

GHS Classification

ID803

polybrominated biphenyl

CAS

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	-	-	-	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	Not classified	-	-	-	Non-flammable (HSDB (2003))
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	-	-	-	Not classified because of "Not flammable" (HSDB, 2003)
11 Self-heating substances and mixtures	Not classified	-	-	-	Not classified because of non-flammable (HSDB, 2003)
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 metalloids(B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At).
13 Oxidizing liquids	Not applicable	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Containing no oxygen, chlorine and fluorine.
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
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	-	-	-	There are 21500, 2000, >5000, >20000 mg/kg (EHC 152 (1994)), >2000 mg/kg (IARC 41 (1986)) and 17000 mg/kg (PATTY (5th, 2001)) as rat LD50, and it was set as the outside of Category based on these data.
1 Acute toxicity (dermal)	Not classified	-	-	-	There are rabbit LD50s: 5000, 5000, > 10000, >10000, >8000mg/kg (EHC 152 (1994)), and there is rat LD50 >5000mg/kg (EHC 152 (1994)). It was set as the outside of Category based on these data.
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)	Not classified	-	-	-	Based on the report that there is no mortality (EHC 152 (1994)) by 71 and 200mg/L (1h) (converted value for 4 hours are 17.8 and 50mg/L, respectively) in rats, it was set as the outside of Category.
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	With a single or two-week repetition application, slight erythemas and edemas were observed on rabbit or guinea pig skin (EHC 152 (1994), ATSDR (2004)), and skin reactions was not observed depending on test conditions (ATSDR (2004)), therefore, it was classified as Category 3.
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	Based on what by applying to the eyes of the rabbit, slight irritations, temporary redness, and edema corneal are acknowledged (ATSDR (2004), it was set as Category 2B.
4 Respiratory/skin sensitization	respiratory sensitization: Classification not possible; Skin sensitization: Not possible	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	[Respiratory sensitization] No data. [Skin sensitization] We classified it as Out Of Category since sensitizing property is not acknowledged in the skin sensitivity test using guinea pigs (EHC 152 (1994)).
5 Germ cell mutagenicity	Not classified	-	-	-	Based on the descriptions (EHC 152 (1994), NTP DB (2006)) that it gave negative for all of the in vivo mutagenicity tests (the chromosomal aberration test using the spermatogenic cells and marrow cells of the rat, the chromosomal aberration test using the mouse marrow cells, and micronucleus examination using the marrow cells of the mouse) using the germ cells and somatic cells, we classified it as Out Of Category.

6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It was set as 2 based on being classified into 2B according to IARC (1987).
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	A cleft palate, a diaphragmatic hernia, a cerebral hernia and malformation of hydronephrosis to fetus in rat or mouse organogenetic period administration test are reported (EHC 152 (1994)), moreover, in pregnant period and/or lacting period administration test, lowering the rates of implantation, increasing the embryo resorptions, increasing the fetal death, and increasing the weaning infant mortality are also described (EHC 152 (1994), ATSDR (2004)). However, since description was not seen about the general toxicity to parent, it was classified into Category 2.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (liver)	Health hazard	Danger	Cause damage to organs (liver)	It is reported that a single-time oral administration of 10 – 13.3mg/kg of 3,3',4,4'-tetrabrominated biphenyl or 3,3',4,4',5,5'-hexabrominated biphenyl to a rat causes effects which mainly include diffuse cytomegaly and cytoplasmic vacuolation accompanied by sinusoidal obstruction in liver (EHC 152 (1994)). Therefore we classified it as Category 1 (liver). In addition, oral administration of FireMaster FF-1 showed the similar effects on liver in rats (PATTY (5th, 2001)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver, thyroid gland, kidneys, nervous system, skin)	Health hazard	Danger	Causes damage to organs (liver, thyroid gland, kidneys, nervous system, skin) through prolonged or repeated exposure	To rats or mice, in repeated oral administrations of the dosage below 10 mg/kg/day (as 90-day medication), liver hypertrophy accompanied by an elevations of liver enzymes, histological changes such as vacuolization and hepatocyte hypertrophy [finding of liver] (EHC 152 (1994)), histological change such as hyperplasia accompanied by a thyroid hormones (T3, T4) decrease etc. [thyroid findings] (EHC 152(1994), ATSDR (2004)), chronic renal impairment [kidney findings] (EHC 152 (1994), and a locomotor activity decrease, decrease of the grip and the extensor reaction of front limb and hind limb (NTP TR398 (1993)) [nervous systems] are observed. On the other hand, huge and various surveillance study concerning the health of the humans are performed after the pollution accident in Michigan, U.S. Then, an elevation of liver enzymes, such as GPT and GOT, liver hypertrophy [finding of liver] (ATSDR (2004)), a hypothyroidism [thyroid findings] (EHC 152 (1994)), neurological symptoms, such as fatigue, concentration-lacking and depression, muscle weakness [nervous system findings] (EHC 152 (1994), ATSDR (2004)), and as systemic symptoms, skin condition such as acne, release, exfoliation, and erythema [skin observation] (ATSDR (2004)) are reported. It was classified into Category 1 (liver,thyroid,kidney,nervous systems,skin) based on the above informations.
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	-	-	-	No data available
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	No data available.