

GHS Classification

ID190

beryllium

CAS 7440-41-7

Date Classified: Mar. 23, 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	-	-	-	There are no chemical groups associated with explosive properties present in the molecules.
2 Flammable gases	Not applicable	-	-	-	Solid (GHS definition)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Solid (GHS definition)
5 Gases under pressure	Not applicable	-	-	-	Solid (GHS definition)
6 Flammable liquids	Not applicable	-	-	-	Solid (GHS definition)
7 Flammable solids	Classification not possible	-	-	-	Although beryllium powder is classified into the class 4.2 of subsidiary risks according to UNRTDG, burning rate changes with size of the powders etc.. So it cannot be judged, without regular burning rate examination of a real sample. The acceptance criteria are as follows: The burning time with defined test: Category 1 <= 5 minutes; Category 2 > 5 minutes and <= 10 minutes
8 Self-reactive substances and mixtures	Not applicable	-	-	-	There are no chemical groups associated with explosive or self-reactive properties present in the molecule.
9 Pyrophoric liquids	Not applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Not classified	-	-	-	UNRTDG Class: 6.1 Subsidiary risks Class: Class: 4.1 (Powdery Beryllium)
11 Self-heating substances and mixtures	Not classified	-	-	-	UNRTDG Class: 6.1 Subsidiary risks Class: Class: 4.1 (Powdery Beryllium)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	-	-	-	UNRTDG Class: 6.1 Subsidiary risks Class: Class: 4.1 (Powdery Beryllium)
13 Oxidizing liquids	Not applicable	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Containing no oxygen , chlorine and fluorine.
15 Organic peroxides	Not applicable	-	-	-	Inorganic substance
16 Corrosive to metals	Not classified	-	-	-	UNRTDG Class: 6.1 Subsidiary risks Class: Class: 4.1 (Powdery Beryllium)

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	-	-	-	Solid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	Since data is insufficient, it cannot classify. There is only a description in ATSDR (2002) that 20 out of 74 rats died on 12 - 15 days after from 50-minute inhalation exposure of 0.8 mg/L...
2 Skin corrosion / irritation	Classification not possible	-	-	-	Classification not possible due to lack of data
3 Serious eye damage / eye irritation	Classification not possible	-	-	-	Insufficient data available.
4 Respiratory/skin sensitization	Respiratory sensitization: Category 1; Skin sensitization: Category 1	Health hazard	Danger	(Respiratory sensitization)May cause allergy or asthma symptoms or breathing difficulties if inhaled; (Skin sensitization)May cause allergic skin reaction	Respiratory : Classified as Category 1 because the Japan Society for Occupational Health (2005) classifies this into the 1st group of respiratory tract sensitization. Respiratory : Classified as Category 1 because the Japan Society for Occupational Health (2005) classifies this into the 2nd group of respiratory tract sensitization.
5 Germ cell mutagenicity	Classification not possible	-	-	-	No data available

6	Carcinogenicity	Category 1A	Health hazard	Danger	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It is classified into 2A according to Japan Society for Occupational Health (2005), and into category 2 in according to EU (Access on Oct 2005). But it is classified into 1 according to IARC (Access on Oct 2005), and into A1 according to ACGIH (7th, 2001), and into L (inhalation) according to EPA (IRIS (Access on Oct 2005)), and is classified into K according to NTP (NTP RoC (2005)). So it was set as Category 1A.
7	Toxic to reproduction	Classification not possible	-	-	-	Since data is insufficient, it cannot classify. Although CICAD 32 (2001), IARC 58 (1993), and IRIS (1998) have description of the epidemiological studies which deny the relationship between the beryllium occupation exposure and a miscarriage/premature delivery, it is not the evidence which can deny reproductive toxicity obviously.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs)	Health hazard	Danger	Cause damage to organs (respiratory organs)	In the descriptions that the inflammation of the airways is observed by short-term exposure in human in EHC 106 (1990), CICAD 32 (2001), ACGIH (7th, 2001), DFGOT vol.3 (1992), PATTY (4th, 1994), IARC 58 (1993) and ATSDR (2002), and that severe chemical pneumonia may be caused. So it is judged that the target organs is respiratory system, therefore, it was classified into Category 1.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs (respiratory organs) through prolonged or repeated exposure	Due to the descriptions that in long-term evidence of exposure of the humans in EHC 106 (1990), CICAD 32 (2001), ACGIH (7th, 2001), DFGOT vol.3 (1992), PATTY (4th, 1994), IARC 58 (1993), IRIS (1998), and ATSDR (2002), Chronic beryllium disease of (berylliosis) is observed, target organ is judged respiratory systems, and it was classified into Category 1.
10	Aspiration hazard	Classification not possible	-	-	-	Insufficient 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	-	-	-	Insufficient data available.
11 Hazardous to the aquatic environment (chronic)	Category 4	-	-	May cause long lasting harmful effects to aquatic life	Classified into Category 4, since it is a metal, behavior in water is unknown.