

## GHS Classification

**ID234**

**Ethane, 1,1,2,2-tetrachloro-**

**CAS 79-34-5**

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	-	-	-	Non-combustible (Merck, 13th, 2001; Chapman, 2005; Hommel, 1991; Weiss, 2nd, 1985; Incompatible Hazard Hand Book, 2nd, 1993).
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	-	-	-	It is nonflammable (Merck (13th, 2001), Chapman (2005), Hommel (1991), Weiss (2nd, 1985), incompatible hazards Hb (the 2nd edition, 1993)).
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	It is nonflammable (Merck (13th, 2001), Chapman (2005), Hommel (1991), Weiss (2nd, 1985), mixed touch dangerous Hb (the 2nd edition, 1993)).
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 (but not to other elements).
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	There are no chemical groups associated with peroxide present in the molecule.
16 Corrosive to metals	Not classified	-	-	-	NRTDG No. 1702, Class: 6.1, PGII (UN)

## 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	Statistical calculation was done using rat oral LD50=1000 mg/kg, 250 mg/kg, 330 mg/kg, and 319 mg/kg (ACGIH (2001), CICAD 3 (1998), ATSDR (1996)). But the result is lower than lowest values of the used value, lowest value 250 mg/kg was adopted. It was set as Category 3 based on rat oral LD50=250 mg/kg.
1 Acute toxicity (dermal)	Not classified	-	-	-	Based on rabbit percutaneous LD50 = 6300mg/kg (ACGIH (2001)), it was set as the outside of Category.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Category 3	Skull and crossbones	Danger	Toxic if inhaled	There are two results with rat LC50 : 1000ppm (ACGIH (2001)) and 1253ppm (ATSDR(s) (1996)). And saturated vapor pressure concentration was calculated to be about 6000 ppm, both values are considered to steam. Therefore, it was classified as Category 3 based on the lower result of rat LC50 = 1000ppm (ACGIH (2001)).
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 based on change of the skin on rabbits, congestion, dropsy, serious blister formation, and being highly and moderately irritating (CICAD 3 (1998), ATSDR (1996), IUCLID (2000)).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	From Draize score (42.5/110) in the rabbit, there is a stimulus of the degree of middle class (IUCLID (2000)), and it was set as Category 2A based on what irritation is acknowledged for also by humans (ATSDR (1996)).
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 is negative in the dominant lethal test in rats (CICAD 3(1998)), but it is positive in the in vivo micronucleus test using mouse peripheral blood (NTP TOX-49 (2004)). Therefore, although there are negative data from multi-generation mutagenicity tests, and positive data from mutagenicity tests using somatic cells, but there is no data from in vivo genotoxicity data for germ cells. So the substance is classified as Category 2.
6	Carcinogenicity	Not classified	-	-	-	The category of IARC which is the newest evaluation document was a group 3, based on the guideline. So it was set as the outside of Category.
7	Toxic to reproduction	Classification not possible	-	-	-	Although there is the effect to reproduction parameter (change of estrous cycle) under the condition of the big weight decrease in oral administration of rat and mouse, and there is a report about the decrease of the weight of embryo and about the increase of fetal resorption under the condition of maternal toxicity (decrease weight gain and increase mortality) (CICAD 3(1998), NTP TOX49 (2004)), these have low importance. There is the effect on testes (atrophy, histological alteration) in rat oral test (ACGIH (2001), CICAD3(1998)), and there is the decrease of weight of testis and epididymis in the rat and mouse oral test(NTP TOX49 (2004)). However, there is the indication to relationship with reduced weight gain (NTP TOX49 (2004)), and in the long term (78 weeks) test of rat and mouse it is not observed effects to reproductive organs (CICAD 3 (1998)). The reproductive tissue effects is not occurred in all the inhalation tests (ACGIH (2001),CICAD 3 (1998)). On the other hand, there is almost no data about the reproductive function and reproductive potential. Therefore, it was considered that it cannot be classified because of the shortage of data. In addition, as reference, a high doses administration (300 to 700 mg/kg, mouse LD50=250 mg/kg) into the abdominal cavity of a pregnancy mouse causes ferotoxicity and teratogenicity (ACGIH (2001), IARC 20 (1979)). [special notes] "an increase in embryo resorption" under the conditions of maternal toxicity which mortality rates increases was not considered as important effect. Moreover, effect on the reproduction parameter (change of the estrous cycle) under conditions of a severe weight decrease was not considered as important effect. Because, in (NTP, the former literature of these data), as the summary of the reproductive and developmental toxicity in the introduction of the latest oral test for 14 weeks (NTP TOX49 (2004)), these above datas are not cited but two kinds of data (No.13, 14) with no effect or the lower incident of teratogenicity and a part of ferotoxicity are cited. And as the conclusion, it said "Data is insufficient and a summary will not come out." Moreover, by the conclusion of ACGHI (2001), it is "not almost all data affects a reproductive systems alternatively." and it is no data in which "use is possible"(IARC 71 (1999)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (liver); Category 3 (narcotic effects, respiratory tract irritation)	Health hazard	Danger	Cause damage to organs (liver); May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	It was classified into Category 1 (liver). Based on the influence on the liver in mouse by taking orally (ACGIH (2001)). Moreover, it was classified into Category 3 (anesthetic actions, respiratory irritant) based on the description of the anesthesia action in human and animal (ACGIH (2001), PATTY (5th, 2001)) and the mucosal irritation in human (ACGIH (2001)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system, liver)	Health hazard	Danger	Causes damage to organs (nervous system, liver) through prolonged or repeated	Based on the effect on the nervous system in humans (ACGIH (2001), CICAD 3 (1998), and PATTY (5th, 2001)), the effect on a liver in an animal (a rat, a mouse, a rabbit and a dog), its dosage and the guidance value (ACGIH (2001), CICAD 3 (1998), NTP TOX-49 (2004)), it is classified in Category 1 (nervous systems,liver).
10	Aspiration hazard	Classification not possible	-	-	-	Although dynamic viscosity (0.98 mm <sup>2</sup> /s) is less than 14 mm <sup>2</sup> /s, there is no information on chemical pneumonia.We could not classify it because of insufficient data.

## 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=9.3mg/L of Crustacea (Daphnia magna), and others (SIDS, 2005).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Classified out of Category since NOEC=6.9 mg/L during 28 days (ECETOC TR 91, 2003) for the Crustacea (Daphnia magna),though acute toxicity was Category 2.