

GHS Classification

ID705

Cumene

CAS 98-82-8

Date Classified: Apr. 20, 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 3	Flame	Warning	Flammable liquid and vapour	It was classified as Category 3 based on flash point: 31 degC and UN No.1918 Class: 3 Packing group 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	-	-	-	Flash point: 420degC (ICSC, 2000)
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 no oxygen, fluorine and chlorine.
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	There are no chemical groups associated with peroxide present in the molecule.
16 Corrosive to metals	Not classified	-	-	-	UNRTDG Class: 3, PG III

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	It was classified into Category 5 based on 2210 mg/kg which was done the statistical calculation of rat LD50 (1400, 4000, 1400, 2910, 2700, 3980, and 4750 mg/kg ((CERI Hazard Data ((1999)), ACGIH ((2001)), EU-RAR ((2001)), and PATTY ((5th, 2001))).
1 Acute toxicity (dermal)	Not classified	-	-	-	It was classified as outside of Category since rabbit LD50s were >10 and 10.6g/kg (CICAD 18 (1999), EU-RAR (2001)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	Examination concentration of 3577ppm for 6hr on rat (4hr equivalent: 4381ppm) (ACGIH (2001)) corresponds to Category 4. But it presupposed that it cannot be classified since death is not observed. Moreover, examination concentration of 20mg/L for 4hr on rats (EU-RAR (2001)) corresponds to Category 4. But it presupposed that it cannot be classified since death is not observed.
1 Acute toxicity (inhalation: dust, mist)	Not classified	-	-	-	Rat LC50 = 8000ppm (39.3mg/L) (ACGIH (2001)) is more than saturated vapor pressure pressures concentrations (4215ppm), and it was judged to be an examination in mist. It was set as the outside of Category based on the guidance value of mist.
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	As for rabbits, some show moderate stimulativeness (DFGOT vol.13 (1999)). But most show mild irritation (ACGIH (2001), EU-RAR (2001), and CICAD 18 (1999)), and it was not classified as "skin irritative" in EU. So it was classified as Category 3.
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	By two Draize examinations, mild irritation (ACGIH (2001), EU-RAR (2001)), and others, from middle to severe edemas and erythema of the conjunctiva are reported by individual reports (DFGOT vol.13 (1999)). Except these one, slight irritation or stimulativeness altogether (ACGIH (2001), CICAD 18 (1999), DFGOT vol.13 (1999), EU-RAR (2001)). Moreover, there is a report that it recovers within five days (ACGIH (2001), CICAD 18 (1999)). Furthermore, it is not classified into "eye irritation" according to the EU classification. It classified into Category 2B from these things.
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: Since there was no data, it was decided that It could not be classified. Skin sensitization: Based on the two reports (ACGIH (2001) and CICAD 18 (1999)) that no skin sensitization was identified in the maximization test, it was put outside of the Category.
5 Germ cell mutagenicity	Not classified	-	-	-	Based on the two negative results (ACGIH (2001), CICAD 18 (1999), DFGOT vol.13 (1999), EU-RAR (2001)) of the in vivo mouse micronucleus examination, we classified it as Out Of Category. In addition, all in vitro examinations were also negative and the results support the classification as "Out Of Category."
6 Carcinogenicity	Not classified	-	-	-	Since the classifications of EPA were "D and CBD", they classified out of Category.

7	Toxic to reproduction	Classification not possible	-	-	-	No developmental toxicity to a neonatal in rat and rabbit examinations is obvious (ACGIH (2001), CICAD 18 (1999), DFGOT vol.13 (1999), EU-RAR (2001), IRIS (2005)). However, since there is no data about the reproductive function and reproductive potential by the exposure in pre mating, it is considered as it cannot be classified.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system); Category 2 (liver, kidneys, blood system); Category 3 (narcotic effects, respiratory tract irritation)	Health hazard; Exclamation mark	Danger; Warning	Cause damage to organs (central nervous system); May cause damage to organs (liver, kidneys, blood system); May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	Many influences of a central nervous systems are reported (ACGIH (2001), CICAD (J)18 (1999), EU-RAR (2001), DFGOT vol.13 (1999)), and it was set as Category 1 (central nervous system) from dosage and a guidance value. Moreover, the affect on liver and the kidney (EU-RAR (2001)) and the affect on leukocyte (DFGO vol.13 (1999)) are reported. It was set as category 2 (liver, kidney, blood) from dosage and a guidance value. Furthermore, an anesthetic action (ACGIH (2001), DFGOT vol.13 (1999), EU-RAR (2001)) and respiratory irritation (ACGIH (2001), DFGOT vol.13 (1999)) are reported. It was set as Category 3 (anesthetic action, respiratory irritation).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (central nervous system)	Health hazard	Danger	causes damage to organs (central nervous system) through prolonged or repeated	Since the effect to central nervous systems in humans was reported (PATTY (5th, 2001)), it was classified to Category 1 (central nervous systems).
10	Aspiration hazard	Category 1	Health hazard	Danger	May be fatal if swallowed and enters airways	It is a hydrocarbon and dynamic viscosity is not over 20.5mm [2/s]. And, there was a description "when the fluid is swallowed, there is a risk of chemical pneumonia by aspiration" (ICSC(ICSC(J), (2000))). Moreover, it is classified as R65 in EU. Therefore, we classified it into Category 1.

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=1.2mg/L of Crustacea (Mysid shrimp), and others (CICAD18, 1999).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Classified into Category 2, since acute toxicity was Category 2 and not rapidly degrading (BOD: 33% (existing chemical safety inspections data)), though supposed less bio-accumulative (log Kow=3.66(PHYSROP Database, 2005)).