GHS Classification

ID596 Bromine

CAS 7726-95-6 Date Classified: Jun. 20, 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	–	–	–	There are no chemical groups associated with explosive properties present in the molecules.
2	Flammable gases	Not applicable	–	–	–	Liquid (GHS definition)
3	Flammable aerosols	Not applicable	–	–	–	Not aerosol products
4	Oxidizing gases	Not applicable	–	–	–	Liquid (GHS definition)
5	Gases under pressure	Not applicable	–	–	–	Liquid (GHS definition)
6	Flammable liquids	Not classified	–	–	–	Not combustible.
7	Flammable solids	Not applicable	–	–	–	Liquid (GHS definition)
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 classified	–	–	–	Not combustible
10	Pyrophoric solids	Not applicable	–	–	–	Liquid (GHS definition)
11	Self-heating substances and mixtures	Not classified	–	–	–	Not combustible.
12	Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	–	–	–	The chemical structure of the substance does not contain metals or metaloids(B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At).
13	Oxidizing liquids	Classification not possible	–	–	–	Although oxygen, fluoride, and chlorine are not included, they are indicated to Enhances combustion of other substances on the ICSC cards. It is an oxidizing liquid. However, in UNRTDG, subsidiary risks nature 5.1 is not attached to the UN number 1744. Although it was thought that oxidizing powers did not exceed 65% nitrate which is a minimum standard substance of PG III, there was no released data. So it presupposed "It cannot classify." Although a possibility of be in outer category is large, references to risk of combustion aids should be attached to MSDS.
14	Oxidizing solids	Not applicable	–	–	–	Liquid (GHS definition)
15	Organic peroxides	Not applicable	–	–	–	Inorganic substance
16	Corrosive to metals	Category 1	Corrosion	Warning	May be corrosive to metals	It is not necessary to do the examination defined in the United Nations, and is judged as "Category 1". Because reacting violently with aluminum is known (Bretherick (J) (1998)).

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	There are the value of 1700 mg/kg (RTECS (2004)) and 2600 mg/kg (IUCLID (2000)) in oral LD50 of rats. The lower one was adopted and it was set as Category 3.
1	Acute toxicity (dermal)	Classification not possible	–	–	–	There is no transdermal absorptions lethal toxicity data, and it cannot be classified.
1	Acute toxicity (inhalation: gas)	Not applicable	–	–	–	Liquid (GHS definition)
1	Acute toxicity (inhalation: vapour)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	There was no suitable data for rats. So two mice data (ACGIH (2001)) were converted for 4 hours, and LC50: 120ppm and 61.5ppm were obtained. And it was classified as Category 1 based on he lower one. T+; R26 is used in the EU risk phrase.
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	–	–	–	Classification not possible due to lack of data
2	Skin corrosion / irritation	Category 1	–	–	–	The experimental result on rats is a stimulation (IUCLID (2000)). But there is a statement of skin corrosion on humans (Patty (5th.2001), HSDB (2005), HSFS (1998)), and the risks phrases of R35 was applied in EU. So it was classified as Category 1. There is no test data with sub-category A-C. But it is designated to be class 8 PG Division I by UNRTDG. So it is considered to be Category 1A.
3	Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	The animal experiment in ACGIH (2001) is exposure to a vapor, and is not what medicated the eye with the liquid. It is indicated as the eye stimulus in another part. HSFS (1998) also has severe eye description of stimulus. Since Category of a skin stimulus is 1, an eye is also set to "Category 1" by provision of GHS.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	(Respiratory sensitization)–; (Skin sensitization)–	(Respiratory sensitization)–; (Skin sensitization)–	(Respiratory sensitization)–; (Skin sensitization)–	No data available
5	Germ cell mutagenicity	Classification not possible	–	–	–	The substance cannot be classified because there are no test reports about the mutagenicity.

6	Carcinogenicity	Classification not possible	–	–	–	Since there was no test reports and there was also no evaluation result, and it presupposed "It cannot classify." Mr. Shirasu's experimental result recorded and selected by IUCLID (2000) is an evaluation of a fumatory agent and a methyl bromide, and is not a thing about an elements d bromine.
7	Toxic to reproduction	Classification not possible	–	–	–	Classification not possible due to lack of data on toxic to rproduction and epidemiology.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory, central nervous system)	Health hazard	Danger	Cause damage to organs (respiratory, central nervous system)	By the animal experiments with an exposure amount (300ppm) which is less than the guidance value (2500ppm) of Category 1, dysfunction of the central nerve system, damages to lungs and bronchus, and bleeding in gastrointestinal mucosa are observed (ACGIH (2001)). Symptoms in connection with the respiratory organ-system and central nerve system are also indicated by humans (Patty (5th.2001)). So it was set as "Category 1(a central nervous system, respiratory-organ system)". The respiratory tract irritation was included in the respiratory systems. The effect on the digestive system is not adopted as organ toxicity because it is caused by the corrosiveness of this substance.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, nervous system, endocrine system)	Health hazard	Danger	Causes damage to organs (respiratory organs, nervous system, endocrine system) through prolonged or repeated exposure	Since it is reported of the effects on the respiratory, nervous and endcrine systems in the animal experiments of exposures which is below the guidance value (10mg of oral/kg/d, 50 ppm of inhalation (steam) / 6 h/d) of Category 1(ACGIH (2001), Patty (5th.2001)) , it was classified to as Category 1 regarding these as target organs.
10	Aspiration hazard	Classification not possible	–	–	–	There is the statements of chemical pneumonia by steam inhalation (IUCLID (2000)), but there was no report of the influence by aspiration and we could not classify it.

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-hour LC50=1000microg/L of Crustacea (Daphnia magna) (AQUIRE, 2003).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Classified into Category 1, since acute toxicity was Category 1, and behavior in water and bioaccumulative potential are unknown.