

## GHS Classification

**ID913**

**Butan-2-ol**

**CAS 78-92-2**

Date Classified: Mar. 23, 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 3	Flame	Warning	Flammable liquid and vapour	Flash point: >=23degC and <=60degC
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: 390degC (Hommel, 1991 Card No.54)
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	UNRTDG Class: 3
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 Class: 3

## Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 5	-	Warning	May be harmful if swallowed	Rat LD50 value =6500mg/kg (EHC 65 (1987)) ACGIH (2002), DFGOT vol.19 (2003). Based on PATTY (4th, 1994), Recommendation of Sanei Academy(1993), and 2200mg/kg (DFGOT vol.19 (2003)). Based on the data above, the lower value was applied to be classified to category 5.
1 Acute toxicity (dermal)	Not classified	-	-	-	From the description that death was not observed at 2000mg/kg in the dermal administration test using rabbits (DFGOT vol.19 (2003)), it was set as the outside of Category.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	Classification not possible due to lack of data
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Not classified	-	-	-	Since it was described that there was no skin irritation in the test using the rabbit, and there was no report that indicated skin irritation in the example of human exposure (EHC 65 (1987), ACGIH (2002), DFGOT vol.19 (2003), and PATTY (4th, 1994)), it was carried out the outside of Category.
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	We classified it as Category 2A based on the description that the disorder was acknowledged in the conjunctiva, iris and cornea by the rabbit study and the symptoms did not recover in one animal on the Day 7 (DFGOT vol.19 (2003)). In addition, we found the description that it had an irritant property on the human eye by exposure to concentrated vapors (PATTY (4th, 1994), Japan Society for Occupational Health Recommendation of Occupational Exposure (2003)).
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)-	Respiratory organ: No data. Skin: We found a description that sensitizing property was not acknowledged in Maximization test with the guinea pigs in DFGOT vol.19 (2003). On the other hand, we found a description that there were a few case reports in which skin sensitization was acknowledged in human in PATTY (4th, 1994), however, we found the descriptions in ACGIH (2002) and DFGOT vol.19 (2003) that the examples which gave positive result to 2-butanol by the skin patch tests showed sensitization to primary or secondary alcohols, and it is suggested to be positive reaction by cross sensitization, therefore we could not conclude that 2-butanol itself has a skin sensitizing property. We could not classify it.
5 Germ cell mutagenicity	Classification not possible	-	-	-	There are no mutagenicity and genotoxicity study data in the in vivo, and all were negative in the in vitro mutagenicity test. So it cannot be classified.
6 Carcinogenicity	Classification not possible	-	-	-	No data available

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	In the two-generation reproduction study by the drinking water medication in rat of ACGIH (2002), DFGOT vol.19 (2003), and the PATTY (4th, 1994), there is no effect on reproductive potential, only the minimum influence (growth retardation of a pup) was observed. On the other hand, based on the description that reduction of live newborns and increase of embryo absorption were observed at the dose in which dam toxicity is observed in the test which carried out inhalation exposure in the gestational age of the rat. So it was considered as Category 2.
8	Specific target organs/systemic toxicity following single exposure	Category 3 (respiratory tract irritation, narcotic effects)	Exclamation mark	Warning	may cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation, narcotic effects)	From description in ACGIH (2002), DFGOT vol.19 (2003), PATTY (4th, 1994), and Society for Occupational Health Recommendation of Occupational Exposure that nasal and throat are stimulated in humans in high exposure levels, it is thought that there is respiratory irritant. And anesthetic actions is seen in humans and mice according to EHC 65 (1987), and in rats and mice inhalation exposure according to DFGOT vol.19 (2003) and PATTY (4th, 1994). Both were set as Category 3. Moreover, although central nervous system depression symptoms were seen in mice described in high inhalation exposure levels (DFGOT vol.19 (2003)), it was judged as anesthesia action at high-concentration.
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)	Not classified	-	-	-	It carried out the outside of Category from 24-hour EC50=2300mg/L of Crustacea (Daphnia magna) (EHC65, 1987).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since not water-insoluble (water solubility=1.81*105mg/L(PHYSROP Database, 2005)) and acute toxicity is low.