

GHS Classification

ID209

CAS 584-84-9

Physical Hazards

4-Methyl-1,3-phenylene diisocyanate

Date Classified: Mar. 23, 2006 (Environmental Hazards: Feb. 10, 2006)

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 atom groups with explosive properties
2 Flammable gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	-	-	-	Classified into Division 6.1 (UN Recommendations on the Transport of Dangerous Goods, UN#2078)
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Containing no atom groups with explosive or self-reactive properties
9 Pyrophoric liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures; the flashing point is 620degC (ICSC, 2004)
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available - melting point: 22degC (ICSC,2004), test temperature: 140degC
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	-	-	-	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not applicable	-	-	-	Organic compounds containing oxygen (but not fluorine and chlorine), with the oxygen bound to carbon and hydrogen (but not to other elements)
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Not classified	-	-	-	Classified into Division 6.1 (UN Recommendations on the Transport of Dangerous Goods, UN#2078)

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Not classified	-	-	-	Based on the rat LD50 (oral route) value of 5,800mg/kg representing the lower of the two testing data, 6,170mg/kg (PATTY 4th, 2000) and 5,800mg/kg (ACGIH 7th, 2004).
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Category 4	Exclamation mark	Warning	Harmful if inhaled	Based on the LC50 value (4 hours) of 897ppm, calculated from the testing data of rat LC50 (6 hour inhalation of dust/mist) of 4.27mg/L (PATTY 4th, 2000), exceeded the saturated vapor concentration (660 ppm) under a saturated vapour pressure of 67 Pa (25degC) (CERI Hazard Data 97-20, 1998), the substance is likely to contain mist, despite its description as vapour.
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin Irritation	Based on the description of "severe" found in the RTECS report (2005) on rabbit skin irritation tests, suggesting that the substance induces at least mild skin irritation, although it is unclear whether the tests were 4-hour tests, and based on the fact that the substance is classified as "Xi (irritant)" by EU Risk Phrase.
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes severe eye irritation	Based on the evidence of "severe irritation" in rabbit eye irritation tests (CERI Hazard Data 97-20, 1998) and "slight conjunctival irritation" and "stinging in the eyes, lacrimation" in human eye irritation tests (DFGOT Vol. 20, 2005), although the substance should be placed in Category 2A from the viewpoint of safety.
4 Respiratory/skin sensitization	Respiratory sensitization: Category 1 Skin sensitization: Category 1	Health hazard	Danger	May cause allergy or asthma symptoms or breathing difficulties if inhaled, may cause allergic skin reaction	Respiratory sensitization: due to the fact that the substance was classified as "Respiratory Tract Group 1" according to Recommendations by the Japan Society of Occupational Health (2005). Skin sensitization: based on positive results in guinea pig skin sensitization tests (EHC 75, 1987) and due to the fact that the substance is classified as "Skin Group 2" according to Recommendations by the Japan Society of Occupational Health (2005) and "SEN" by ACGIH-TLV (2005).
5 Germ cell mutagenicity	Classification not possible	-	-	-	Due to the lack of description on the type of cells (germ cells or somatic cells) used for in vivo tests in which positive results were obtained, although positive results were obtained for multiple indices in in vitro mutagenicity tests.
6 Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category A4 by ACGIH (2001), Group 2B by IARC 71 (1999) and Category 2B according to Recommendations by the Japan Society of Occupational Health (2004), and priority was given to the IARC classification, following the guidelines.
7 Toxic to reproduction	Classification not possible	-	-	-	No data available
8 Specific target organs/systemic toxicity following single exposure	Category 2 (respiratory organs)	Health hazard	Danger	May cause damage to organs (respiratory organs)	Based on human evidence including "the substance induces eye/skin/respiratory irritation and induces chemical bronchitis, pneumonia and pulmonary edema through inhalation of vapor" (ICSC (J) (1995)).
9 Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, blood system)	Health hazard	Danger	Causes damage to organs (respiratory organs, blood systems) through prolonged and repeated exposure	Based on the evidence from animal studies including "reversible hyperplasia in the larynx, squamous metaplasia, rhinitis, forced breathing, reversible hyperplasia in the trachea, necrotizing bronchitis, bronchiolitis, hyperplasia in the lung, metaplasia, dropsy, alveolitis, decrease in urinary output and urine protein levels, increases in blood nitrogen, hemoglobin and hematocrit levels and red blood cell counts, decreases in platelet and white blood cell counts" (DFGOT Vol. 20, 2004). 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)	Not classified	-	-	-	It was classified into Not classified from 96 hours LC50=164500microg/L of the fish (Fathead minnows) (MOE Risk Assessment vol. 1 (2002) and others.). In addition, methyl-1,3-phenylene diisocyanate (isomer mixture of this substance) was classified into Category 1.
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since acute toxicity was classified into Not classified (acute toxicity is not reported within the aqueous solubility concentrations) and the bio-accumulation was low (BCF=380 (Existing Chemical Safety Inspections Data)), it was classified into Not classified. In addition, the chronic toxicity of methyl-1,3-phenylene diisocyanate (isomer mixture of this substance) was classified into Category 1.