

## GHS Classification

**ID463**

**CAS 137-30-4**

### Physical Hazards

**Zinc bis(N,N'-dimethyldithiocarbamate)**

Date Classified: Nov. 20, 2006 (Environmental Hazards: Mar. 31, 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 chemical 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 as flammable according to ICSG (2004). Assigned to Division 6.1 (UN#2771 Thiocarbamate Pesticide (solid, toxic) (ICSC (2004))) (UN Recommendations on the Transport of Dangerous Goods).
8 Self-reactive substances and mixtures	Not applicable	—	—	—	Containing no chemical groups with explosive or self-reactive properties
9 Pyrophoric liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	—	—	—	Assigned to Division 6.1 (UN#2771 Thiocarbamate Pesticide (solid, toxic) (ICSC (2004))) (UN Recommendations on the Transport of Dangerous Goods)
11 Self-heating substances and mixtures	Not classified	—	—	—	Assigned to Division 6.1 (UN#2771 Thiocarbamate Pesticide (solid, toxic) (ICSC (2004))) (UN Recommendations on the Transport of Dangerous Goods).
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	—	—	—	Stable to water (water solubility: 65mg/L (25degC), SRC (2006))
13 Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not applicable	—	—	—	Organic compounds containing no oxygen, fluorine or chlorine
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "—O—O—" structure
16 Corrosive to metals	Classification not possible	—	—	—	Test methods applicable to solid substances with melting point of >55degC are not 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 LD50 value of 594mg/kg calculated from the testing data of rat LD50 (oral route) of 500mg/kg, 1,400mg/kg, 1,750mg/kg, 650mg/kg and 267mg/kg (IUCLID (2000)).
1 Acute toxicity (dermal)	Not classified	—	—	—	Based on the rabbit LD50 (dermal route) values of >2,000mg/kg and >5,010mg/kg (IUCLID (2000)).
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is a solid according to the GHS criteria 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 2	Skull and crossbones	Danger	Fatal if inhaled	Because the rat LC50 (inhalation of vapour) values of 0.07mg/L (4 hours) (IUCLID (2000)) and 0.081mg/L (4 hours) (IUCLID (2000)) exceeded 90% of the saturated vapour concentration of $9.9 \times 10^{-6}$ ppm under a saturated vapour pressure of $7.5 \times 10^{-9}$ mmHg (extrapolation) [equivalent to $1.0 \times 10^{-6}$ Pa (extrapolation)] (SRC (2006)), the substance was considered as "mist exposure" and was classified as Category 2.
2 Skin corrosion / irritation	Category 3	—	Warning	Causes mild skin irritation	Based on test data from rat skin irritation studies (exposure duration unknown) (IUCLID (2000)): "Mild irritation."
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Based on test data from rabbit eye irritation studies (IUCLID (2000)): "Moderate to severe irritation." The substance is thus considered a "strong (though reversible) irritant" to the eye.
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: Insufficient data available
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects	Based on positive data in multi-generation mutagenicity tests (dominant lethal tests), germ cell mutagenicity tests in vivo (chromosome aberration tests) and in vivo somatic cell mutagenicity tests (micronucleus tests), described in NTP DB (Access on July 2006), EHC 78 (1988) and IARC 53 (1991).
6 Carcinogenicity	Not classified	—	—	—	Due to the fact that the substance is classified as Group 3 by IARC (1991).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of visceral anomalies in the pups at doses producing parental toxicity in rat teratogenicity studies, described in IARC 53 (1991).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (systemic toxicity), Category 2 (nervous system), Category 3 (respiratory irritation)	Health hazard	Danger	Causes damage to organs (systemic toxicity) May cause damage to organs (nervous system) (Respiratory irritation) May cause respiratory	Based on the human evidence: "Ingestion of 0.5L of a solution of ziram of unknown concentration was fatal within a few hours; nonspecific pathology was observed" (IARC 53 (1991)), "findings included focal necrosis of the mucosa of the small intestine, congestion and microscopic edema of many organs, diapedetic hemorrhages, focal atelectases, acute emphysema, and desquamation of alveolar and bronchial epithelium. The pathology was nonspecific" (HSDB (2003)), and "irritating to the respiratory tract" (ICSC (J) (2000)). Also based on the evidence from animal studies including "somnolency, and changes in physical capabilities" (IUCRID (2000)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver), Category 2 (blood system, adrenal, nervous system, kidneys, muscles, bladder)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (liver) May cause damage to organs through prolonged or repeated exposure (blood system, adrenal, nervous system,	Based on the human evidence: "may adversely affect the central nervous system" (IPCS (J) (2000)). Also based on the evidence from animal studies including "decreases in RBC, PCV and hemoglobin, and an increase in reticulocyte count," "centrilobular fibrocytes were seen" (JMPPR Ziram (Pesticide residues in food 1996 evaluations Part II Toxicological)), "adrenal cortical hypertrophy/degeneration/vacuolation increased; there was an increase in sciatic nerve axonal degeneration and lipofuscin in tubular kidney epithelium; increased adipose replacement and narrowing of peripheral muscle fiber bundles occurred in skeletal muscle; bile duct hyperplasia and pigmented sinusoidal cell incidence increased," "urinary bladder epithelial hyperplasia was increased" (HSDB 2003). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1 (liver) and Category 2 (blood system, adrenal, nervous system, kidneys, muscles, bladder).
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 LC50=0.14mg/L of the crustacea (Daphnia magna) (EHC78, 2001).
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=1.23(PHYSPROP Database, 2005)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.