GHS Classification

ID303 Lead dinitrate

CAS 10099-74-8 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 classified	–	–	–	No data available though being nitrates, containing chemical groups with explosive properties. Classified into Division 5.1 and Division 6.1 (UN#1469) (UN Recommendations on the Transport of Dangerous Goods)
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	–	–	–	Non-flammable (ICSC, 2004)
8	Self-reactive substances and mixtures	Not classified	–	–	–	No data available, though being nitrate, containing chemical groups with explosive properties. Classified into Division 5.1 and Division 6.1 (UN#1469) (UN Recommendations on the Transport of Dangerous Goods)
9	Pyrophoric liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
10	Pyrophoric solids	Not classified	–	–	–	Non-combustible (ICSC, 2004)
11	Self-heating substances and mixtures	Not classified	–	–	–	Non-combustible (ICSC, 2004)
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	–	–	–	Stable to water (water solubility: 52g/100mL (20degC, ICSC (2004))
13	Oxidizing liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
14	Oxidizing solids	Category 2	Flame over circle	Danger	May intensify fire; oxidizer	Inorganic compounds containing oxygen which "intensifies combustion of other materials" according to ICSC (2004). Classified as "Division 5.1: oxidizing substances" by the UN Recommendations on the Transport of Dangerous Goods. However, it can be included in Category 2 or 3, given the fact that it has subsidiary risks corresponding to Division 6.1 and is assigned to Packing Group II (UN#1469). The substance is placed in Category 2 from the viewpoint of safety.
15	Organic peroxides	Not applicable	–	–	–	Not organic compounds
16	Corrosive to metals	Classification not possible	–	–	–	Test methods applicable to solid substances are not available

Health Hazards

Hazard class		Classification	symbol	signal word	hazard statement	Rational for the classification
1	Acute toxicity (oral)	Classification not possible	–	–	–	No data available
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:	Classification not possible	–	–	–	No data available
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	–	–	–	No data available
2	Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the description of acute effects on humans (ICSC (J) (1999)): "flare and pain" were observed. The substance is thus considered to produce skin irritation of unknown degree.
3	Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Based on the description of acute effects on humans (ICSC (J) (1999)): "reddening and pain" were observed in the eye. The substance is thus considered to produce eye irritation of unknown degree. It should be placed in Category 2A from the viewpoint of safety is further subclassification is needed.
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	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on the absence of data on multi-generation mutagenicity tests, germ/somatic cell mutagenicity tests in vivo and germ cell genotoxicity tests in vivo, and positive data on somatic cell genotoxicity tests in vivo (SCE tests) and mutagenicity tests in vitro (gene mutation tests), described in DFGOT vol.17 (2002).
6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category R by NTP (2005), Group 2B by IARC (1987), Category A3 by ACGIH (2001) and Category 2B by Japan Society for Occupational Health.
7	Toxic to reproduction	Category 1A	Health hazard	Danger	May damage fertility or the unborn child	Based on expert judgment, given the fact that lead has been known to possess developmental neurotoxic and reproductive toxic potentials in humans.

8	Specific target organs/systemic toxicity following single exposure	Category 1 (blood system, kidneys, nervous system)	Health hazard	Danger	Causes damage to organs (blood system, kidneys, nervous system)	Based on toxicity of inorganic lead compounds. Based on the human evidence: "The effects observed in acute and chronic studies are very similar for inorganic lead compounds. Inhalation or oral ingestion of inorganic lead has been reported to induce oral contraction and thirst, along with nausea, vomiting, upper abdominal discomfort, loss of appetite, abdominal pain and constipation suggesting gastrointestinal toxicity. The effects on hematopoietic function such as hemoglobin synthesis inhibition due to delta-aminolevulinic acid/heme synthetic enzyme inhibition and anemia caused by shortened survival of red blood cells are considered representative of toxic actions of inorganic lead. Kidney effects are evidenced by interstitial nephropathy and decreased urinary output along with proximal renal tubular damage showing Fanconi's syndrome represented by proteinuria, hematuria, urinary cast, glycosuria and aminoaciduria. Inorganic lead adversely affects the central and peripheral nervous systems, displaying in particular weakening of the muscle of the limbs, pain and spasm. There have been rare reports of adults exhibiting ataxia, headache, paresthesia, depression and coma indicative of toxic effects on the central nervous system when exposing to extremely high doses (details not shown). However, children are most sensitive to toxicity of lead, and neurodevelopmental toxicity manifested as restlessness, aggression, concentration difficulties and memory lapse has become serious problem in the
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (blood system, kidneys, nervous system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (blood system, kidneys, nervous system)	Based on toxicity of inorganic lead compounds. Based on the human evidence: "The effects observed in acute and chronic studies are very similar for inorganic lead compounds. Inhalation or oral ingestion of inorganic lead has been reported to induce oral contraction and thirst, along with nausea, vomiting, upper abdominal discomfort, loss of appetite, abdominal pain and constipation suggesting gastrointestinal toxicity. The effects on hematopoietic function such as hemoglobin synthesis inhibition due to delta-aminolevulinic acid/heme synthetic enzyme inhibition and anemia caused by shortened survival of red blood cells are considered representative of toxic actions of inorganic lead. Kidney effects are evidenced by interstitial nephropathy and decreased urinary output along with proximal renal tubular damage showing Fanconi's syndrome represented by proteinuria, hematuria, urinary cast, glycosuria and aminoaciduria. Inorganic lead adversely affects the central and peripheral nervous systems, displaying in particular weakening of the muscle of the limbs, pain and spasm. There have been rare reports of adults exhibiting ataxia, headache, paresthesia, depression and coma indicative of toxic effects on the central nervous system when exposing to extremely high doses (details not shown). However, children are most sensitive to toxicity of lead, and neurodevelopmental toxicity manifested as restlessness, aggression, concentration difficulties and memory lapse has become serious problem in the
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 96 hours LC50=0.124mg/L(Lead Nitrate Equivalent: 0.198mg/L) of the crustacea (Amphipod) (EHC85, 1989).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Since although acute toxicity was Category 1 and bio-accumulation was low (BCF=250 (existing chemical safety inspections data)), it was a metallic compound, and the underwater action was unknown, it was classified into Category 1.