GHS Classification

ID1221 Benzonitrile

CAS 100-47-0 Date Classified: Mar. 15, 2007 (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 4	–	Warning	Combustible liquid	Flash point: 75degC(C.C.) (ICSC(J), 1999).
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	–	–	–	The ignition points is 550 degC (ICSC (J), 1999), and even if it contacts the air of normal temperature, it does not ignite spontaneously.
10	Pyrophoric solids	Not applicable	–	–	–	Liquid (GHS definition)
11	Self-heating substances and mixtures	Not classified	–	–	–	The intended use is as solvent, and it is considered that there is no self-febrility, and was set to the outside of category.
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 metaloids(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	–	–	–	Organic compounds containing no -0-0- 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)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Based on the value of LD50 = 848mg/kg calculated by the rat oral LD50 values : 1500, 720, 1000, 800 and 840mg/kg (IUCLID (2000)) and 700, 1500 and 1300mg/kg (HSDB(2003)), the substance was classified as Category 4.
1	Acute toxicity (dermal)	Category 4	Exclamation mark	Warning	Harmful in contact with skin	Rat dermal LD50 = 1200mg/kg (IUCLID (2000), RTECS (2000), HSDB (2003)). Rabbit dermal LD50 = 1250mg/kg (IUCLID (2000), RTECS (2000), HSDB (2003)). The lower one (LD50=1200 mg/kg) was adopted, and it was set as Category 4.
1	Acute toxicity (inhalation: gas)	Not applicable	–	–	–	Liquid (GHS definition)
1	Acute toxicity (inhalation: vapour)	Category 3	Skull and crossbones	Danger	Toxic if inhaled	Based on LC50 = 1900ppm (equivalent 8mg/L) which is obtained by having converted rat inhalation LC50 value (8hr, 950ppm) for 4 hours, it was classified as Category 3. In addition, the saturated concentration of this product is 1000ppm, and it is presumed that the inhalation test is done in the state of steam.
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	–	–	–	No data available
2	Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Since there was description that it stimulates to "Moderate (moderately)" as a result of the standard Draize's method for a rabbit (RTECS and (2000), HSDB (2003)) and the human skin is stimulated (ICSC (J), (1999), SITTIG (4th, 2002), HSFS (2000)), it was set as category 2.
3	Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Since stimulus condition like the redness of a conjunctiva and conjunctiva dropsy is acknowledged as a result of the injections against eyes of rabbit (IUCLID (2000)), and there is the description that a human ocular is stimulated (ICSC (J), (1999), SITTIG (4th, 2002), and HSFS (2000)), it is set as Category 2A-2B. In addition, the detailed categorization from the acquired information is difficult.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	Respiratory sensitization: no data available. Skin sensitization: although there is a report that there was no causing sensitivity (HSDB(2003)) as a result of doing a patch test to a volunteer, there is no other data, and data is insufficient and it cannot classify.
5	Germ cell mutagenicity	Classification not possible	–	–	–	There is only the result of the Ames test negative in in vitro (IUCLID (2000)), and it cannot be classified because of insufficient data
6	Carcinogenicity	Classification not possible	–	–	–	No data available
7	Toxic to reproduction	Classification not possible	–	–	–	No data available

8	Specific target organs/systemic toxicity following single exposure	Category 2 (central nervous system); Category 3 (respiratory tract irritation)	Health hazard	Warning	May cause damage to organs (central nervous system); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)	Since there is description that it has influence of distraction, headache, nausea, vomiting, etc., in the document of Priority 2 as a result of human exposures (ICSC (J) (1999), SITTIG (4th, 2002), HSFS (2000)), and the symptom (a coma, limbs spasm, etc.) which derives in control of central nervous system by dose to rats and mice (dose course, amount of dose are unknown) was observed (HSDB (2003)), it was considered as Category 2 (central nervous system). Furthermore, since the respiratory tracts was stimulated (ICSC (J) (1999), HSFS (2000)), it was considered as Category 3 (respiratory irritation).
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	Since there is description that disorder is occured on central nervous system and liver in the inhalation exposure experiment (steam) in a rat, exposure of the dosage which is equivalent to Category 2 with a guidance value (IUCLID(2000), and RTECS(2000)), it was classified into Category 2 (central nervous system, and liver).
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)	Category 3	–	–	Harmful to aquatic life	It was classified into Category 3 from 24-hour EC50=30930microg/L(AQUIRE, 2003) of Crustacea (Water fleas).
11	Hazardous to the aquatic environment (chronic)	Not classified	–	–	–	Since rapidly degrading (BOD: 63.4% (existing chemical safety inspections data)), and less bio-accumulative (log Kow=1.56 (PHYSPROP Database, 2005)).