GHS Classification

ID487 Beryllium sulfate, Tetrahydrate

CAS 7787-56-6 Date Classified: Aug. 22, 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	–	–	–	The anhydride of beryllium sulfate is classified as non-flammable by HSDB (2006)
8	Self-reactive substances and mixtures	Classification not possible	–	–	–	Classification not possible due to lack of data, though being sulfonyls, containing chemical groups with self-reactive properties
9	Pyrophoric liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
10	Pyrophoric solids	Not classified	–	–	–	The anhydride of beryllium sulfate is classified as non-flammable by HSDB (2006)
11	Self-heating substances and mixtures	Not classified	–	–	–	The anhydride of beryllium sulfate is classified as non-flammable by HSDB (2006)
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	–	–	–	Stable to water (water solubility: 41.3g/100g (anhydride equivalent, 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 being 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 140 mg BeSO4.4H2O/kg calculated from the testing data of rat LD50 (oral route) of 7.0 mg beryllium/kg (DFGOT Vol.21 (2005)).
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)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	Based on the LC50 value of 0.029 mg BeSO4.4H2O/L calculated from the testing data of rat LC50 (4 hour inhalation) of 0.15 mg beryllium/m3 (DFGOT Vol.21 (2005)).
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: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization)— (Skin sensitization) Exclamation mark	(Respiratory sensitization)— (Skin sensitization) Warning	(Respiratory sensitization)— (Skin sensitization) May cause an allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the positive results in patch tests and Maximization Tests reported in human epidemiological studies (DFGOT Vol.21 (2005)), and the positive results in guinea pig skin sensitization tests carried out according to Maximization Method. The substance is thus considered a sensitizing skin irritant.
5	Germ cell mutagenicity	Not classified	–	–	–	Based on the absence of data on multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, and negative data on somatic cell mutagenicity tests in vivo (micronucleus tests), described in NTP DB (Access on May, 2006), IARC 58 (1993), ATSDR (2002) and DFGOT Vol.21 (2005).
6	Carcinogenicity	Category 1A	Health hazard	Danger	May cause cancer	Due to the fact that the substance is classified as Category K (Beryllium (CAS 7440-41-7) and Beryllium Compounds) by NTP (2005) and Category 1 (BERYLLIUM AND BERYLLIUM COMPOUNDS) by IARC (1993).
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of abnormal behaviour of the offspring such as delayed response in head turning in a geotaxis test and delayed bar-holding response following intraperitoneal injection of the substance (140ng Be/mouse per day), described in EHC 106 (1990) (though no data are available on maternal toxicity). As for the reproductive toxicity of beryllium compounds, refer to "ID485, Beryllium Oxide, CAS: 1304-56-9."
8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs (respiratory organs)	Based on the evidence from animal studies: "occurrence of pneumonitis with thickening of the alveolar walls and inflammation of the lung" in rats and mice (ATSDR (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, kidneys, blood system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs, kidneys, blood system)	Based on the human evidence: "field studies were carried out, and it became evident that the acute respiratory effects could be caused by inhalation of beryllium fluoride, sulfate, chloride, oxide, or hydroxide, and metallic dust" (EHC 106 (1990)). Also based on the evidence from animal studies including "inflammation, emphysema, and fibrosis of the lung were observed. Histological examination revealed glomerular degeneration in the kidneys," "the lung appeared to be severely inflamed and emphysematous; leukocytosis and thrombocytosis were observed," "inflammation and fibrosis of the lung" (ATSDR (2002)), "chronic pneumonia; localized granulomatous lesions" (EHC 106 (1990)) The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 96 hours 0.15-0.2mg Be/L(Beryllium Sulfate Equivalent=1.75-2.34mg/L) of the fish (Fathead Minnows) (EHC106, 1990).
11	Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Although acute toxicity was Category 2 and bio-accumulation was low (BCF=230 (Existing Chemical Safety Inspections Data)), since it was a metallic compound and the underwater action was unknown, it was classified into Category 2.