

CLIP, Chemical Laboratory Information Profile

"Only when you know the hazards, can you take the necessary precautionary measures."

Chromium(VI) oxide**CAS No.: 1333-82-0**

Synonyms: Chromium trioxide, Chromic acid, Chromic anhydride

Physical Properties

Red to violet solid deliquescent crystals.
 Vapor pressure at 20 °C: negligible
 Melting point: 197 °C
 Boiling point: 250 °C (decomposes)

Exposure Limits

OSHA PEL: 0.1 mg/m³ (as CrO₃)
 ACGIH TLV: 0.05 mg/m³ (as Cr)

Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
4	0	3	0	No	No	Combustible and flammable substances, other reducing agents, and with bases. Also with alkali metals and with nitric acid and nitrates.*

0: None (or very low); 1: Slight; 2: Moderate; 3: High; 4: Severe.

***Reactivity Hazards**

Chromium(VI) oxide is a strong oxidizing agent. It is a strong acid as well when dissolved in water. Typically, reactions with combustibles, flammables, other reducing agents and with bases are rapid and violent, even explosive, and often also resulting in fires that are difficult to extinguish. This compound decomposes when heated, forming the trivalent oxide and oxygen, which increases the fire hazard. Chromium(VI) oxide reacts vigorously with nitrates and with nitric acid, probably forming chromyl nitrates. See Bretherick's *Handbook of Reactive Chemical Hazards* for details and for other incompatibilities.

Cited as known to be or reasonably anticipated to be carcinogenic in NTP-9? Yes

Identified as a reproductive toxin in Frazier and Hage, *Reproductive Hazards of the Workplace?* Insufficient data

Typical symptoms of acute exposures:

Severe skin burns. In the eyes, pain, blurred vision, blindness. If inhaled, sore throat, coughing, labored breathing, lung edema. If ingested, sore throat, abdominal spasm, vomiting, diarrhea.

Principal target organ(s) or system(s):

Skin, respiratory system, kidneys.

Storage Requirements

Store with other poisons in a cool, dry, well-ventilated and locked location, away from bases, flammables, combustibles, and other reducing agents.

Additional Remarks

Symptoms of lung edema are not manifest immediately in victim who have inhaled chromium(VI) oxide dust or solution mist; some hours may elapse first; physical effort can exaggerate these symptoms. Rest is essential for persons exposed to excessive inhalation of dust particles or solution mist.

Notes**ReadMe**

This Chemical Laboratory Information Profile is *not* a Material Safety Data Sheet. It is a brief summary for teachers and their students that describes some of the hazards of this chemical as it is typically used in laboratories. On the basis of your knowledge of these hazards and before using or handling this chemical, *you need to select the precautions and first-aid procedures to be followed*. For that information as well as for other useful information, refer to Material Safety Data Sheets, container labels, and references in the scientific literature that pertain to this chemical.

Reproductive Toxins

Some substances that in fact are reproductive toxins are not yet recognized as such. For the best readily available and up-to-date information, refer to "DART/ETIC". See the TOXNET home page at <http://www.sis.nlm.nih.gov> and click on "Toxicology search". *Note that some of the data in DART/ETIC have not been peer-reviewed.* See also Linda M. Frazier and Marvin L. Hage, *Reproductive Hazards of the Workplace*; Wiley, 1998; and T. H. Shepard, *Catalog of Teratogenic Agents*, 9th ed.; Johns Hopkins University Press, 1998.

Abbreviations

ACGIH TLV—American Conference of Governmental Industrial Hygienists—Threshold Limit Value. C—Ceiling. CAS—Chemical Abstracts Service. mg/m³—milligrams per cubic meter. NA—Not applicable. NE—Not established. NI—No information. NTP-9—National Toxicology Program, Ninth Annual Report on Carcinogens. OSHA PEL—Occupational Safety and Health Administration—Permissible Exposure Limit. ppm—parts per million. STEL/C—Short-term exposure limit and ceiling.

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