

GHS Classification

ID453

CAS 7786-81-4

Physical Hazards

Nickel sulphate

Date Classified: Jul. 24, 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	—	—	—	Non-flammable (ICSC, 2004)
8 Self-reactive substances and mixtures	Classification not possible	—	—	—	Classification not possible due to lack of data, though being a sulfonyl, containing chemical groups with self-reactive properties
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: 40.4g/100g (25degC), Lide (84th, 2003))
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 inorganic compounds containing oxygen
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 275mg/kg calculated from the testing data of rat LD50 (oral route) of 500mg/kg, 275mg/kg and 325mg/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: dust, mist)	Classification not possible	—	—	—	No data available
2 Skin corrosion / irritation	Classification not possible	—	—	—	Animal studies (rat skin irritation tests using cumulative application) (EHC 108 (1991)) and human epidemiological studies (EHC 108 (1991)) provide some evidence of irritation. However, classification is not possible in the absence of data on the severity of the effects.
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 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 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	Not classified	—	—	—	Based on the absence of data on multi-generation mutagenicity tests and negative data on germ cell mutagenicity tests in vivo (chromosome aberration tests) and somatic cell mutagenicity tests in vivo (micronucleus tests, chromosome aberration tests), described in IARC 49 (1990), ATSDR (2005) and EHC 108 (1991). As for the mutagenicity/genotoxicity of water-soluble inorganic nickel compounds, refer to "ID455, Nickel Chloride (II), CAS: 7718-54-9."
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 male reproductive function and pup development, described in EHC 108 (1991), IARC 49 (1990), ATSDR (2005), ACGIH (7th, 2001) and CERL Hazard Data 97-19 (1998).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, respiratory organs)	Health hazard	Danger	Causes damage to organs (central nervous system, respiratory organs)	Based on the human evidence including "nausea, abdominal spasm, diarrhea, vomiting, headache, dizziness, debility, myalgia" (ATSDR (2005)), "hemianopia" (IARC 49 (1990)), and the evidence from animal studies including "pulmonary hemorrhage" (ATSDR (2005)), "ataxia, swelling of the limbs, salivation" (CERI Hazard Data 97-19 (1998)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. 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 (respiratory organs, kidneys, testes) Category 2 (liver)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (respiratory organs, kidneys, testes) May cause damage to organs through prolonged or repeated exposure (liver)	The respiratory organs, kidney, testes and liver were considered to be the target organs based on reported effects including "increase in urinary levels of total proteins, beta2-microglobulin, retinol binding protein, and N-acetyl-beta-D-glucosaminidase (NAG)" (ATSDR (2005)) and "chronic rhinitis, nasal septal erosions, perforations and ulceration, allergic asthma and acute asthma" (EHC 108 (1991)) observed in human studies, and "decrease in number of bipolar receptor cells in nasal olfactory epithelium, alveolitis, atrophy of centrally located tubules" (ATSDR (2005)) and "vacuolation and deformation of hepatocytes, degeneration of the renal glomerulus, detachment of alveolar epithelium, alveolar wall thickening, emphysema and detachment of bronchial epithelium" (CERI hazard data collection 97-19 (1998)) observed in experimental animal studies. In experimental animals, these effects were observed at dosing levels within the guidance value ranges for Category 1 and for Category 2. Therefore the substance has been classified as Category 1 (respiratory organs, kidney and testes) and Category 2 (liver). The chronic toxicity of nickel compounds in humans is mentioned as follows: "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 72 hours EC50=0.75mg/L of the algae (Selenastrum) (CERI Hazard Data, 1997).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity was Category 1 and bio-accumulation was low (BCF<31 (Existing Chemical Safety Inspections Data)), since it was a metallic compound and the underwater action was unknown, it was classified into Category 1.