

GHS Classification

ID169

Nickel

CAS 7440-02-0

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	Classification not possible	-	-	-	Classification not possible, because of the unidentified configuration and the absence of data. The substance, in the form of powder or vapor, is flammable (ICSC (2004)) and, as far as metals are concerned, the finer the particles, the more dangerous they are, according to Sax (11th, 2004). Metal powder (combustibles) (except those identifiable by name) is classified into Divisions 4.1, Packing Group II and III (UN Recommendations on the Transport of Dangerous Goods, UN#3089).
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	-	-	-	The substance is stable in the air at ordinary temperatures (Merck (13th, 2001)).
11 Self-heating substances and mixtures	Classification not possible	-	-	-	No data available
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	-	-	-	The substance is stable in the air and does not react with water (Merck (13th, 2001))
13 Oxidizing liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not applicable	-	-	-	Inorganic compounds containing no oxygen and halogen
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)	Not classified	-	-	-	Because the rat LD50 (oral route) values of >=9,000mg/kg (ECETOC TR33 (1989)) and >=5,000mg/kg (ECETOC TR33 (1989)) exceed 5,000mg/kg.
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
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Classification not possible	-	-	-	No data available
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 into "Respiratory Sensitizing Substance: Group 2" according to the Recommendation on Occupational Exposure Limits for Chemical Substances (Japan Society for Occupational Health (2005)) and "Respiratory Sensitizing Substance" by the Japanese Society of Occupational Allergy and DFG. Skin sensitization: Due to the fact that the substance is classified into "Skin Sensitizing Substance: Group 1" according to the Recommendation on Occupational Exposure Limits for Chemical Substances (Japan Society for Occupational Health (2005)) and Skin Sensitizing Substance by the Japanese Society of Occupational Allergy and DFG.
5 Germ cell mutagenicity	Classification not possible	-	-	-	Classification not possible due to the insufficiency of data (no data available on in vivo mutagenicity/genotoxicity tests)
6 Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category R (as metal nickel) by NTP (2005), Category 2B (as metal nickel) by IARC (1990).
7 Toxic to reproduction	Classification not possible	-	-	-	Insufficient data available
8 Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs, kidneys)	Health hazard	Danger	Causes damage to organs (respiratory organs, kidneys)	Based on the human evidence including "alveolar wall damage, alveolar edema and significant renal tubular necrosis" (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 (respiratory organs)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs)	The respiratory organs are considered to be the target organs since there are reports on adverse effects such as "pleurisy, pneumonia, congestion, and edema" (CaPSAR (1994)) and then "focal accumulation of alveolar macrophages and interstitial" (ATSDR (2005)). These effects were observed at dosing levels within the guidance values for Category 1 in the chronic studies. Therefore, the substance was classified as Category 1 (respiratory organs). 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
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)	Classification not possible	-	-	-	Classification not possible due to lack of data
11 Hazardous to the aquatic environment (chronic)	Category 4	-	-	May cause long lasting harmful effects to aquatic life	Although L(E) C50 <=100 mg/L data existed, since it was metal and the behavior in the water was unknown, it classified into Category 4.