GHS Classification

ID455 Nickel dichloride

CAS 7718-54-9 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 "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 (HSDB, 2006)
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	–	–	–	Non-combustible (HSDB, 2006)
11	Self-heating substances and mixtures	Not classified	–	–	–	Non-combustible (HSDB, 2006)
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	–	–	–	Stable to water (water solubility: 642g/L (20degC), Merck (13th, 2001))
13	Oxidizing liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
14	Oxidizing solids	Classification not possible	–	–	–	Classification not possible due to lack of data, though being inorganic compounds containing chlorine
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)	Category 3	Skull and crossbones	Danger	Toxic if swallowed	Based on the LD50 value of 195mg/kg calculated from the testing data of rat LD50 (oral route) of 430mg/kg, 529mg/kg, 210mg/kg and 175mg/kg (ECETOC TR33 1989)).
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 in EHC 108 (1991): "When aqueous solutions of nickel chloride were applied to the back, the threshold concentrations for irritancy were 1% with occlusion and 10% without occlusion." Also based on the evidence of skin irritation in humans (though the severity of the effects is unknown).
3	Serious eye damage / eye irritation	Classification not possible	–	–	–	No data available
4	Respiratory/skin sensitization	Respiratory sensitization: Category 1 Skin sensitization: Category 1	(Respiratory sensitization) Health hazard (Skin sensitization) Exclamation mark	(Respiratory sensitization) Danger (Skin sensitization) Warning	(Respiratory sensitization) May cause allergy or asthma symptoms or breathing difficulties if inhaled (Skin sensitization) May cause an allergic skin reaction	Respiratory sensitization: Due to the fact that the substance is classified as a Respiratory Sensitizing Substance by DFG (MAK/BAT (2005)) and "Respiratory Sensitizing Substance: Group 2" (as nickel compounds) according to the Recommendation on Occupational Exposure Limits for Chemical Substances (Japan Society for Occupational Health (2005)). Skin sensitization: Due to the fact that the substance is classified as a Skin Sensitizing Substance by DFG (MAK/BAT (2005)) and "Skin Sensitizing Substance: Group 1" (as nickel compounds) according to the Recommendation on Occupational Exposure Limits for Chemical Substances (Japan Society for Occupational Health (2005)).
5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on negative data on multi-generation mutagenicity tests (dominant lethal tests) and the absence of data on germ cell mutagenicity tests in vivo and germ cell genotoxicity tests in vivo, and positive data on somatic cell mutagenicity tests in vivo (chromosome aberration tests), described in IARC 49 (1990), EHC 108 (1991), ECETOC 33 (1989) and ATSDR (2005).
6	Carcinogenicity	Category 1A	Health hazard	Danger	May cause cancer	Due to the fact that the substance is classified as Category K (as nickel compounds) by NTP (2005) and Category 1 (as nickel compounds) by IARC (1990).
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of adverse effects on the reproductive function of parental animals and pup development, described in ATSDR (2005), IARC 49 (1990) and EHC 108 (1991). As for the reproductive/developmental toxicity of water-soluble inorganic nickel compounds, refer to "ID453, Nickel Sulfate, CAS: 7786-81-4."
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system)	Health hazard	Danger	Causes damage to organs (central nervous system)	Based on the human evidence including "nausea, abdominal spasm, diarrhea, vomiting, headache, dizziness, debility and myalgia" (ATSDR (2005)). The acute toxicity of nickel compounds manifests in humans as "nausea, diarrhea, dizziness, headache" (ECETOC TR33 (1989)).

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (kidneys, respiratory organs, testes)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (kidneys, respiratory organs, testes)	Based on the human evidence including "elevated urinary beta2-microglobulin levels" (ATSDR (2005)) and the evidence from animal studies including "hyperplasia of the bronchial epithelium, marked reduction of seminiferous tubule diameter" (ATSDR (2005)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. Chronic exposure to nickel and its compounds may produce respiratory irritation and degeneration in humans even at doses close to occupational exposure limits. Prolonged exposure to high concentrations is likely to result in the fibroid lung (ECETOC TR33 (1989)).
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=0.013mg/L of the crustacea (Ceriodaphnia) (ECETOC TR91, 2003).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Since acute toxicity was Category 1 and it was a metallic compound, and since an underwater action and bio-accumulation were unknown, it was classified into Category 1.