

GHS Classification

ID542

Iron carbonyl

CAS 13463-40-6

Date Classified: Sep. 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 2	Flame	Danger	Highly flammable liquid and vapour	The flash point is -15degC (ICSC (2004)) and the boiling point is 103degC, which is classified into Category 2. Classified into Class 3 and Division 6.1 (UN#1994) (UN Recommendation 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 classified based on the "Technical Guideline of GHS Classification of Physical Hazard" (Mar.10, 2006) since the substance is Classified into Class 3 and Division 6.1 (UN#1994) by the UN Recommendation on the Transport of Dangerous Goods, though it has the flash point of 50degC (ICSC (2004)) and may be pyrophoric when in contact with air, which could be classified into "Category 1."
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 classified	—	—	—	Stable to water (insoluble, ICSC (2004))
13 Oxidizing liquids	Not classified	—	—	—	Classified as a powerful reducing agent by ICSC (2004), though being inorganic compounds containing oxygen
14 Oxidizing solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
15 Organic peroxides	Not applicable	—	—	—	Not organic compounds
16 Corrosive to metals	Not classified	—	—	—	Classified into Class 3 and Division 6.1 (UN#1994) (UN Recommendation 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 2	Skull and crossbones	Danger	Fatal if swallowed	Based on the rat LD50 (oral route) value of 25mg/kg representing the lower of the two testing data. 25mg/kg (RTECS (2006)) and 40mg/kg (IUCLID (2000)).
1 Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Based on the LD50 value of 105mg/kg calculated from the testing data of rabbit LD50 (dermal route) of 56mg/kg (RTECS (2006)), 240mg/kg, 250mg/kg and 170mg/kg (males) (IUCLID (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 1	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 (4 hours) value of 0.32mg/L (equivalent to 40ppm), calculated from the testing data of rat LC50 (inhalation of vapour) of 0.91mg/L (30 min) (equivalent to 115ppm) (ATSDR (2001)), was lower than 90% of the saturated vapour concentration (46,000ppm) under a saturated vapour pressure of 35torr (25degC), 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	Not classified	—	—	—	Based on the description in the report on rabbit skin irritation tests (4 hour application) performed in accordance with OECD Test Guideline (IUCLID (2000)): "Not irritating."
3 Serious eye damage / eye irritation	Not classified	—	—	—	Based on the description in the report on rabbit eye irritation tests performed in accordance with OECD Test Guideline 405 (IUCLID (2000)): "Not irritating."
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	—	—	—	Classification not possible due to the insufficiency of data (no data available on in vivo mutagenicity/genotoxicity tests)
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 1 (respiratory organs, nervous system, cardiovascular system) Category 2 (liver, kidneys)	Health hazard	Danger	Causes damage to organs (respiratory organs, nervous system, cardiovascular system) May cause damage to organs (liver, kidneys)	Based on the human evidence including "liver and kidney damage: central nervous system degeneration" (HSDB (2005)), "pathological lesions including hepatization of the lung, vascular disorder and central nervous system degeneration" (PATTY (4th, 1999)), and the evidence from animal studies: "clinical symptoms following exposure include respiratory depression, cyanosis, tremor and motor paralysis" (ACGIH (7th, 2001)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. Since the referenced studies for the effects on human liver and kidneys are assigned a priority rating of 2, these effects are classified into Category 2.
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (liver, blood system, respiratory organs)	Health hazard	Warning	May cause damage to organs through prolonged or repeated exposure (liver, blood system, respiratory)	Based on the description in ICSC (J) (1995): "The substance adversely affects the liver, inducing hepatic dysfunction." Also based on the evidence from animal studies: "Treatment-related histopathological changes occurred in the lung; a slight but significant increase in carboxyhemoglobin was detected" (IUCLID (2000)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. However, the substance is classified into Category 2 since the priority rating of referenced studies is 2.
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)	Not classified	—	—	—	Since it was suggested that relevant toxicity is not indicated within the water solubility (100mg/L (IUCLID (2000))) of this substance in spite of 48 hours EC50=130mg/L and EC0=62.5mg/L of the crustacea (<i>Daphnia magna</i>) (IUCLID (2000)), it was classified into Not classified.
11 Hazardous to the aquatic environment (chronic)	Not classified	—	—	—	Since it was not water-insolubility (the water-solubility =100mg/L (IUCLID, 2000)), and acute toxicity was low, it was classified into Not classified.