

GHS Classification

ID662

Ethanol

CAS 64-17-5

Date Classified: Mar. 23, 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 2	Flame	Danger	Highly flammable liquid and vapour	Category 2 because of its flash point: 13degC and boiling point: 78.5degC. UNRTDG No. 1170, Class: 3, PGI or III
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	-	-	-	Since the ignition points was 422.78 degC (ACGIH (2001)) (> 70 degC), it carried out the outside of Category.
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	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	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Not classified	-	-	-	UNRTDG No.1170, Class: 3

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Not classified	-	-	-	It was set as the outside of Category by the statement of "rat oral LD50=6.2-17.8 g/kg bw.>5 g/kg bw" (DFGOT vol.7 (1996, p148) and Patty (5th, 2005, p385)).
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Not classified	-	-	-	Since LC 50 = 20000ppm/10H for rat inhalation (RTECS (2004)) is less than ethanol saturated vapor pressure concentration of 56580ppm at 20degC, it is considered to be an inhalation test with steam. Furthermore, based on 20000ppm/10H*sqrt(10)/sqrt(4)= 31600ppm/4h >12500ppm (gas: 5000ppm (Category 4) *2.5), it was classified as out of Category.
1 Acute toxicity (inhalation: dust, mist)	Not classified	-	-	-	"Rat inhalation LC50 (4h) = about 63000ml/m3 = 63000ppm (based on the definition of DFG. DFGOT (1996))". Since it was over the ethanol saturated vapor pressure pressures concentrations of 56580ppm in 20degC, it was classified as an inhalation test by mist. Furthermore, based on 63000ppm*1.88mg/m3 = 118mg/L >12.5mg/L (mist 5mg/L(mist 4 Category) *2.5), it considered as the outside of Category.
2 Skin corrosion / irritation	Not classified	-	-	-	It was classified as out of Category by the statement of "not being stimulative in the test according to OECD TG404 and American guidelines" (DFGOT (1996)).
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Based on statements of "by the test according to OECD TG405 and Draize test, it was classified with moderate" (DFGOT (1996)), and "the injury of an anterior epithelium of cornea, and conjunctival injection in humans recover in 1 or 2 days" (ACGIH (2001)), it was set as Category 2A-2B.
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)-	Skin sensitization: Although there are statements of skin sensitization that there are case reports of contact dermatitis caused by the allergic reaction to alcohol in humans(DFGOT (1996)), as there are cases in which cross reactions with other first class or second class alcohol may be seen in humans and no significant skin sensitization is identified in animal tests, the description that Aethanol has the skin sensitization cannot be fully supported with data. (ACGIH (2001), DFGOT (1996), IUCLID (2000)). Therefore, it was decided that the skin sensitization could not be classified due to the absence of sufficient data. Respiratory sensitization: Although there are case reports on humans, such as asthmatic inducement by an asthmatic's alcoholic suction, it is not considered that the origin is an allergic reaction" (DFGOT (1996)). However, since the knowledge about the inhalation sensitization in the other humans and data on inhalation sensitization tests of animals are not found, it was decided that it could not be classified due to insufficiency of data.

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)	We classifies it as Category 1B. Based on the report of dominant fatality in the rat and the mouse, and on the report of the heteroploidy induction in the mouse productive cells (DFG (1999), IARC (1988)).
6	Carcinogenicity	Not classified	-	-	-	It has classified into the group 1 according to IARC as "carcinogenic is in humans as a tonsil paint." This acknowledges which the causal relationship of the esophagus system cancer, liver cancer and an alcoholic drinks, based on numerous epidemiological studies of the humans who take in an alcoholic drinks habitually (DFGOT (1996)). On the other hand, ACGIH has classified ethanol into A4 (the substance which cannot be classificationed into human carcinogenicity, ACGIH (1996)) mainly as a hazardous property factor in work environment. Here, the hazardousness of alcoholic beverages as luxury grocery items was not assessed and classified, but it thought that the toxicity of ethanol was assessed. Therefore, it carried out the outside of Category according to A4 classified by ACGIH and technical guide.
7	Toxic to reproduction	Category 1A	Health hazard	Danger	May damage fertility or the undorn child	It is classified into the Category 1A because it is reported that many adverse effect as fetal malformation etc. to human embryo by habitual large intakes of alcohol (DFGOT (1996)).
8	Specific target organs/systemic toxicity following single exposure	Category 3 (respiratory tract irritation, narcotic)	Exclamation mark	Warning	May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation, narcotic)	There is the description that "the oral ingestion of ethanol may effect to central nervous systems, may cause the headache, fatigue, the fall of concentration (ICSC (2000)), and may cause death in the case of acute intoxication in human"(DFGOT (1996)), and the description that "inhalation by 5000ppm (9.4mg/L) causes the respiratory irritation, stupor, pathological sleep in human"(ACGIH (2001)). So it is classified into Category 3 (respiratory irritation, anesthetic action)
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver); Category 2 (nervous system)	Health hazard	Danger	causes damage to organs (liver) through prolonged or repeated exposure; May cause damage to organs (nervous system) through prolonged or repeated exposure	"A damage is caused in almost all organs of humans by long-term extensive alcohol ingestion, and the target organ which has a most harmful effects is liver. The disorder started the fatty degeneration and finished in the hepatic cirrhosis after affecting necrotic and fibrillization.(DFGOT (1996))." According to this statement, it was classified to Category 1. Moreover, it was classified to as Category 2 (nerve) based on the statement of "withdrawals symptoms of alcoholics (symptoms of tremor, epilepsy, mental confusions)" (HSDB, (2003)).
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)	Not classified	-	-	-	It carried out the outside of Category from 48-hour LC50=5463.9mg/L of Crustacea(Daphnia magna) (ECETOC TR91, 2003).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since not water-insoluble (water solubility=1.00*106mg/L(PHYSROP Database, 2005)) and acute toxicity is low.