

GHS Classification

ID138

3,3'-Dichlorobenzidine

CAS 91-94-1

Date Classified: Mar. 23, 2006 (Environmental Hazards: Feb. 10, 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	-	-	-	There are no chemical groups associated with explosive properties present in the molecules.
2 Flammable gases	Not applicable	-	-	-	Solid (GHS definition)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Solid (GHS definition)
5 Gases under pressure	Not applicable	-	-	-	Solid (GHS definition)
6 Flammable liquids	Not applicable	-	-	-	Solid (GHS definition)
7 Flammable solids	Classification not possible	-	-	-	No data available by regulated examination methods, though "Flammable" (ICSC (J) (1994))
8 Self-reactive substances and mixtures	Not applicable	-	-	-	There are no chemical groups associated with explosive or self-reactive properties present in the molecule.
9 Pyrophoric liquids	Not applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Not classified	-	-	-	Flash point: 350degC (ICSC (J), 1994)
11 Self-heating substances and mixtures	Classification not possible	-	-	-	No data available
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	The chemical structure of the substance does not contain metals or metalloids(B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At).
13 Oxidizing liquids	Not applicable	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Organic compounds containing chlorine (but not oxygen and fluorine) and the chlorine is chemically bonded only to carbon and hydrogen (but not to other elements).
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
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)	Not classified	-	-	-	Based on Rat LD50 value =7070mg/kg (CERI Hazard Data (2002), MOE Risk Assessment the 3rd volume (2004), IARC 29 (1982), ATSDR (1998) and about 7000mg/kg (ACGIH (7th, 2001)), it was set as the outside of Category.
1 Acute toxicity (dermal)	Not classified	-	-	-	Based on rabbit LD50 value =>8000mg/kg (CERI Hazard Data (2002)) and rabbit minimum lethal dose =>8000mg/kg (ATSDR (1998)), it was set as the outside of Category.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Solid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Classification not possible	-	-	-	There are a report that dermatitis with human occupational exposure (sources are limited to two reports) (the 3rd volume of MOE Risk Assessment(2004), CICAD 2 (1998), IARC 29 (1982), and ATSDR (1998)), and the potential skin sensitizations is suggested to be the cause of dermatitis (ATSDR (1998)). There is a data which suggests the possibility of primary skin irritation being low (CERI Hazard Data (2002)). But there is no animal data proving these, and data is insufficient, it cannot be classified.
3 Serious eye damage / eye irritation	Not classified	-	-	-	From description that even if applied to the rabbit eye, irritation was not seen (CERI Hazard Data (2002), CICAD 2 (1998), and ATSDR (1998)), and there was no report which indicated the eye irritation in the example of human exposure. So it was set as the outside of Category.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	Respirator: No data Skin: CERI Hazard Data (2002), MOE Risk Assessment vol. 3 (2004), CICAD 2 (1998), IARC 29 (1982) and ATSDR (1998) describe that dermatitis was found in the cases of human occupational exposures. However this is uncategorizable because of insufficient data for judging whether it is induced by irritation or sensitization.

5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	The substance was classified as Category 2. Because there are positive results from the chromosome aberration test using mammalian bone-marrow cells, which is an in vivo mutagenicity test using somatic cells, and the micronucleus test using mammalian erythrocytes (CERI Hazard Data (2002), CICAD 2(1998), ATSDR(1998)), and there are no positive results from in vivo genotoxicity tests in germ cells.
6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It is classified into the category 2 in EU. But it is classified into B-2 according to IARC and Japan Society for Occupational Health, into A3 according to ACGIH, B2 according to EPA, and into R according to NTP. So it was set as Category 2.
7	Toxic to reproduction	Classification not possible	-	-	-	No data available
8	Specific target organs/systemic toxicity following single exposure	Category 3 (respiratory tract irritation)	Exclamation mark	Warning	may cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)	There is the descriptions that it causes moderate pneumoemia (some irritation and moderate pulmonary congestion) by inhalation exposure to rat in ACGIH (7th, 2001), that the throat pain frequency is high in human exposure evidence in CERI Hazard Data Description (2002), and that it stimulates human respiratory tracts by short-term exposure in the 3rd volume of MOE Risk Assessment (2004). Therefore, it was classified into Category 3 (respiratory irritant).
9	Specific target organs/systemic toxicity following repeated exposure	Classification not possible	-	-	-	Classification not possible due to lack of data
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 96-hour 0.5mg/L of fishes (Bluegill), and others (CaPSAR, 1993).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Classified into Category 1, since acute toxicity was Category 1, not rapidly degrading (BOD: 1% (existing chemical safety inspections data)), though less bioaccumulative (BCF=213 (existing chemical safety inspections data)).