GHS Classification

ID27 Hydrogen cyanide

CAS 74-90-8 Date Classified: Jun. 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	–	–	–	Containing no chemical groups with explosive properties
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 1	Flame	Danger	Extremely flammable liquid and vapour	The flash point is −18degC (c.c.) and the boiling point is 26degC (ICSC, 2003). Those containing stabilizers (water content: less than 3% by mass) are classified into Class 3 and Division 6.1 (UN#1051) by the 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 applicable	–	–	–	Containing no chemical groups with explosive or self-reactive properties
9	Pyrophoric liquids	Not classified	–	–	–	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 538degC (ICSC, 2003)
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	–	–	–	No data available. Those containing stabilizers (water content: less than 3% by mass) are classified into Class 3 and Division 6.1 (UN#1051) (UN Recommendations on the Transport of Dangerous Goods).

Health Hazards

	Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1	Acute toxicity (oral)	Category 1	Skull and crossbones	Danger	Fatal if swallowed	Based on the rat LD50 (oral route) value of 4.2mg/kg (CICAD 61 (2004)).
1	Acute toxicity (dermal)	Category 1	Skull and crossbones	Danger	Fatal in contact with skin	Based on the rabbit LD50 (dermal route) value of 6.8mg/kg (CICAD 61 (2004)).
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 1	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 value of 50.2ppm (4 hours), calculated from the testing data of rat LC50 (inhalation of vapour: GHS definition) of 142ppm (30 minutes) (CERI Hazard Data 2001-38 (2002)), was lower than 90% of the saturated vapour concentration (9,980ppm) under a saturated vapour pressure of 98.9kPa (742 mmHg, 25degC) (CERI Hazard Data 2001-38 (2002)), the substance was considered as "vapour containing substantially no mist" and was classified based on standard values expressed in ppm.
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	–	–	–	No data available
2	Skin corrosion / irritation	Classification not possible	–	–	–	Clinical effects described in some case reports include "mild skin burns" in test animals (CICAD 61, 2004) and "skin irritation" in humans (HSDB, 2005). However, neither is the description of test results, and there is a provision that the substance "may be" irritating. Given these uncertainties, it was decided not to use these specific observations for classification.
3	Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Clinical effects described in some human case reports include "IRRITATION OF EYE, CONJUNCTIVITIS" (HSDB, 2005); "There may also be irritation from skin and eye contact with the liquid" (HSDB, 2005)). However, neither is the description of test results, and the severity of effects is not provided. Although classified into Category 2A-2B, it should be placed in Category 2A from the viewpoint of safety, if further subclassification is
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	Classification not possible	–	–	–	Based on the absence of data on multi-generation mutagenicity tests, germ/somatic cell mutagenicity tests in vivo and germ/somatic cell genotoxicity tests in vivo, and no strong positive data on mutagenicity tests in vitro (several indices), described in CERI Hazard Data (2002) and
6	Carcinogenicity	Classification not possible	–	–	–	No data available
7	Toxic to reproduction	Classification not possible	–	–	–	Insufficient data available
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, respiratory organs, heart)	Health hazard	Danger	Causes damage to organs (central nervous system, respiratory organs, heart)	Based on the human evidence including "coma" (HSDB (2000)), "dizziness, hypopnea, sense of instability, headache and nausea" (ACGIH (7th, 2001)), and the evidence from animal studies including "mild adverse effects on the central nervous system" (CICAD 61 (2004)), "dyspnea, bradycardia, arrhythmia, abnormal T wave during the diastolic period, clouding of consciousness and interruption of breathing, EEG fluctuations, dyspnea, coma, debility, gait disturbance and spasm" (CERI Hazard Data 2001-38 (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (central nervous system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (central nervous system)	Based on the human evidence including "abnormalities in the scores of long term memory, visual ability, visual learning, psychomotor functions" (CICAD 61 (2004)) and "headache, debility, dysgeusia and dysosmia" (IRIS (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)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96 hours LC50=0.028mg/L of the fish (Rainbow Trout) (CERI Hazard Data, 2002).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Since acute toxicity was Category 1 and an underwater action and bio-accumulation were unknown, it was classified into Category 1.