GHS Classification

ID56 Hydrazine

CAS 302-01-2 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 classified	–	–	–	Classification not possible, because of lack of data (though the substance contains chemical groups associated with explosive properties that contain nitrogen but lack oxygen). Classified into Class 3, Division 6.1 and Class 8 (UN Recommendations on the Transport of Dangerous Goods, UN#2029)
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 3	Flame	Warning	Flammable liquid and vapour	The flash point is 38degC (c.c.) (ICSC, 1999), which is classified into Category 3. Classified into Class 3, Division 6.1 and Class 8 (UN#2029) (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	–	–	–	The substance contains nitrogen atoms adjacent to each other. Classified into Class 3, Division 6.1 and Class 8 (UN Recommendations on the Transport of Dangerous Goods, UN#2029)
9	Pyrophoric liquids	Classification not possible	–	–	–	Classification not possible, due to lack of data, though the substance is considered "pyrophoric" under certain conditions, with its flash point ranging from 24degC (rusty iron surface) to 270degC (glass surface).
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	–	–	–	Inorganic compounds containing no oxygen and halogen
14	Oxidizing solids	Not applicable	–	–	–	Classified as "liquid" according to GHS definition
15	Organic peroxides	Not applicable	–	–	–	Not organic compounds
16	Corrosive to metals	Classification not possible	–	–	–	No data available. Corrosivity to metals remains uncertain, though classified as "corrosive substances" (as the classification based on UN Recommendations on the Transport of Dangerous Goods includes "skin corrosivity") (UN#2029).

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 rat LD50 (oral route) of 60 mg/kg (DFGOT vol.1 (1989)).
1	Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Based on the testing data of rabbit LD50 (dermal route) of 91 mg/kg (IUCLID (2000)).
1	Acute toxicity (inhalation: gas)	Not applicable	–	–	–	Due to the fact that the substance is "liquid" according to the GHS definition.
1	Acute toxicity (inhalation: vapour)	Category 3	Skull and crossbones	Danger	Toxic if inhaled	Based on the rat LC50 (4 hours) value of 570ppm, calculated from the testing data of rat LC50 (inhalation of vapour) of 0.75 mg/L (4 hours) (DFGOT vol.1 (1989)), was lower than 90% of the saturated vapor concentration (21,000ppm) under a saturated vapour pressure of 2.1kPa (20degC) (CERI Hazard Data 97-15 (1998)), 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	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	Due to lack of data for subclassification, though the results of rabbit skin irritation tests suggest irritating reaction, with fatal cases reported in some subjects, although the substance should be placed in Category 1A from the viewpoint of safety.
3	Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the evidence of "severe irritation" from rabbit eye irritation tests.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization) – (Skin sensitization) Exclamation mark	(Respiratory sensitization) – (Skin sensitization) Warning	(Respiratory sensitization) – (Skin sensitization) May cause allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the classification by the Japan Society for Occupational Health (2004).
5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on negative data on multi-generation mutagenicity tests (dominant lethal tests), the absence of data on germ cell mutagenicity tests in vivo, positive data on somatic cell mutagenicity tests in vivo (micronucleus tests in mouse red blood) and the absence of data on germ cell genotoxicity tests in vivo, described in CERI-NITE Hazard Assessment No.73 (2004).
6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as 2B by IARC (1999), Category A3 by ACGIH (2005), Category B2 by IRIS (2005) and Category R by NTP (2005).

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the description in CERI-NITE Hazard Assessment No.73 (2004): the results of mouse developmental toxicity studies suggest exencephalia in offspring at dose levels toxic to parent animals.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, liver) Category 3 (narcotic effects)	Health hazard and Exclamation mark	Danger Warning	Causes damage to organs (nervous system, liver) (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence including "confusion, lethargy, restlessness," "loss of consciousness, erubescence, irregular violent behavior followed by ataxia," "nystagmus, a decrease in vibration sensation, prickling in the arm and leg," "an increase in AST/LDH/ total bilirubin levels" (EHC 68 (1987)), and "a significant increase in the oxygen value associated with liver toxicity" (CERI-NITE Hazard Assessment No.73 (2003)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver, respiratory organs, kidneys, adrenal)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (liver, respiratoy organs, kidneys, adrenal)	Based on human evidence including "jaundice, pneumonia, an increase in creatinine concentrations, albuminuria, hematuria, hepatocellular necrosis, nephritis, renal tubule necrosis, glomerulonephritis" (CERI-NITE Hazard Assessment No.73 (2003)), "pleural effusion and shadow (pulmonary x-ray findings), an increase in blood bilirubin levels, pneumonia (observed in autopsy cases), damage to hepatocytes" (EHC 68 (1987)), and the evidence from animal studies including "bile duct hyperplasia, degeneration of the adrenal, nasal mucosal inflammation, necrosis of the nasal mucosal epithelium and scale formation, hyperplasia, squamous epithelium metaplasia" (CERI-NITE Hazard Assessment No.73 (2003)). 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 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 48 hours EC50=160microg/L of the crustacea (Daphnia magna) (MOE Risk Assessment vol. 1, 2002).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity is Category 1 and bio-accumulation is low (log Kow=-2.07(PHYSPROP Database, 2005)), since there was no rapidly degrading (the decomposition by BOD: 2%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.