

GHS Classification

ID70

Methacrylic acid

CAS 79-41-4

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 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 4	-	Warning	Combustible liquid	The flash point is 68degC (c.c.) (ICSC (2004)), which is classified into Category 4.
7 Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Classification not possible	-	-	-	Classification not possible due to lack of data, though containing unsaturated bonds. Those containing stabilizers are classified into Class 8 (UN#2531) (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 400degC (NFPA13th,2002).
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 oxygen (but not fluorine and chlorine), with the oxygen bound to carbon and hydrogen (but not to other elements)
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	-	-	-	Classification not possible due to lack of data, though the substance acts on metals according to ICSC (2004). Those containing stabilizers are classified into Class 8 (UN#2531) (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 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 1,210mg/kg calculated from the testing data of rat LD50 (oral route) of 1,060mg/kg (MOE Risk Assessment vol. 2 (2003)), 1,320mg/kg, 2,260mg/kg and 2,224mg/kg (EU-RAR No.25 (2002)).
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	Based on the rabbit LD50 (dermal route) value of 500-1,000mg/kg representing the lower of the two testing data, 500-1,000mg/kg (EU-RAR No.25 (2002)) and 2,000mg/kg (CERI Hazard Data 96-34 (1997)).
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: mist)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Not classified	-	-	-	Because the rat LC50 (4-hour inhalation exposure) value of 7.1mg/L (equivalent to 2,000ppm) (EU-RAR No.25 (2002)) exceeded the saturated vapour concentration (900ppm) under a saturated vapour pressure of 0.09kPa (20degC), the substance was considered as "mist exposure."
2 Skin corrosion / irritation	Category 1A	Corrosion	Danger	Causes severe skin burns and eye damage	Based on the description in the report on a skin irritation test with a rabbit (CERI-NITE Hazard Assessment No.92 (2005)): "Corrosion was observed after 3 minute open application." Classified into Category 1A in accordance with the criteria for subclassification.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the description in the report on rabbit eye irritation tests performed in accordance with OECD Test Guideline 405 (CERI-NITE Hazard Assessment No.92 (2005)): "Corneal opacity/irritation and conjunctival injection/chemosis were observed in all test animals at 24 hours," "corneal opacity and corneal/conjunctival irritation persisted through day 7, with chemical burn, corneal epithelial necrosis/loss and empyema of the anterior chamber of eyeball noted." The substance is classified as Category 1, given Category 1A of skin irritation.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Not classified	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization)	(Respiratory sensitization) - (Skin sensitization) -	Respiratory sensitization: No data available Skin sensitization: Based on no evidence of sensitization from Buehler tests in guinea pigs (CERI-NITE Hazard Assessment No.92 (2005)), no positive results in Polak adjuvant tests and no epidemiological finding suggesting skin sensitization in humans. Also based on a report concluding "human epidemiological studies and animal studies provide no evidence of skin sensitization" (EU-RAR No.25 (2002)).
5 Germ cell mutagenicity	Classification not possible	-	-	-	Insufficient data available (no data available on in vivo mutagenicity/genotoxicity tests) As for germ cell mutagenicity, refer to "ID204, Methyl Methacrylate, CAS: 80-62-6."
6 Carcinogenicity	Classification not possible	-	-	-	Based on expert judgment, given the absence of existing classification (though epidemiological data are available). As for carcinogenicity, refer to "ID204, Methyl Methacrylate, CAS: 80-62-6."
7 Toxic to reproduction	Classification not possible	-	-	-	Insufficient data available As for reproductive/developmental toxicity, refer to "ID204, Methyl Methacrylate, CAS: 80-62-6."
8 Specific target organs/systemic toxicity following single exposure	Category 3 (respiratory tract irritation)	Exclamation mark	Warning	(Respiratory tract irritation) May cause respiratory irritation	Based on the evidence from animal studies (EU-RAR No.25 (2002)): "respiratory irritation," suggesting a potential for respiratory tract irritation.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system, liver, kidneys, adrenal) Category 2 (respiratory organs)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (nervous system, liver, kidneys, adrenal) May cause damage to organs through prolonged or repeated exposure	Based on the human evidence including "tachycardia, low blood pressure, excessive reaction with nitroglycerin, low body temperature, weak reaction to heating/ultraviolet rays, pathological changes of Ashner reflex, acrocyanosis and tremor of fingers" (EU-RAR No.25 (2002)), and the evidence from animal studies including "changes in hepatic enzymes, changes in electrolyte, reduced liver/adrenal weights, atrophy of liver/kidneys/adrenal gland, degeneration of nasal olfactory epithelium" (CERI-NITE Hazard Assessment No.92 (2005)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1 (liver, kidneys, adrenal) and Category 2 (respiratory organs).
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 3	-	-	Harmful to aquatic life	It was classified into Category 3 from 72 hours ErC50=14mg/L of the algae (Selenastrum) (CERI/NITE Hazard Assessment Report, 2005).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since there was rapidly degrading (the decomposition by BOD: 91% (Existing Chemical Safety Inspections Data)) and the bio-accumulation was low (log Kow=0.93 (PHYSPROP Database, 2005)), it was classified into Not classified.