

GHS Classification

ID107

Glutaraldehyde

CAS 111-30-8

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	-	-	-	No data available
9 Pyrophoric liquids	Not classified	-	-	-	Not combustible (indicated as ICSC (2000).) The ignition points is 225 degC (CERI Hazard Data (2000)).
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible (ICSC, 2000)
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 (but not to other elements).
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	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 3	Skull and crossbones	Danger	Toxic if swallowed	Category 3 based on SPECIES: Rat; ENDPOINT: LD50; VALUE: 149 mg/kg (calculated from 23 of LD50 values)
1 Acute toxicity (dermal)	Category 4	Exclamation mark	Warning	Harmful in contact with skin	It was set as Category 4 based on the calculation value of 1100mg/kg calculated from 6 rabbit LD50 values.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	It was classified as Category 1 based on 23.5ppm, the lower value of the two LC50. Since LC50 was less than 90% of saturated vapor pressure concentration, gaseous (ppm) Category was used.
1 Acute toxicity (inhalation: dust, mist)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	Category 2 because of ENDPOINT: LC50; VALUE (lower): 0.48 mg/L
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	In the skin irritation test on rabbits, not only erythema and dropsy but necrosis are found all six rabbits with concentrations of 10% or more (NICNAS (1994)). Furthermore, since it is described to be "highly irritating" after 1-hour exposure and "corrosive" after 4-hour exposure in another study (DFGOT vol.8 (1997)), it was classified as Category 1A-1C. In addition, there are a large number of reports on skin irritations and dermatitis from occupational exposure on humans, especially among hospital related persons (NICNAS (1994)).
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	In eye irritation test with rabbit, the severe and continuous stimulus accompanied by a necrosis to the conjunctival was acknowledged, and it continued for two weeks with the half of the animals (NICNAS (1994)). Moreover, in another study, corneal opacity got worse three days afterward (NICNAS (1994)). It was set as Category 1 based on these statement. In addition, the example of exposure by the accident which was accepted conjunctiva inflammation, a palpebral edema, heliophobe, etc. by humans is reported (ACGIH (2001)).

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 allergy or asthma symptoms or breathing difficulties if inhaled; (Skin sensitization)May cause allergic skin reaction	[Respiratory sensitization] There are several reports that humans showed rhinitis, asthma with breathing difficulties, or asthma-like symptoms exposed by this substance (NICNAS (1994)) and a report that concludes that this product caused an occupational asthma based on a bronchial hypersensitive test (ACGIH (2001)). Moreover, the Japan Society for Occupational Health (JSOH advice (2005)) and the Japanese Occupational and Environmental Allergology Society (ALGY society, list of (sensitizing) substances (proposal), p95) listed this as a respiratory tract sensitization and a sensitizing chemical substance, respectively. Therefore, we classified this as Category 1. In addition, animal testing cannot confirm positive findings (NICNAS (1994)). [Skin sensitization] There are several reports that health care workers, especially in hospitals and clinics, develop contact dermatitis and that positive reactions are confirmed by patch tests and all are believed to be allergic reactions (NICNAS (1994), DFGOT vol.8 (1997)). In addition, every skin sensitization test with various kinds of methods using guinea pigs, i.e. "Maximization test", "modified Magnusson-Kligman test" and "Buehler test" resulted positive (NICNAS (1994), ECETOCT77 (1999)). Skin sensitization was classified into Category 1 based on the above information.
5	Germ cell mutagenicity	Not classified	-	-	-	Dominant lethal tests in mice (in vivo multi-generation mutagenicity tests), micronucleus tests using mouse peripheral blood cells and chromosome aberration tests using rat bone-marrow cells (in vivo mutagenicity tests using somatic cells) have been done. Because all the results of these tests are negative (NICNAS (1994)), the substance was regarded as outside the categories.
6	Carcinogenicity	Not classified	-	-	-	Based on the classification of A4 (1997) by ACGIH, it was set as the outside of Category. There is no statement of the classification by other evaluation organizations.
7	Toxic to reproduction	Not classified	-	-	-	As the result of rabbit and mouse oral administration in organogenetic period, it is observed no adverse effects for fetal development including teratogenesis (NICNAS (1994), DFGOT vol.8(1997)). Furthermore, since although weight loss was observed in mother animal and the born child, the adverse effects on reproduction in two-generation administration to rats were not observed (NTP TR490 (1999)), it was out of the Category.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system); Category 3 (respiratory tract irritation)	Health hazard; Exclamation mark	Danger; Warning	Cause damage to organs (central nervous system); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)	The substance was classified as Category 1 (central nervous system). Because central symptoms, such as inertia, delay in righting reflex and decrease of motor ability, were observed after a single oral exposure of 50 – 200mg/kg or inhalation exposure (fumes) of 10.6 – 42.7ppm in rats (NICNAS (1994)). The substance was classified as Category 3 (airway irritant). Because there is a report of an human epidemiological study indicating a clear relationship between irritation of the upper airway and occupational (hospital) environmental concentration (DFGOT vol.8(1997)), and there are reports of symptoms associated with airway irritation, such as low respiratory rate and coagulation of original squamous epithelium as the results from inhalation tests in rats and mice (NICNAS (1994), ACGIH (2001), DFGOT vol.8 (1997)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory tract)	Health hazard	Danger	Causes damage to organs (respiratory tract) through prolonged or repeated exposure	In the test which carried out inhalation exposure to rat and mouse for 13 weeks, pathological changes, such as a necrosis and inflammation in the respiratory tract(the nose, the larynx and tracheal gill) are observed(NTP TR490 (1999)). Moreover, change of the upper airways, such as vestibular neutrophilic infiltrate, destruction and fusion of turbinate are observed in another similar test, but histologic changes are not observed in any parts other than respiratory tract (ACGIH (2001)). These change was observed at 0.5–1ppm, since there are fatal cases it is considered as significant toxic changes, and it was classified into Category 1 (respiratory tract) as compared with the guidance value. In addition, such effect on the respiratory tract is not observed in oral administration (NICNAS (1994)).
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 48-hour LC50=0.35mg/L of Crustacea (Daphnia magna), and others (SIDS, 1998).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since rapidly degrading (the decomposition of TOC: 86% (Existing Chemicals Safety Check Data)), and supposed less bio-accumulative (log Kow=-0.18 (PHYSPROP Database, 2005)).