

GHS Classification

ID710

enflurane

CAS 13838-16-9

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	Not classified	-	-	-	Non-combustible (ICSC(J), 2002).
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	-	-	-	Not combustible (ICSC (J), 2002)
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	Not combustible (ICSC(J) (2000))
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, fluorine and chlorine and these elements are chemically bonded only to carbon (but not to other elements).
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no -O-O- structure
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)	Not classified	-	-	-	Not classified because of SPECIES: Rat; ENDPOINT: LD50;VALUE:5450 mg/kg; REFERENCE SOURCE: DFGOT vol. 9 (1998)
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 the saturated vapor pressure concentration of this product is 780000ppm, it is thought that the test was performed with steam. Based on LC50 of 3-hour exposure on rat = 14000ppm (4 hour exposure equivalent: 12100ppm) (DFGOT vol.9 (1998)), it was classified as out of Category.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	It was classified as Category 3 based on the statement that the skin may be stimulated and redness and dryness may be caused (ICSC (J) (2002)).
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	It was set as Category 2A-2B based on the statement that an eye was stimulated and redness and pain are produced (ICSC (J), (2002)).
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 sensitization: Although there is a publication that allergic asthma was caused(DFGOT vol.9 (1998)) , it is not known whether the symptom was induced only by those who have bronchia hypersensitivity, and besides that there is another publication too that it may serve as a trigger of bronchospasm in an asthmatic patient(DFGOT vol.9 (1998)). This substance is not listed in MAK/BAT (2004) as a sensitization. It was decided, based on the above mentioned, that it could not be classified due to the insufficiency of data. Skin sensitization:No data
5 Germ cell mutagenicity	Not classified	-	-	-	Based on the statement that neither the malformation of a sperm nor the chromosome aberration of the spermatogenous cells was acknowledged in the 78-week inhalation study in the mouse (DFGOT vol.9 (1998)), and based on the statement (DFGOT vol.9 (1998)) that neither the sister chromatid exchanges nor the increase in the chromosomal aberrations was acknowledged in the human who received occupational exposures or anesthesia. So we classified it as Out Of Category according to the technical guideline.
6 Carcinogenicity	Not classified	-	-	-	Based on being classified into group 3 (Gangolli (2nd, 1999)) according to IARC, and being classified into A4 (ACGIH (2001)) according to ACGIH, it carried out the outside of Category.

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Since although there is no statement on parents' toxicity in mice, there is a statement that cleft palates and a few abnormalities of internal organs and scaffold on offsprings were observed (DFGOT vol.9 (1998)), there is a statement of a relationship between exposure to this substance and the increase in miscarriages and congenital anomaly in humans (SITTIG (4th, 2002)), it was classified into Category 2.
8	Specific target organs/systemic toxicity following single exposure	Category 2 (cardiovascular system), Category 3 (narcotic effects, respiratory tract irritation)	Health hazard; Exclamation mark	Warning	May cause damage to organs (cardiovascular system); May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	There are the description that there is an anesthetic actions in humans, and a description that the fall of judgment and learning ability, the influence of amnesia and on the other center nerve were seen after exposure (DFGOT vol.9 (1998), ICSC (J) (2002), SITTIG (4th, 2002)). Moreover, there is the description (ICSC (J) (2002)) that an respiratory tract may be irritated and a cardiovascular systems may be affected. It is classified into Category 2 (cardiovascular system) and Category 3 (anesthetic actions, respiratory irritation) based on the above information.
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (central nervous system, liver)	Health hazard	Warning	May cause damage to organs (central nervous system, liver) through prolonged or repeated exposure	It was classified as Category 2 (central nervous systems,liver) based on the statementthat the bad influence to an epilepsy seizure and liver is seen in the human high exposure levels (SITTIG (4th, 2002)) .
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)	Classification not possible	-	-	-	No data available
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	No data available.