

GHS Classification

ID261

Chromium trioxide

CAS 1333-82-0

Date Classified: May 24, 2006 (Environmental Hazards: Mar. 31, 2006)

Physical Hazards

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not applicable	-	-	-	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	-	-	-	Non-flammable (ICSC, 2003)
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Containing no chemical groups with explosive or self-reactive properties
9 Pyrophoric liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	-	-	-	Non-combustible (ICSC, 2003)
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible (ICSC, 2003)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	-	-	-	Stable to water (water solubility: 167.299Lb/100Lb (21degC)[converted to 167.299g/100g(21degC)], HSDB (2006))
13 Oxidizing liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
14 Oxidizing solids	Category 2	Flame over circle	Danger	May intensify fire; oxidizer	Classified as "Division 5.1: oxidizing substances" by UN Recommendations on the Transport of Dangerous Goods. It can, however, be included in Category 2 or 3, given the fact that it has subsidiary risks corresponding to Division 6.1 and Class 8 and is assigned to Packing Group II (UN#1493). The substance is placed in Category 2 from the viewpoint of safety.
15 Organic peroxides	Not applicable	-	-	-	Not organic compounds
16 Corrosive to metals	Classification not possible	-	-	-	Test methods applicable to solid substances are not available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Classification not possible	-	-	-	No data available
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	Based on the description in the report on rabbit skin irritation tests (CERI Hazard Data 97-18 (1998)): "severe irritation" (though it is unclear whether the results are those of 4-hour application), and the human evidence of "chemical burn and necrosis over a large area of the arm" after accidental exposure (ATSDR (2000)). The substance is thus considered to cause "skin corrosion." Although classified into 1A-1C, the substance should be placed in Category 1A from the viewpoint of safety, if further subclassification is needed.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the description in EU-RAR No.53 (2005) of the effects on human health: Accidental exposure to water-soluble Cr (VI) solution causes damage to the eyes; A number of case reports indicate corneal/conjunctival inflammation and severe symptoms such as corneal erosion and ulceration; Single and repeated exposure causes severe, persistent damage to the eyes and skin associated with the formation of ulcers. Chromic anhydride is classified into Category 1, according to the classification of chromium (VI) compounds into the same category. As for the health hazards, refer to the data on chromium and chromium compounds.
4 Respiratory/skin sensitization	Respiratory sensitization: Category 1 Skin sensitization: Category 1	(Respiratory sensitization) Health hazard (Skin sensitization) Exclamation mark	(Respiratory sensitization) Danger (Skin sensitization) Warning	(Respiratory sensitization) May cause allergic or asthmatic symptoms or breathing difficulties if inhaled (Skin sensitization) May cause allergic skin reaction	Respiratory sensitization: based on the description in CERI Hazard Data 97-18 (1998) of the human health effects: "Inhalation of fume causes bronchial asthma." Chromium is classified into "Respiratory Sensitizing Substance" by the ad hoc committee of the Japanese Society of Occupational Allergy, and "Respiratory Sensitizing Substance: Group 2" by the Japan Society for Occupational Health. These classifications, though not specifying chromic anhydride, seem to include chromium compounds. Chromic anhydride, which is a chromium compound, should thus cause respiratory sensitization. Skin sensitization: chromium is classified into "Skin Sensitizing Substance" by the ad hoc committee of the Japanese Society of Occupational Allergy, and "Skin Sensitizing Substance: Group 1" by the Japan Society for Occupational Health. These classifications, though not specifying chromic anhydride, seem to include chromium compounds. Chromic anhydride, which is a chromium compound, should thus cause skin sensitization. * There is a provision to the effect that "the category refers to the substance concerned and its compounds, but does not identify all substances causing respiratory/skin sensitization."
5 Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on the absence of data on multi-generation mutagenicity tests, germ cell mutagenicity tests in vivo and germ cell genotoxicity tests in vivo, and positive data on somatic cell mutagenicity tests in vivo (chromosome aberration tests), described in ATSDR (2000), IARC 49 (1999) and EHC 61 (1988).
6 Carcinogenicity	Category 1A	Health hazard	Danger	May cause cancer	Due to the fact that the substance is classified as Category 1 by EU (2005), Group 1 (as Chromium (VI)) by IARC (1990), Category K (as Chromium hexavalent (VI) compounds) by NTP, Category 1 (Chromium hexavalent (VI) compounds) by the Japan Society for Occupational Health.

7	Toxic to reproduction	Classification not possible	-	-	-	Insufficient data available As for the reproductive toxicity of Cr (IV), refer to potassium dichromate (CAS: 7778-50-9).
8	Specific target organs/systemic toxicity following single exposure	Classification not possible	-	-	-	No data available The acute toxicity of hexavalent chromium compounds manifests as "cough, yellow-green phlegm, dyspnea, pulmonary congestion, vomiting (yellow-green mucus), gastralgia, diarrhea, nausea, vomiting, hepatic damage, renal damage" (CERI Hazard Data 97-18 (1998)). Refer to the GHS classification result of potassium dichromate (ID 0262, CAS 7778-50-09).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs)	Based on the human evidence including "nasal septum perforation, bronchial asthma" (CERI Hazard Data 97-18 (1998)), and the evidence from animal studies including "nasal septum perforation, inflammation of trachea and bronchus, and squamous metaplasia." The effects were observed at dosing levels within the guidance value ranges for Category 1. The chronic toxicity of hexavalent chromium compounds manifests as "nasal mucosa, inflammation and ulcers in the pharynx and larynx, nasal septum perforation" (CERI Hazard Data 97-18 (1998)). Refer to the GHS classification result of potassium dichromate (ID 0262, CAS 7778-50-09).
10	Aspiration hazard	Classification not possible	-	-	-	No data available

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Classification not possible	-	-	-	Classification not possible due to lack of data
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	Classification not possible due to lack of data