

GHS Classification

ID673

Ethanol, 2-butoxy-

CAS 111-76-2

Date Classified: May 24, 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	-	-	-	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	Flash point: 61-62degC (Merck 13th, 2001)
7 Flammable solids	Not applicable	-	-	-	Liquid (GHS definition)
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Containing no chemical groups with explosive or self-reactive properties present
9 Pyrophoric liquids	Not classified	-	-	-	By the description that the ignition points is 240 degC (Hommel (1991)), it is over 70 degC.
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 chlorine and fluorine (but not oxygen) and these elements are 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	-	-	-	Diluent type A >=60%. Available oxygen
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	Rat LD50=1746 mg/kg (SIDS 1997). As date of rat, 1746 mg/kg, 2410 mg/kg (male), and 1950 mg/kg (female) were corresponded (SIDS 1997). But in consideration of that 1950 mg/kg (female) is not the pure line animal data and an old thing as 1966, it was excluded. From remained two examinations of male, low value of 1746 mg/kg was adopted.
1 Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Rabbit LD50 = 135mg/kg (calculation value) (SIDS 1997). [As data of rats or rabbits, 610mg/kg, 99mg/kg, and 435mg/kg (all are rabbits) corresponded (SIDS 1997), and a calculated value was LD50 = 135mg/kg.]
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	Rat LC50 (4h) was classified as Category 2 based on male: 2.4mg/L (486ppm), and female: 2.2mg/L (450ppm) (SIDS (1997)). Since LC50 was lower than 90% of saturated vapor pressure concentration (1158ppm), the gaseous classification Category was applied.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	According to the results of 5 examinations that are made applicable to a classification ('no irritating', 'slightly irritating', 'irritating', 'irritating', and 'irritating') (SIDS (1997)), irritation was seen in four examinations. There is also description of serious erythema accompanied by crust and drowsy on three examples among six in one of the examinations (SIDS (1997)). From what mentioned above, it was classified as Category 2. In addition, it was reported to cause erythema and contact dermatitis on a sweeper who used the floor removing agent that contains high concentrations of this product (SIDS (1997)).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Severe irritation is acknowledged by multiple studies using the rabbit (SIDS (1997), ECLTOCT1146 (1996)). On the other hand, it is described that although corneal opacity is also sometimes caused with a painful irritation in humans, the symptom is generally recovered within several days (DFGOTvol.6 (1986)). It was set as Category 2A based on these
4 Respiratory/skin sensitization	respiratory sensitization: Classification not possible; Skin sensitization: Not possible	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	[respiratory sensitization] No data. [Skin sensitization] Based on the two negative results of the Maximization test with guinea pigs(SIDS (1997)), and the result of repeated insult patch tests in humans showing [having no skin sensitization (SIDS (1997))], it was put outside of the Category.

5	Germ cell mutagenicity	Not classified	-	-	-	A negative result is obtained in a somatic cell in vivo mutagenicity test (micronucleus test which used the bone marrow cells of the mouse and the rat), (SIDS (1997), CICAD 10 (1998)), and the increase of micronucleus sister chromatid exchanges is not acknowledged in the human epidemiologic survey (ATSDR (1998)). Based on these results, we classified it as Out Of Category.
6	Carcinogenicity	Not classified	-	-	-	It was classified into 3 according to IARC (2004), into A3 according to ACGIH (2003) and into CBD according to EPA (1996), respectively. And the category varies with organizations. Therefore, it carried out the outside of category according to the category 3 by IARC which assessment year is the latest.
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Since there is description that it is observed of adverse effects in development as decrease implantation count and increase embryo resorptions etc. and at the same time of occurring general toxicity as decrease weight gains, change of organs weight and changes in blood parameter on maternal animals in pregnant rat and rabbit organogenetic period exposure test (SIDS (1997)), it was classified into class 2. In addition, although reference is made to the risks of development of cleft palate in a human epidemiologic survey, the relationship with this substance is not clear (PATTY (5th, 2001)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, blood system, kidneys, liver); Category 3 (respiratory tract irritation)	Health hazard; Exclamation mark	Danger; Warning	Cause damage to organs (central nervous system, blood system, kidneys, liver); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)	In animals, the effect on the erythrocytes is characteristic (SIDS (1997)), but in human, there is the reports not only about the effect to blood such as the decrease of hemoglobin, erythrocytes, and hemoglobinuria, but about the symptoms such as coma, vertigo, dyspnoea, metabolic acidosis, hematuria, unusual liver function (SIDS (1997), PATTY (5th, 2001)). And there is the case which leads to hospital admission (SIDS (1997)). Moreover, the effect to central nervous systems, blood, kidney, liver is mentioned (ICSC (2003)). Considering all the various information together, it is classified into Category 1 (central nervous system, blood, kidney, liver). On the other hand, there is the statement about "a irritation of nose and throat" (SIDS (1997)) in human inhalation test, and the statement about "the irrecurrent rritation to respiratory, and a dry cough" in another case paper (HSDB (2004)). So it is classified into Category 3 (respiratory irritation).
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (blood)	Health hazard	Warning	may cause damage to organs (blood) through prolonged or repeated exposure	Although there is a report about blood parameter changes after repeated exposure to humans (CaPSAR (1999), HSDB (2004)), the report in particular about serious toxic influence is not found. It was classified to as Category 2 (blood) with reference to the guidance value, and as in the animal studies, toxic effects is admitted to be to blood (red blood cells) in case of inhalation exposure (SIAR 1997, the collection 99-17 of hazard data, IUCLID 2000).
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-hour LC50=5.4mg/L of Crustacea (glass shrimp), and others (CICAD10, 1998).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since rapidly degrading (BOD: 96% (existing chemical safety inspections data)), and less bio-accumulative (log Kow=0.83 (PHYSROP Database, 2005)).