

GHS Classification

ID1002

Diethyl sulfate

CAS 64-67-5

Date Classified: Jul. 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 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	Not classified	-	-	-	Flash point: >93degC
7 Flammable solids	Not applicable	-	-	-	Liquid (GHS definition)
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 classified	-	-	-	Flash point: 436degC (ICSC (J), 1999)
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 classified	-	-	-	UNRTDG Class: 6.1
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Not classified	-	-	-	UNRTDG Class: 6.1

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	Rat LD50 value: 880mg/kg (CERI Hazard Data, 1996, DFGOT vol.20, 2003), 350mg/kg (DFGOT vol.20, 2003), 350-1000mg/kg (IARC 54, 1992). Calculated based on the data above. Since the calculated values was 539.2mg/kg, it was classified to category 4.
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	It was set as Category 3 based on rabbit LD50 value: 708mg/kg (CERI Hazard Data, 1996) and 600mg/kg (DFGOT vol.20, 2003, IARC 54, 1992).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	There is description that death was not observed with rat 4-hour exposure to 250ppm (equivalent 1.57mg/L) in the inhalation exposure test (DFGOT (vol.20, 2003)), but there was no other exposure data to vapor, and since Category could not be specified only with this data. So it cannot be classified due to data insufficiency.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	There is description that the example of all six rats died within 14 days by 500ppm 4-hour exposure (equivalent 3.15 mg/L) in the inhalation exposure test (DFGOT (vol.20, 2003)). But there was no other exposure data in mists and the category could not be specified only by this data. Therefore, it cannot be classified since data is insufficient.
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	From description that the necrosis arose by application on the skin of the rabbit (CERI Hazard Data (1996) and DFGOT (vol.20, 2003)), it was judged that there was caustic and it was set as Category 1A-1C.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Since it had skin corrosiveness, it was classified as Category 1.
4 Respiratory/skin sensitization	Classification not possible; Skin sensitization: Classification not possible	-	-	-	No data available
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Since there is a positive result (IARC 71, 1999; DFGOT vol.20, 2003) by the dominant lethal test using the mouse which is the in vivo multigeneration mutagenicity test using a germ cell, it is set as Category 1B.

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)	Since it was classified into group 2A (IARC 71, 1999) in IARC, 2A in Japan Assoc. of Industrial Health (industrial hygiene academic society recommendation, 2005), category 2 (EU-Annex I, 2006) in 2005 in EU and R (NTP RoC 11th, 2005) in NTP, it was considered as Category 1B.
7	Toxic to reproduction	Classification not possible	-	-	-	No data available
8	Specific target organs/systemic toxicity following single exposure	Category 2 (respiratory organs)	Health hazard	Warning	May cause damage to organs (respiratory organs)	Although there are no specific case reports, the substance was classified as Category 2 (respiratory organs). Because it is reported in ICSC (J) (1999) and SITTING (4th, 2002) that it has irritant and corrosive properties to airways, and that the inhalation of the aerosol substance form may cause pulmonary edema.
9	Specific target organs/systemic toxicity following repeated exposure	Classification not possible	-	-	-	No data available
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 LC50=20mg/L of fishes (Rainbow trout) (IUCLID, 2000).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since rapidly degrading (BOD: 69% (existing chemical safety inspections data)), and less bio-accumulative (log Kow=1.14 (PHYSPROP Database, 2005)).