

GHS Classification

ID381

1-Chloro-2,4-dinitrobenzene

CAS 97-00-7

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 classified	—	—	—	Cannot be classified due to lack of data on decomposition energy, though the substance contains nitro groups, with its oxygen budget calculated at 75 and the kick-off temperature of 250degC (Bretherick (J), 5th, 1998). Classified into Division 6.1 in accordance with the classification by the UN Recommendations on the Transport of Dangerous Goods (UN#0154, chlorodinitrobenzene (solid)).
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	—	—	—	Cannot be classified due to lack of data, though classified as "combustible" by ICSC (2000). Classified into Division 6.1, in accordance with the classification by the UN Recommendations on the Transport of Dangerous Goods (UN#3441, chlorodinitrobenzene (solid)).
8 Self-reactive substances and mixtures	Not classified	—	—	—	No data available, though containing nitro groups. Classified into Division 6.1, in accordance with the classification by the UN Recommendations on the Transport of Dangerous Goods (UN#3441, chlorodinitrobenzene (solid)).
9 Pyrophoric liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	—	—	—	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 432degC (ICSC, 2000)
11 Self-heating substances and mixtures	Classification not possible	—	—	—	Test methods applicable to liquid substances are not available (melting point: 54degC (ICSC, 2000), test temperature: 140degC)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	—	—	—	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not classified	—	—	—	Organic compounds containing oxygen bound to elements other than carbon and hydrogen. Classified into Division 6.1, in accordance with the classification by the UN Recommendations on the Transport of Dangerous Goods (UN#3441, chlorodinitrobenzene (solid)).
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "O-O-" structure
16 Corrosive to metals	Not classified	—	—	—	Classified into Division 6.1, in accordance with the classification by the UN Recommendations on the Transport of Dangerous Goods (UN#3441, chlorodinitrobenzene (solid)).

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Based on the rat LD50 (oral route) value of 640mg/kg (MOE Risk Assessment vol.3 (2004)).
1 Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Based on the rabbit LD50 (dermal route) value of 130mg/kg (CERI Hazard Data 2000-41 (2001)).
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 2	Exclamation mark	Warning	Causes skin irritation	Based on the description in the report on rabbit skin irritation tests (CERI Hazard Data 2000-41 (2001)): The substance produced "severe skin irritation." Although it is unknown whether the effects are reversible or not, the substance is placed in Category 2, given the fact that the results are those of 24- (not 4) hour application.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the evidence of "severe irritation" in the rabbit eye irritation tests (CERI Hazard Data 2000-41 (2001)). As it is unknown whether the effects are reversible or not, the substance is placed in Category 1 from the viewpoint of safety.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization) – (Skin sensitization) Exclamation mark	(Respiratory sensitization) – (Skin sensitization) Warning	(Respiratory sensitization) – (Skin sensitization) May cause allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the description in the report on the animal skin sensitization tests (CERI Hazard Data 2000-41 (2001)): "The substance causes skin sensitization." Also based on the evidence of skin sensitization in humans (CERI Hazard Data 2000-41 (2001)).
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/somatic cell mutagenicity tests in vivo and germ/somatic cell genotoxicity tests in vivo, and positive data on mutagenicity tests in vitro (reverse mutation tests and chromosome aberration tests), described in CERI Hazard Data 2000-41 (2001).
6 Carcinogenicity	Classification not possible	—	—	—	Cannot be classified given the insufficiency of data for use in classification along with the absence of existing classification.
7 Toxic to reproduction	Classification not possible	—	—	—	Insufficient data available

8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, blood system), Category 3 (respiratory tract irritation)	Health hazard and Exclamation mark	Danger Warning	Causes damage to organs (nervous system, blood system) May cause respiratory irritation (Respiratory tract irritation)	Based on the human evidence including "irritation to the eye/airway/skin, cyanosis of the lips/nails/skin, dizziness, headache, smothering feeling, nausea, vomiting, acute visual impairment," "may affect the blood system and produce methemoglobin" (MOE Risk Assessment vol.3 (2004)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (blood system) Category 2 (nervous system)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (blood system) May cause damage to organs through prolonged or repeated exposure (nervous system)	Based on the human evidence including "retrobulbar neuritis" (HSDB (2002)), "may affect the nervous system and cause visual impairment" (ICSC (J) (1999)), and the evidence from animal studies including "abnormal behaviour, congestion of the visible mucosa, dyspnea, decreases in hemoglobin concentration/RBC count, sulfhemoglobinemia" (MOE Risk Assessment vol.3 (2004)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2.
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)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 72 hours ErC50=0.14mg/L of the algae (Selenastrum) (MOE Eco-Toxicity Tests of Chemicals, 1999).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity is Category 1 and bio-accumulation is low (BCF<44(Existing Chemical Safety Inspections Data.)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.