GHS Classification

ID79 1,1-Dimethylhydrazine

CAS 57-14-7 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 classified	-	-	-	Classification not possible, because of lack of data (though the substance is hydrazines, containing chemical groups associated with explosive properties). Classified into Class 3, Division 6.1 and Class 8 (UN#1163) (UN Recommendations on the Transport of Dangerous Goods)
2	Flammable gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
3	Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4	Oxidizing gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
5	Gases under pressure	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
6	Flammable liquids	Category 2	Flame	Danger	Highly flammable liquid and vapour	The flash point is -15degC (c.c.) (ICSC (2004)), and the boiling point is 63degC, which is classified as Category 2. Classified into Class 3, Division 6.1 and Class 8 (UN#1163) (UN Recommendations on the Transport of Dangerous Goods)
7	Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8	Self-reactive substances and mixtures	Not classified	-	-	-	No data available, though the substance is hydrazines, containing chemical groups associated with explosive properties. Classified into Class 3, Division 6.1 and Class 8 (UN#1163) (UN Recommendations on the Transport of Dangerous Goods)
9	Pyrophoric liquids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 249degC (ICSC,2004)
10	Pyrophoric solids	Not applicable	-	-	-	Classified as "liquid" according to 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	-	-	-	Containing no 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	-	-	-	Classified as "liquid" according to GHS definition
15	Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "-O-O-" structure
16	Corrosive to metals	Classification not possible	-	-	-	Cannot be classified due to lack of data. Classified into "Class 8: corrosive substances" by the UN Recommendations on the Transport of Dangerous Goods. However, the category includes skin corrosivity, and it is unclear whether the substance is classified as "metal" corrosive (UN#1163)

Health Hazards

	Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1	Acute toxicity (oral)	Category 3	Skull and crossbones	Danger	Toxic if swallowed	Based on the LD50 value of 131mg/kg calculated from the testing data of rat LD50 (oral route) of 122mg/kg, 250mg/kg and 360mg/kg (PATTY (4th, 2000)).
1	Acute toxicity (dermal)	Category 4	Exclamation mark	Warning	Harmful in contact with skin	Based on the rabbit LD50 (dermal route) value of 1,060mg/kg (PATTY (4th, 2000)).
1	Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "liquid" according to the GHS definition and inhalation of its gas is not expected.
1	Acute toxicity (inhalation: vapour)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 value of 252ppm, representing the lower of the two testing data of rat LC50 (4-hour inhalation exposure) of 252ppm (equivalent to 0.66mg/L) and LC50 (1hour) of 1,411ppm (equivalent to 3.67mg/L; 708ppm for 4 hours (equivalent to 1.84mg/L)) (PATTY (4th, 2000)) was lower than 90% of the saturated vapour concentration (207,000ppm) under a saturated vapour pressure of 156.8torr (25degC), the substance was considered as "vapour containing substantially no mist" and was classified based on standard values of gas.
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2	Skin corrosion / irritation	Classification not possible	-	-	-	PATTY (4th, 2000) describes findings from skin irritation tests in rabbits and guinea pigs: "Application of small doses produced slight erythema." However, the study details (application doses, concentrations, etc.) are not available. Also, the substance is reported to be strong alkaline (PATTY (4th, 2000)) but the pH is not shown. Given these uncertainties, it was decided not to use this specific observation for classification.
3	Serious eye damage / eye irritation	Classification not possible	-	-	-	PATTY (4th, 2000) describes findings from rabbit eye irritation tests: "The substance induced mild conjunctivitis and slight erythema, with effects resolving within 5 days." Also, eye irritation studies in rodents provide no evidence of "irreversible eye damage." However, the study details (application doses, concentrations, etc.) are not available. Moreover, the substance is reported to be strong alkaline (PATTY (4th, 2000)) but the pH is not shown. Given these uncertainties, it is decided not use these observations for classification.
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: No data available Skin sensitization: No data available
5	Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects	Based on negative data on multi-generation mutagenicity tests (dominant lethal tests) and positive data on germ cell mutagenicity tests in vivo (micronucleus tests on mouse sperm cells), described in IARC 71 (1999).
6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category R by NTP (2005), Category A3 by ACGIH (2001) and Group 2B by IARC (1999).

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of pup development at doses causing maternal toxicity, described in IARC 71 (1999), ACGIH (7th, 2001) and PATTY (4th, 2000).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, respiratory organs)	Health hazard	Danger	Causes damage to organs (nervous system, respiratory organs)	Based on the human evidence including "effects on respiratory organs, nausea, vomiting, neurological effects and pulmonary edema" (PATTY (4th, 2000)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver, nervous system, blood system, kidneys)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (liver, nervous system, blood system, kidneys)	Based on the human evidence including "fatty liver" (IARC 4 (1974)), and the evidence from animal studies including "tremor, dyspnea, lethargy, spasm, lethargy, salivation, diarrhea, ataxia, hematological effects, renal tubular damage" (PATTY (4th, 2000)), "neurological symptoms, body weight reduction, hemolytic anemia and hemosiderin deposition in the reticuloendothelial system" (ACGIH (7th, 2001)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 96 hours LC50=7.85*103microg/L of the fish (Fathead Minnows) (AQUIRE, 2003).
11	Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Although acute toxicity was Category 2 and the bio-accumulation potential was low (log Kow=-0.4(Existing Chemical Safety Inspections Data)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 2.