

## GHS Classification

**ID98**

**2,3-epoxypropan-1-ol**

**CAS 556-52-5**

Date Classified: Apr. 20, 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	–	–	–	There are no chemical groups associated with explosive properties present in the molecules.
2 Flammable gases	Not applicable	–	–	–	Liquid (GHS definition)
3 Flammable aerosols	Not applicable	–	–	–	Not aerosol products
4 Oxidizing gases	Not applicable	–	–	–	Liquid (GHS definition)
5 Gases under pressure	Not applicable	–	–	–	Liquid (GHS definition)
6 Flammable liquids	Category 4	–	Warning	Combustible liquid	Category 4 because of its flash point: 72degC
7 Flammable solids	Not applicable	–	–	–	Liquid (GHS definition)
8 Self-reactive substances and mixtures	Classification not possible	–	–	–	This product including a ring with distortion (epoxides), and if this contacts metal salts etc., it is known to cause a very intense polymerization reaction. But there is no data, it cannot be classified.
9 Pyrophoric liquids	Not classified	–	–	–	Flash point: 415degC (ICSC (J), 1994)
10 Pyrophoric solids	Not applicable	–	–	–	Liquid (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	–	–	–	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	–	–	–	Organic compounds containing oxygen (but not chlorine and fluorine) chemically bonded only to carbon and hydrogen (but not to other elements).
14 Oxidizing solids	Not applicable	–	–	–	Liquid (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	It was set as Category 4 based on rat LD50 = 433mg/kg calculated from the three tests with rats (CERI Hazard Data (2002) and PATTY (5th, 2001)).
1 Acute toxicity (dermal)	Category 4	Exclamation mark	Warning	Harmful in contact with skin	It was set as Category 4 based on rabbit LD50= 1980mg/kg (ACGIH (2001), CERI Hazard Data (2002)).
1 Acute toxicity (inhalation: gas)	Not applicable	–	–	–	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 3	Skull and crossbones	Danger	Toxic if inhaled	The saturated vapor pressure concentration of this product is 1180ppm, and the 4 hour rat inhalation test (CERI Hazard Data (2002)) was conducted with steam. It was classified as Category 3 based on LC50= 580ppm based on the test.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	–	–	–	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Since there are descriptions of moderate irritation on rabbits (ACGIH (2001), PATTY (5th, 2001)), it was classified as Category 2.
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Although there were severe irritation and corneal disorders to eye of rabbit, it is not irreversible damage (ACGIH (2001), PATTY (5th, 2001)). So it was set as Category 2A.
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)–	No data available
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 by the guidelines. Based on the facts that there are positive results from the somatic cell in vivo mutagenicity tests (the in vivo micronucleus and chromosome aberration tests in mice and rats) (CERI Hazard Data (2002), ACGIH (2001), DFGOT vol.20 (2003), PATTY (5th, 2001)), and that there is no positive result from germ cell in vivo genotoxicity tests.

6	Carcinogenicity	Category 1B	Health hazard	Danger	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It was set as Category 1B based on being classified into 2A in IARC (IARC77 (2000)) and into 2A in Japan Society for Occupational Health (Japan Society for Occupational Health recommendation (2004)), and into 2 in EU (EU-Annex 1 (2005)).
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	There is no description about the toxicity to parental animals. However, there are descriptions of testicular atrophy (DFGOT vol. 20 (2003, ACGIH (2001))), decreased fertility (CERI Hazard Data Description (2002)), resorption, death and growth inhibition of embryo and fetus (IARC 77 (2000)), (CERI hazard data (2002)). Therefore, it was classified into Category 2.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, respiratory)	Health hazard	Danger	Cause damage to organs (central nervous system, respiratory)	It is mentioned, "effects on the central nervous system are reported, and irritant properties to upper respiratory organs are shown" in humans (CERI Hazard Data (2002)). There are reports of irritation to lungs, pneumonia, pulmonary emphysema in animals (ACGIH (2001)), and the dosages required for the development of these disorders are not mentioned, but it is estimated that they developed at dosages around the LD50 values (1.36mg/L, 1.78mg/L) or less. Such doses are within the range of the guidance values for Category 1. The substance was classified as Category 1 (central nervous system, respiratory system) based on these results.
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (central nervous system, liver, spleen)	Health hazard	Warning	May cause damage to organs (central nervous system, liver, spleen) through prolonged or repeated	In rat and mouse, at the dosage within the guidance value range of Category 2 (ten to 100 mg/kg), it was classified into Category 2 (central nervous systems, liver, spleen) based on the descriptions of encephalic nerves demyelination, fibrillization of spleen, and the coagulative necrosis of liver (CERI Hazard Data (2002)).
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 3	–	–	Harmful to aquatic life	It was classified into Category 3 from 96-hour EC50=53.3mg/L of algae (Selenastrum) (CERI Hazard Data, 2002).
11 Hazardous to the aquatic environment (chronic)	Not classified	–	–	–	Since rapidly degrading (BOD: 85% (existing chemical safety inspections data)), and less bio-accumulative (log Kow=-0.95 (PHYSPROP Database, 2005)).