/gal)  
**Relative density** Not determined.  
**Vapor density** Not applicable.  
**Evaporation rate** Not applicable.  
**Solubility in / Miscibility with**  
**Water at 20 °C (68 °F):** 630 g/l  
**Partition coefficient (n-octanol/water):** Not determined.  
**Viscosity:**  
**dynamic:** Not applicable.  
**kinematic:** Not applicable.  
**Other information** No further relevant information available.

**10 Stability and reactivity**

**Reactivity**

May intensify fire; oxidizer.  
May cause fire or explosion; strong oxidizer.  
**Chemical stability** Stable under recommended storage conditions.  
**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.  
**Possibility of hazardous reactions**  
Reacts with reducing agents  
Reacts with flammable substances  
**Conditions to avoid** No further relevant information available.  
**Incompatible materials:**  
Reducing agents  
Flammable substances  
Organic materials  
Metal powders  
Water/moisture

**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:**

Fatal in contact with skin.  
Fatal if inhaled.  
Toxic if swallowed.  
Danger through skin absorption.  
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

**LD/LC50 values that are relevant for classification:**

Oral LD50 80 mg/kg (rat)

**Skin irritation or corrosion:** Causes severe skin burns.

**Eye irritation or corrosion:** Causes serious eye damage.

**Sensitization:**

May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.

**Germ cell mutagenicity:**

May cause genetic defects.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

**Carcinogenicity:**

May cause cancer.  
IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.  
ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.  
ACGIH A5: Not suspected as a human carcinogen: Not suspected as a human carcinogen on the basis of properly conducted epidemiologic studies in humans.  
Studies have sufficiently long follow-up, reliable exposure histories, sufficiently high dose, and adequate statistical power to conclude that exposure to the agent does not convey a significant risk of cancer to humans. Evidence suggesting a lack of carcinogenicity in experimental animals will be considered if it is supported by other relevant data.  
NTP-K: Known to be carcinogenic: sufficient evidence from human studies.  
(inhalation) EPA-A: human carcinogen: sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer.  
(inhalation) EPA-K: Known human carcinogens.  
(oral) EPA-D: Not classifiable as to human carcinogenicity; inadequate human and animal evidence of carcinogenicity or no data are available.  
(oral) EPA-CBD: Carcinogenic potential cannot be determined.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

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**Product name: Chromium(VI) oxide**

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**Reproductive toxicity:**

Suspected of damaging fertility or the unborn child.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.

**Specific target organ system toxicity - repeated exposure:**

Causes damage to the central nervous system, the lung and the blood through prolonged or repeated exposure. Route of exposure: Inhalation.

**Specific target organ system toxicity - single exposure:** No effects known.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability** No further relevant information available.

**Bioaccumulative potential** No further relevant information available.

**Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Very toxic for aquatic organisms

**Additional ecological information:**

**General notes:**

Do not allow material to be released to the environment without proper governmental permits.

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

Very toxic for aquatic organisms

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

**13 Disposal considerations**

**Waste treatment methods**

**Recommendation** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

**UN-Number**

**DOT, IMDG, IATA**

UN1463

**UN proper shipping name**

**DOT**

**ADR**

**IMDG, IATA**

Chromium trioxide, anhydrous  
1463 Chromium trioxide, anhydrous  
CHROMIUM TRIOXIDE, ANHYDROUS

**Transport hazard class(es)**

**DOT**



**Class Label ADR**

5.1 Oxidizing substances  
5.1, 6.1, 8



**Class Label IMDG**

5.1 (OTC) Oxidizing substances  
5.1+6.1+8



**Class Label IATA**

5.1 Oxidizing substances  
5.1/6.1/8



**Class Label**

5.1 Oxidizing substances  
5.1 (6.1, 8)

**Packing group**

**DOT, ADR, IMDG, IATA**

II

**Environmental hazards:**

Not applicable.

**Special precautions for user**

**EMS Number:**

**Stowage Category**

**Segregation Code**

Warning: Oxidizing substances

F-A,S-Q

A

SG6 Segregation as for class 5.1

SG16 Stow "separated from" class 4.1

SG19 Stow "separated from" class 7

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**Product name: Chromium(VI) oxide**

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**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.**

**Transport/Additional information:**

**DOT**  
**Quantity limitations** On passenger aircraft/rail: 5 kg  
On cargo aircraft only: 25 kg

**Marine Pollutant (DOT):** No

**IMDG**  
**Limited quantities (LQ)** 1 kg  
**Excepted quantities (EQ)** Code: E2  
Maximum net quantity per inner packaging: 30 g  
Maximum net quantity per outer packaging: 500 g

**UN "Model Regulation":** UN 1463 CHROMIUM TRIOXIDE, ANHYDROUS, 5.1 (6.1+8), II

**15 Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**Hazard pictograms**



GHS03 GHS05 GHS06 GHS08

**Signal word** Danger

**Hazard statements**

H271 May cause fire or explosion; strong oxidizer.  
H301 Toxic if swallowed.  
H310+H330 Fatal in contact with skin or if inhaled.  
H314 Causes severe skin burns and eye damage.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H317 May cause an allergic skin reaction.  
H340 May cause genetic defects.  
H350 May cause cancer.  
H361 Suspected of damaging fertility or the unborn child.  
H372 Causes damage to the central nervous system, the lung and the blood through prolonged or repeated exposure. Route of exposure: Inhalation.

**Precautionary statements**

P221 Take any precaution to avoid mixing with combustibles.  
P283 Wear fire/flame resistant/retardant clothing.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.  
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P320 Specific treatment is urgent (see on this label).  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.  
All components of this product are listed on the Canadian Domestic Substances List (DSL).

**SARA Section 313 (specific toxic chemical listings)**

1333-82-0 | Chromium(VI) oxide

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer**

1333-82-0 | Chromium(VI) oxide

**Prop 65 - Developmental toxicity**

1333-82-0 | Chromium(VI) oxide

**Prop 65 - Developmental toxicity, female**

1333-82-0 | Chromium(VI) oxide

**Prop 65 - Developmental toxicity, male**

1333-82-0 | Chromium(VI) oxide

**Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.  
For use only by technically qualified individuals.  
This substance is subject to a Significant New Use Rule (SNUR) promulgated under Section 5(a)(2) of the Toxic Substances Control Act (TSCA). See 40 CFR 721.  
This product is being sold for research and development use.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.**

This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**16 Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation/Revision:** Print date, revision date and version number are in the header of each page.

**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organisation  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)

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USA

**Product name: Chromium(VI) oxide**

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HMIS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)  
Ox. Sol. 1: Oxidizing solids – Category 1  
Acute Tox. 3: Acute toxicity – Category 3  
Acute Tox. 2: Acute toxicity – Category 2  
Skin Corr. 1A: Skin corrosion/irritation – Category 1A  
Eye Dam. 1: Serious eye damage/eye irritation – Category 1  
Resp. Sens. 1: Respiratory sensitisation – Category 1  
Skin Sens. 1: Skin sensitisation – Category 1  
Muta. 1A: Germ cell mutagenicity – Category 1A  
Carc. 1A: Carcinogenicity – Category 1A  
Repr. 2: Reproductive toxicity – Category 2  
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

USA