

## GHS Classification

**ID191**

**Benzene, (trichloromethyl)-**

**CAS 98-07-7**

Date Classified: Mar. 23, 2006 (Environmental Hazards: Feb. 10, 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	-	-	-	Flash point: >93degC
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	-	-	-	Flash point: 211degC (ICSC(J) (1995))
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	UNRTDG Class: 8
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	-	-	-	Organic compounds containing chlorine (but not oxygen and fluorine) chemically bonded only to carbon and hydrogen (but not to other elements).
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Classification not possible	-	-	-	Although classified into the class 8 according to UNRTDG, there is no data used as the basis of metal corrosiveness.

## Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Calculated based on rat LD50 value: 736mg/kg (CERI Hazard Data (2002)), ACGIH (7th, 2001), DFGOT vol.6 (1994), 1249mg/kg (SIDS (2004)), 1590mg/kg (SIDS (2004)), and 702mg/kg (SIDS (2004)). Since the calculated values was 718.3mg/kg, it was set as Category 4.
1 Acute toxicity (dermal)	Category 5	-	Warning	May be harmful in contact with skin	Based on rabbit LD50 value: 4000mg/kg (CERI Hazard Data (2002), SIDS (2004), DFGOT vol.6 (1994)), and rat LD50 value: >5000mg/kg (SIDS (2004)), the lower value was adopted and it was set as Category 5.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	Lower value was adapted based on the rat LC50 with 4-hour exposure: 0.53mg/L (SIDS (2004)) and rat LC50 with 1 hour exposure: 8.39mg/L (4-hour equivalent is 4.2mg/L) (SIDS (2004), DFGOT vol.6 (1994)). 0.53mg/L was indicated steam with almost no mist from the vapor pressure. So it was classified according to the ppm concentration standard. It was classified as Category 1 based on the equivalent value (conversion coefficient: 1ppm =7.99mg/m3) was 66ppm.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	It was classified as Category 2 from descriptions that irritation was observed in the application test on rabbit skin (CERI Hazard Data (2002) and SIDS (2004)) and from the report of human skin irritation (IARC 29 (1982) and CERI Hazard Data (2002)).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	From Descriptions that severe irritation was acknowledged by apply to the eye of the rabbit on CERI Hazard Data (2002) and SIDS (2004), and that change acknowledged by apply to the eye of the rabbit was recovered within 14 days on SIDS (2004), and that IARC 29 (1982) and CERI Hazard Data(2002) had eye or mucosal irritation reports in humans. So it was set as Category 2A.
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	Category 2	Health hazard	Warning	Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	The substance was classified as Category 2. Because there are positive results from the chromosome aberration tests using rat bone-marrow cells, which are in vivo mutagenicity tests using somatic cells (CERI Hazard Data (2002), SIDS (2004), DFGOT vol.6 (1994)), and there is no positive result from in vivo genotoxicity tests using germ cells.
6	Carcinogenicity	Category 1B	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 1 in Japan Society for Occupational Health (2005) and is classified into B-2 according to EPA (IRIS (Access on Oct 2005)). But it is classified into A2 according to IARC 29 (1982), and into 2A according to ACGIH (7th, 2001), and into R according to NTP (NTP RoC (11th, 2005)), and classified into category 2 according to EU (EU ANNEX-I (Access on Oct 2005)). So it was set as Category 1B.
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Since there is the description that there was skeletal malformation of embryo in the dose no general toxicity to maternal animals in the teratogenicity test of rat oral administration during organogenesis stage (SIDS (2004) and CERI Hazard Data (2002)), it is classified into the Category 2.
8	Specific target organs/systemic toxicity following single exposure	Category 3 (narcotic effects, respiratory tract irritation)	Exclamation mark	Warning	May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	In the description that excitability of the central nervous system was observed by inhalation exposure at low concentration in the range of guidance value of Category 1 in rat and mouse in CERI Hazard Data (2002), ACGIH (7th, 2001), IARC 29 (1982) and DFGOT vol.6 (1994), it was judged that it has anesthetic actions. Moreover, due to the descriptions that the airway mucosa irritation was observed by inhalation exposure in rat and mouse in CERI Hazard Data (2002), ACGIH (7th, 2001), IARC 29 (1982), and DFGOT vol.6 (1994), and that it has the respiratory irritation and the mucosa irritation in human in IARC 29 (1982) and CERI Hazard Data (2002), it is judged it has respiratory irritation, it was classified into Category 3 (anesthesia action, respiratory irritant).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (inhalation exposure: liver, kidneys, thyroid gland, blood, respiratory organs)	Health hazard	Danger	Causes damage to organs (inhalation exposure: liver, kidneys, thyroid gland, blood, respiratory organs) through prolonged or repeated	Due to the descriptions that in CERI Hazard Data (2002), SIDS (2004), and DFGOT vol.6 (1994), by the oral feeding administration tests using the rats, histologic changes was observed in the liver, the kidney and the thyroid gland, and that in CERI Hazard Data (2002), SIDS (2004), ACGIH (7th, 2001), IARC 29 (1982), or DFGOT vol.6 (1994), by the inhalation exposure test using the rat, leukopenia, mild anemia, renal dysfunction, bronchitis, pneumonia, or the fatty change of liver were observed, the liver, the kidney, thyroid, blood and respiratory systems were considered as target organs. Since all effects were observed by exposure within the guidance value of Category 1, these were classified into Category 1.
10	Aspiration hazard	Category 2	Health hazard	Warning	May be harmful if swallowed and enters airways	Since description of "there is a risk of causing chemical pneumonitis by aspiration in swallowing fluid" (ICSC (J) (1995)) was judged to be described based on the evidence of humans etc., we classified into Category 2.

## Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 3	-	-	Harmful to aquatic life	It was classified into Category 3 from 24-hour EC50=50mg/L of Crustacea (Daphnia magna) (CERI Hazard Data, 2002).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since rapidly degrading (it hydrolyzed and benzoic acid and hydrochloric acid are generated (CERI Hazard Data, 2002)), and supposed less bio-accumulative (log Kow=3.9 (PHYSPROP Database, 2005)).