

GHS Classification

ID613

Hexachlorocyclopentadiene

CAS 77-47-4

Date Classified: Aug. 18, 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	-	-	-	Non-combustible (Hommel, 1991, Card No.1075).
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	-	-	-	Non-combustible (Hommel, 1991 Card No.1075 ; etc.)
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible (Hommel, 1991, Card No.1075; etc.)
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 it is classified into the class 6.1 in UNRTDG, there is also information that it corrodes various metals under the presence of moisture content. (HSDB (2005))

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 values: 510mg/kg, 926mg/kg, 651mg/kg, and 315mg/kg (EHC 120, 1991), 505mg/kg and 530mg/kg (IRIS, 2001), 584mg/kg and 471mg/kg (ATSDR, 1999). Since the calculated values was 459mg/kg, it was set as Category 4.
1 Acute toxicity (dermal)	Classification not possible	-	-	-	If the lower value is adopted based on rabbit LD50 value: 780mg/kg and <200mg/kg (EHC 120, 1991), Category was not able to be specified. So it was determined that 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	Based on rat LC50 (4 hours) value: 0.0181mg/L (EHC 120, 1991, IRIS, 2001, ATSDR, 1999), vapor pressure of 0.0181mg/L (1.6 ppm) was judged to be steam with almost no mist. It was classified as Category 1 by the ppm
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 moderate to severe irritation were observed in rabbit skin application test (EHC 120 (1991)) and skin irritation on humans was observed with exposure (IRIS (2001), and ATSDR
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	It was set as Category 2A from description that severe irritation was admitted in the test applied to the eye of the rabbit of EHC 120 (1991) and ATSDR (1999).
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 allergic skin reaction	Respiratory sensitization: No data Skin sensitization: Based on the description that in a skin sensitivity test using the guinea pigs of EHC 120 (1991) the positive rate was 100% and it was conclude to be a skin sensitizing substance, it was referred to as Category 1.
5 Germ cell mutagenicity	Not classified	-	-	-	It gave the negative results by the dominant lethality test using the mouse, which was an in vivo over generation mutagenicity test using the germ cells (EHC 120, 1991, ATSDR, 1999, NTP TR437, 1994), and it gave the negative results (IRIS, 2001, ATSDR, 1999, NTP DB, 2005) by the micronucleus test using the mouse erythrocytes, which were the in vivo mutagenicity tests using the somatic cells. So we classified it as Out Of Category.
6 Carcinogenicity	Not classified	-	-	-	It was classified into E in 1986 and classified into NL (all are IRIS and 2001) according to ACGIH by A4 (ACGIH 7th, 2001) and EPA in 1996. So it carried out the outside of Category.

7	Toxic to reproduction	Not classified	-	-	-	Based on description of no serious reproductive toxicity in maternal rabbit oral administration during pregnancy at dose of occurring general toxicity to maternal animals, and of no general toxicity and reproductive toxicity in oral administration to pregnant rat and mouse (EHC 120 (1991), IRIS (2001), NTP TR437 (1994)), it is considered as on the outside of Category.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs); Category 2 (liver, kidneys)	Health hazard	Danger	Cause damage to organs (respiratory organs); May cause damage to organs (liver, kidneys)	According to the descriptions that severe respiratory irritation was identified in the human evidence of exposure (EHC 120 (1991), IRIS (2001), ACGIH (7th, 2001), NTP TR437 (1994), ATSDR (1999)), and that the influence such as pulmonary edemas etc. on the respiratory tracts was identified within the guidance value range of Category 1 in the inhalation exposure test using the rat (IRIS (2001) and ATSDR (1999)). So it was set as Category 1 (respiratory tracts). Moreover, it was set as Category 2 (liver, kidney) based on the description that the effects on the liver and kidney were identified with the given dose of guidance value range of Category 2 in the oral medication test using rats and rabbits (ATSDR (1999)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs); Category 2 (kidneys)	Health hazard	Danger	Causes damage to organs (respiratory organs) through prolonged or repeated exposure; May cause damage to organs (kidneys) through prolonged or repeated	It was classified to as Category 1 (respiratory organs) and 2 (renal) according to the description that the effects on the respiratory tract were acknowledged by the concentration of the guidance value range of Category 1 in the 13-week inhalation exposure test using rats and mice of EHC 120 (1991), NTP TR437 (1994), IRIS (2001), ATSDR (1999), and the description that the effects on kidney were acknowledged with the given dose of the guidance value range of Category 2 in the oral study using rats and mice.
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 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96-hour LC50=0.007mg/L of fishes (Fathead minnows) (EHC120, 1991).
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 is Category 1, supposed not rapidly degrading (BIOWIN), and bioaccumulative (log Kow=5.04 (PHYSPROP Database, 2005)).