

GHS Classification

ID499

CAS 106-91-2

Physical Hazards

2,3-Epoxypropyl methacrylate

Date Classified: Aug. 22, 2006 (Environmental Hazards: Mar. 31, 2006)

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 "liquid" according to GHS definition
3 Flammable aerosols	Not applicable	—	—	—	Not aerosol products
4 Oxidizing gases	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
5 Gases under pressure	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
6 Flammable liquids	Category 4	—	Warning	Combustible liquid	The flash point is 84degC (open cup flash test) (HSDB (2006)), which is classified into Category 4
7 Flammable solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Classification not possible	—	—	—	Classification not possible due to lack of data, though containing unsaturated bonds (olefin) and a distorted ring structure
9 Pyrophoric liquids	Classification not possible	—	—	—	No data available
10 Pyrophoric solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Classification not possible	—	—	—	Test methods applicable to liquid substances are not available.
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	—	—	—	Organic compounds containing oxygen (but not fluorine and chlorine), with the oxygen bound to carbon and hydrogen (but not to other elements)
14 Oxidizing solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	—	—	—	No data available

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 500mg/kg representing the lower of the two testing data, 597mg/kg (SIDS (2002) and 500mg/kg (MOE Risk Assessment vol. 3 (2004)).
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	Based on the rabbit LD50 (dermal route) value of 470mg/kg representing the lower of the two testing data, 480mg/kg (SIDS (2002)) and 470mg/kg (CERI Hazard Data 2000-38 (2001)).
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is "liquid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: vapour)	Classification not possible	—	—	—	Classification not possible due to data gaps and deficiencies, with the rat LC50 (4 hour inhalation) value of 0.26mg/L (equivalent to 45ppm) (MOE Risk Assessment vol. 3 (2004)) and LC0 (4 hour inhalation) of 2.39mg/L (SIDS (2002)).
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 (4 hour application) (SIDS (2002)): "The substance induced moderate to severe skin irritant reactions such as necrosis with mild to moderate edema." Also based on the descriptions of irritation tests: "Skin responses included redness, edema and bulla on days 1-2, subcutaneous bleeding and ulcer formation on day 3, hardening and thickening of the epidermis with fissure and hyperpigmentation on day 5." "Pathological changes included epidermal degeneration and necrosis, disappearance of cell boundaries, occurrence of pinkish blots, dermal hemorrhage, infiltration of lymphocytes, and abscess formation" (though these results are not those of 4 hour application). Although classified into Category 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 the report on rabbit eye irritation tests (SIDS (2002)): "The substance produced moderate to severe corneal damage, with no recovery observed over the subsequent 7 days." Also due to the fact that it is classified into Category 1A-1C for skin irritation. The substance is thus considered severely irritating to the eye.
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 an allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the positive results in allergy reaction tests on guinea pigs (SIDS (2002)) along with two epidemiological case reports of positive reactions in humans (MOE Risk Assessment vol. 3 (2004)).
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 and germ cell mutagenicity tests in vivo, positive data on somatic cell mutagenicity tests in vivo (micronucleus tests), and no positive data on germ cell genotoxicity tests in vivo (UDS tests), described in Report by the Ministry of Health, Labour and Welfare (1997), SIDS (2002), NTP DB (Access on Mar., 2006) and CERI Hazard Data 2000-38 (2001).
6 Carcinogenicity	Classification not possible	—	—	—	No data available

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of decreased fertility and increased incidence of resorption at doses causing parental toxicity, described in Report by the Ministry of Health, Labour and Welfare (1997), MOE Risk Assessment vol. 3 (2004) and SIDS (2002).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs (respiratory organs)	Based on the evidence from animal studies: "changes in the lung, thorax and respiration" following inhalation exposure (SIDS (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system, cardiovascular system, liver, kidneys, respiratory organs)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (nervous system, cardiovascular system, liver, kidneys, respiratory organs)	Based on the evidence from animal studies "damage to the central nervous system, cardiovascular system, liver and kidneys," "hyperplasia of the nasal tissues/epithelium of the respiratory tract" (SIDS (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 96 hours LC50=2.8mg/L of the fish (<i>Oryzias latipes</i>) (MOE <i>eco-toxicity tests of chemicals</i> (1996) and others.).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since there was rapidly degrading (the decomposition by BOD: 94% (Existing Chemical Safety Inspections Data)) and the bio-accumulation was low (log Kow=0.81 (PHYSPROP Database, 2005)), it was classified into Not classified.