

GHS Classification

ID980

Methyl t-butyl ether

CAS 1634-04-4

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	Category 2	Flame	Danger	Highly flammable liquid and vapour	Flash point: <23degC, Initial boiling point: >35degC, UNRTDG Class: 3, PG II
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: 224degC (Merck, Access on Dec. 2005)
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: 4000mg/kg (MOE Risk Assessment the 4th volume, 2005, DFGOT vol.17, 2002, EU-RAR, 2002), 3800mg/kg (EHC 206, 1998, DFGOT vol.17, 2002, EU-RAR, 2002), 3866mg/kg (EHC 206, 1998, ATSDR, 1996, EU-RAR, 2002), 2963mg/kg (IARC 73, 1999, ACGIH, 2002) and > 2000mg/kg (EU-RAR, 2002). Based on the data above, it was classified to category 5.
1 Acute toxicity (dermal)	Not classified	-	-	-	It was set as the outside of Category. Based on rabbit LD50 values: >10200mg/kg (EHC 206, 1998, DFGOT vol.17, 2002, EU-RAR, 2002), 10000mg/kg (EHC 206, 1998, DFGOT vol.17, 2002), > 10000mg/kg (EU-RAR, 2002, ATSDR, 1996), 7400mg/kg (IARC 73, 1999), and rat LD50 values: >6800mg/kg (DFGOT vol.17, 2002) and >2000mg/kg (EU-RAR, 2002).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Not classified	-	-	-	Calculated based on rat LC50 (4 hours): 84.825mg/L (MOE Risk Assessment the 4th volume, 2005, ACGIH, 2002), 85mg/L (DFGOT vol.17, 2002, EU-RAR, 2002), 86mg/L (IARC 73, 1999), 41mg/L (MOE Risk Assessment the 4th volume, 2005), 142mg/L (DFGOT vol.17, 2002, EU-RAR, 2002, ATSDR, 1996), and 120mg/L (EU-RAR, 2002, ATSDR, 1996). The calculated value was 79.004mg/L.. And this is considered steam with almost no mist from vapor pressure, it was classified as out of Category based on the converted value of 21946ppm.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	It was set as Category 2 from description that moderate to serious dropsy and moderate erythema were acknowledged in the study applied to the skin of the rabbit for 4 hours (EU-RAR (2002)).
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	We classified it as Category 2B based on the descriptions that change of the eye which indicates irritation was seen and it recovered within seven days in the tests applied to the eyes of the rabbits (EHC 206 (1998), ACGIH (2002), DFGOT (vol.17, 2002) and EU-RAR (2002)).
4 Respiratory/skin sensitization	respiratory sensitization: Classification not possible; Skin sensitization: Not	-	-	-	Respiratory organ: No data. Skin: Based on the descriptions that sensitizing property was not acknowledged in Maximization test using the guinea pigs in EHC 206 (1998), DFGOT (vol.17, 2002), and EU-RAR (2002), we classified it to be Out Of Category.

5	Germ cell mutagenicity	Not classified	-	-	-	There is the negative results by the chromosomal aberration test using a rat myeloid cell which is the in vivo mutagenicity test using a somatic (MOE Risk Assessment No. 4, 2005, EHC 206, 1998, ATSDR, 1996, ACGIH, 2002, IARC 73, 1999, EU-RAR, 2002), the micronucleus test which uses a mouse bone marrow cell (MOE Risk Assessment, No. 4, 2005, EHC 206, 1998, ATSDR, 1996, ACGIH, 2002, IARC 73, 1999, DFGOT vol.17, 2002, EU-RAR, 2002), and the micronucleus test which uses a rat myeloid cell (NTP DB, 2005). So it carried out the outside of Category.
6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It was classified into the group 3 (IARC 73, 1999) in IARC. But it was classified into A3 (ACGIH, 2002) in ACGIH. So it was considered as Category 2 according to ACGIH which is latest assessment document.
7	Toxic to reproduction	Not classified	-	-	-	It was considered as out of Category based on the description that clear reproductive toxicity was not observed even at the dose in which general toxicity is observed in parental animals in reproduction study by inhalation exposure using rat (MOE Risk Assessment The 4th volume (2005), EHC 206 (1998), ACGIH (2002), DFGOT (vol.17, 2002), IARC 73 (1999), EU-RAR (2002), ATSDR (1996), and IRIS (2005)), and in the fetus exposure tests of organogenesis inhalation using rats, rabbits and mice.
8	Specific target organs/systemic toxicity following single exposure	Category 3 (narcotic effects, respiratory tract irritation)	Exclamation mark	Warning	May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	Because of descriptions in EHC 206 (1998), ACGIH (2002), EU-RAR (2002), and ATSDR (1996) referring to that effects indicating respiratory irritation such as decreased respiratory rates were confirmed in inhalation exposure tests using rats or mice, and of descriptions in EHC 206 (1998), ACGIH (2002), DFGOT (vol.17, 2002), EU-RAR (2002), IARC 73 (1999), and IRIS (2005) referring to confirmation of symptoms indicating transient central-nerves depressions such as ataxia, active falls, and muscular hypotonia in inhalation exposure and oral administration tests using rats. So it was judged as Category 3 (respiratory irritation, anesthesia action). Moreover, there are descriptions in some examples of exposure as effects on humans in EHC 206 (1998), DFGOT (vol.17, 2002), and EU-RAR (2002) referring to confirmation of a very mild condition such as having a feeling that head was heavy.
9	Specific target organs/systemic toxicity following repeated exposure	Not classified	-	-	-	Based on the descriptions that no serious toxic effect was observed even with the dose exceeding the guidance value range for Category 2 in the inhalation atmospheric exposure test on rats and mice and in the oral administration study on rats (MOE Risk Assessment The 4th volume (2005), EHC 206 (1998), ATSDR (1996), ACGIH (2002), DFGOT (vol.17, 2002), EU-RAR (2002), IARC 73 (1999) and IRIS (2005)), it was classified as out of Category.
10	Aspiration hazard	Category 1	Health hazard	Danger	May be fatal if swallowed and enters airways	Since there is a description that when the liquid is swallowed, the chemical pneumonia may be occurred in aspiration into lungs (MOE Risk Assessment the 4th volume (2005)), we classified it as Category 1.

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 96-hour EC50=136mg/L of Crustacea (Mysid shrimp) (EU-RAR, 2002).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since not water-insoluble (aqueous solubility =51000mg/L(PHYSPROP Database, 2005)) and acute toxicity is low.