

## GHS Classification

**ID559**

**CAS 6864-37-5**

**4,4'-Methylenebis(2-methylcyclohexanamine)**

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	Not classified	—	—	—	The flash point is 173degC (c.c.) (IUCILID (2000))
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 (flash point: 275degC (IUCILID, 2000)).
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 or 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

### 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 rat LD50 (oral route) value of 550mg/kg (SIDS (2005)).
1 Acute toxicity (dermal)	Classification not possible	—	—	—	Insufficient data available
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 0.003ppm (4 hours), calculated from the testing data of rat LC50 (inhalation of vapour) of 0.40mg/L, 0.42mg/L and 0.44mg/L (SIDS (2005)), was lower than 90% of the saturated vapour concentration (80ppm) under a saturated vapour pressure of 0.08kPa (20degC) (SIDS (2005)), 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	Based on the description in the report on rabbit skin irritation tests (SIDS (2005)): "Corrosive." Although classified into Category 1A-1C, the substance should be placed in Category 1A from the viewpoint of safety if further subclassification is needed.
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 (SIDS (2005)): "Corrosive."
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 the description in the report on a skin painting test and a Maximization test in guinea pigs (SIDS (2005)): "Not sensitizing."
5 Germ cell mutagenicity	Classification not possible	—	—	—	Based on the absence of data on in vivo mutagenicity tests and no positive data on in vitro mutagenicity tests (several indices), described in SIDS (2005).
6 Carcinogenicity	Classification not possible	—	—	—	No data available
7 Toxic to reproduction	Not classified	—	—	—	Histopathological changes, such as seminiferous tubular atrophy, were observed at doses producing general toxicity in repeated dose toxicity studies and teratogenicity studies with rats (SIDS (2005)). However, SIDS attributes these changes to the indirect effects of general toxicity of a severe degree.
8 Specific target organs/systemic toxicity following single exposure	Category 2 (nervous system, heart, kidneys, respiratory organs)	Health hazard	Warning	May cause damage to organs (nervous system, heart, kidneys, respiratory organs)	Based on the evidence from animal studies including "sedation, laboured breathing, dyspnea, spasm, arrhythmia, cardiac fibrillation, proteinuria, kidney damage" (BUA 143 (1996)), "corrosive to the respiratory tract; inhalation of aerosols may result in pulmonary edema" (ICSC (J) (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. However, the referenced studies are assigned a priority rating of 2, the effects are classified into Category 2.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (kidneys) Category 2 (respiratory organs, liver, blood system, adrenal, heart)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (kidneys) May cause damage to organs through prolonged or repeated exposure (respiratory organs, liver, blood system, adrenal, heart)	Based on the evidence from animal studies including "vacuolar degeneration of the nasal mucosa and olfactory epithelium, elevated GOT/GPT, decreased hemoglobin level/mean corpuscular hemoglobin concentration (MCHC), and mild renal tubular nephrosis" (SIDS (2001)), "histological changes in the liver, red blood cell, white blood cell, kidneys, adrenal and heart" (SIDS (2001)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1 (kidneys) and Category 2 (respiratory organs, liver, blood system, adrenal, heart).
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 2	—	—	Toxic to aquatic life	It was classified into Category 2 from 48 hours EC50=4.6mg/L of the crustacea (Daphnia magna) (MOE eco-toxicity tests of chemicals, 2000).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	—	Toxic to aquatic life with long lasting effects	Although acute toxicity was Category 2 and the bio-accumulation potential was low (BCF=6(Existing Chemical Safety Inspections Data)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 2.