

GHS Classification

ID859

Propane, 1,2,3-trichloro-

CAS 96-18-4

Date Classified: May 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	-	-	-	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	Category 4	-	Warning	Combustible liquid	Flash point: >60degC and <=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: 304degC (ICSC (J), 2002)
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available
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	-	-	-	No data available

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	Calculated based on rat LD50 values: 150mg/kg (CICAD 56, 2003, DFGOT vol.9, 1998, ATSDR, 1992), 500mg/kg (CICAD 56, 2003), 444mg/kg (ACGIH 7th, 2001, DFGOT vol.9, 1998, NTP TR384, 1993, ATSDR, 1992), 505mg/kg (ACGIH 7th, 2001), 205mg/kg (DFGOT vol.9, 1998), 170mg/kg (DFGOT vol.9, 1998), 150mg/kg (DFGOT vol.9, 1998), 442mg/kg (DFGOT vol.9, 1998), 250mg/kg (DFGOT vol.9, 1998), and 320mg/kg (IARC 63, 1995). Since the calculated values was 253mg/kg, it was set as Category 3.
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	The calculation value was 352mg/kg based on rabbit LD50 = 384mg/kg (CICAD 56, 2003), 2457mg/kg (CICAD 56, 2003, ACGIH 7th, 2001, DFGOT vol.9, 1998, NTP TR384, 1993), 900mg/kg (DFGOT vol.9, 1998), 850mg/kg (DFGOT vol.9, 1998), 850mg/kg (DFGOT vol.9, 1998), 516mg/kg (DFGOT vol.9, 1998), and 250mg/kg (DFGOT vol.9, 1998). Rat LD50 value is 836mg/kg (CICAD 56, 2003, DFGOT vol.9, 1998, ATSDR, 1992). The lower value was adopted, and it was set as Category 3.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	Based on rat LC50 (4 hours) value: about 3mg/L (CICAD 56, 2003), its vapor pressure indicate steam with almost no mist, and it was classified by the ppm concentration standard. Since 3mg/L was converted to 498ppm using the conversion factor (1ppm=6.03mg/m3), it was classified as Category 2.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Not classified	-	-	-	It was carried out the outside of Category from description that the skin of the rabbit was not stimulated on ACGIH (7th, 2001), and description that irritation was not admitted in the test applied to the rabbit skin for 4 hours on CICAD 56
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	There is description that in the test applied to the eye of the rabbit, mild irritation or the change of the eye recovered within seven days, were acknowledged (CICAD 56 (2003) and DFGOT (vol.9, 1998)). But also have the description that in the eye of the rabbit, moderate or strength irritation are acknowledged (CICAD 56 (2003) and ACGIH (7th, 2001)). So the subdividing was not possible, and it was set as Category 2A-2B.
4 Respiratory/skin sensitization	respiratory sensitization: Classification not possible; Skin sensitization: Not possible	-	-	-	Respiratory organ: No data. Skin: We classified it as Out of Category based on the description that it did not show sensitizing property in the Buehler test using the guinea pigs in CICAD 56 (2003), DFGOT (vol.9, 1998) and ATSDR (1992).

5	Germ cell mutagenicity	Not classified	-	-	-	Since there were negative results with the dominant lethal test on rats, which is an in vivo generation mutagenicity test using germ cells (CICAD 56, 2003, ACGIH 7th, 2001, DFGOT vol.9, 1998, IARC 63, 1995, NTP TR384, 1993, ATSDR, 1992), it was classified as out of Category.
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 was classified into A3 (ACGIH (7th, 2001)) in ACGIH, it was classified into group 2A (IARC 63, 1995) in IARC, 2A (industrial hygiene academic society recommendation, 2005) in Japan Assoc. of Industrial Health, R (NTP RoC 11th, 2005) in NTP, and category 2 (EU-Annex 1, 2005) in EU. So it was considered as Category 1B based on the evaluation including IARC and updated evaluation (NTP, 2005).
7	Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	It was classified into Category 1B based on the description that reduction of the female reproduction ability was observed at the dose causing general toxicity to parental animals in the mouse one-generation reproductive oral administration study (IARC 63 (1995), NTP DB (2005), CICAD 56 (2003)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (liver); Category 2 (adrenal); Category 3 (narcotic effects, respiratory tract irritation)	Health hazard; Exclamation mark	Danger; Warning	Cause damage to organs (liver); May cause damage to organs (adrenal); May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	It was set as Category 1 (liver) from description that the effect which indicates a liver injury in the inhalation exposure test of CICAD 56 (2003), ACGIH (7th, 2001), and NTP TR384 (1993) using the rat was acknowledged in the concentration of the guidance value range of Category 1. It was set as Category 2 (adrenal) from description that the effect on the adrenal was acknowledged by exposure of the guidance value range of Category 2 in the inhalation exposure test using the rat and guinea pig (ACGIH (7th, 2001), NTP TR384 (1993)). Moreover, description that the anesthetic actions was admitted in the inhalation exposure test using the rat and guinea pig (ACGIH (7th, 2001), NTP TR384 (1993)), description that respiratory irritant was admitted in the inhalation exposure test using the rat and mouse (ACGIH (7th, 2001)), and from description that irritation was admitted in the throat by evidence of exposure of humans (CICAD 56 (2003), ACGIH (7th, 2001), DFGOT (vol.9, 1998), IARC 63 (1995) ATSDR (1992)), and it was set as Category 3 (an anesthetic actions, respiratory irritant).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver, respiratory organs, blood); Category 2 (kidneys, heart)	Health hazard	Danger; Warning	Causes damage to organs (liver, respiratory organs, blood) through prolonged or repeated exposure; May cause damage to organs (kidneys, heart) through prolonged or repeated exposure	Based on the description that in the 13-week inhalation exposure test using the rat, the effects on the liver and blood, and the effects which suggests anemia were observed with the concentration in the Category 1 guidance value range (CICAD 56 (2003), ACGIH (7th, 2001), DFGOT (vol.9, 1998), IARC 63 (1995), NTP TR384 (1993), ATSDR (1992)), it was classified into Category 1 (liver, respiratory systems, blood). Moreover, the description that in the 13-weeks administration tests in drinking water or the 17-weeks oral administration tests using the rat, the effects on the kidney were observed with the dosage in the Category 2 guidance value range (CICAD 56 (2003), ACGIH (7th, 2001), DFGOT (vol.9, 1998), IARC 63 (1995), NTP TR384 (1993), IRIS (2005), ATSDR (1992)), furthermore, the description that in the 90-days oral administration test using the rat, the effects on the myocardial were observed with the dosage in the Category 2 guidance value range (CICAD 56 (2003), DFGOT (vol.9, 1998), IARC 63 (1995)), it was classified into Category 2 (kidney, heart).
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 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 48-hour EC50=4.1mg/L of Crustacea (Daphnia magna) (CICAD 56 and 2003).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Classified into Category 2, since acute toxicity was Category 2 and not rapidly degrading (BOD: 0% (existing chemical safety inspections data)), though less bio-accumulative (BCF=13 (existing chemical safety inspections data)).