

## GHS Classification

**ID132**

**Ethane, 2,2-dichloro-1,1,1-trifluoro-**

**CAS 306-83-2**

Date Classified: Apr. 20, 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, Flash point: none (Non-hazardous Substance) (Solvent Pocket Book, 1997), Limits of flammability: Non-flammable (PATTY, 5th, 2001)
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	-	-	-	Nonflammable and no flash point (non-dangerous object) (pocket book books (1997)). Limits of flammability: Nonflammable (PATTY (5th, 2001))
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	With nonflammable and no flash point (non-dangerous object) (solvent pocket book (1997)). Limits of flammability: Nonflammable (PATTY(5th, 2001))
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 and fluorine (but not oxygen) and these elements are chemically bonded only to carbon (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	-	-	-	Test methods applicable to gas substances are not available. Boiling point: 27.6degC (NICNAS, 1996)

## Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Not classified	-	-	-	Since the minimum lethal doses was presumed to be 9000 mg/kg by the rat (NICNAS (1999)), it was set as the outside of Category.
1 Acute toxicity (dermal)	Not classified	-	-	-	Since mortality was not observed in rat and rabbit at 2000mg/kg (NICNAS (1999)), it was set as the outside of Category.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Not classified	-	-	-	Rat LC50 (4-hour exposure value) = 35000, 32000ppm (NICNAS (1999)). Since all LC50 values far exceed (by 6 - 7 fold) the cut-off value of Category 4, it was classified as out of Category.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Not classified	-	-	-	As a result of the skin irritation study on rabbits under the OECD Guidelines, there was no erythema and dropsy, and skin irritation was not found (NICNAS (1999)), therefore, it was classified as out of Category.
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	Although mild to moderate conjunctival irritation and mild corneal clouding are mainly observed by applying concentrate solution of this material or 50% solution to rabbit eye (NICNAS (1999)), it recovered completely within three to seven days (EHC 123 (1992)). So 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: Classified as out of category because the skin sensitization test using guinea pigs found no skin sensitization as intradermal injection after sensitization treatment induced no allergic reactions (NICNAS (1999)).
5 Germ cell mutagenicity	Not classified	-	-	-	The substance was regarded as outside the categories because the results of the chromosome aberration test using rat lymphocytes and the micronucleus test using mouse erythrocytes (both are in vivo mutagenicity tests) are negative.
6 Carcinogenicity	Classification not possible	-	-	-	In two years inhalation study to rats, there was no generating of malignant tumor considered to be originated in exposure. But significant or dose dependent increases of hepatic adenoma, bile duct fibroid tumor, leydig cell adenoma, and acinar cell adenoma of pancreas were observed (NICNAS (1999)). However, except for the classification (3B) by DFG, the classification of other evaluation organizations was not made. So it was determined "It cannot be classified."

7	Toxic to reproduction	Not classified	-	-	-	There is no effect on survival and generation of the child with organogenetic period exposure in rats and rabbits (NICNAS (1999), ECETOC JACC (2005)). The effects to reproductive functions or potential are not observed in rat two-generation exposure test (since pre-mating period to pregnancy and lactation period of F0, since pre-mating to pregnancy and lactation period of F1) (NICNAS (1999)). Moreover, although a metabolite is detected in milk or newborn blood with peripartum exposure in rat and ape, effects on lactation is not observed, either (NICNAS (1999)). As mentioned above, it was out of the Category.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, liver); Category 2 (heart)	Health hazard	Danger; Warning	Cause damage to organs (central nervous system, liver); May cause damage to organs (heart)	Central symptoms, such as dizziness and headaches are reported to 40 laborers who received exposure of this product by exploded industrial cooler (NICNAS (1999)). Moreover, there is the report that the workers engaged in dry cleaning received exposure of the solvent including the this product and hepatic function test results rose, and showing the symptoms of acute hepatitis (virus infection is negated) (ECETOC JACC (2005)). It was classified into Category 1 (the central nervous system, liver) based on these results. In addition, for the effects to the liver, liver function tests raised, liver degeneration, and hepatic necrosis are observed in inhalation single exposure in guinea pig (NICNAS (1999)). On the other hand, there is the example of report of developed coronary artery diseases in the human to whom fluorocarbon was exposed (HSDB (2003)), and cardiac inadequacy as short-term exposure effects was described in ICSC (1998). The test result that adrenergic hypersensitivity is caused to the heart by exposure of this product in dog is obtained (NICNAS (1999)). It was classified into Category 2 (heart) based on these results.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver)	Health hazard	Danger	Causes damage to organs (liver) through prolonged or repeated	Based on the many reports that the liver function test value was elevated or hepatic disorder was affected by occupational repeated exposure, it was classified into Category 1 (liver) (NICNAS (1999), ECETOC JACC (2005)). In addition, when a repeated dose is carried out to animals for two to 13 weeks, the toxic effects on the liver is also observed (NICNAS (1999)), but it is restricted to high levels of exposure over the range of the guidance value.
10	Aspiration hazard	Classification not possible	-	-	-	Insufficient data available.

### 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 48-hour EC50=17mg/L of Crustacea (Daphnia magna), and others (CICAD23, 2000).
11 Hazardous to the aquatic environment (chronic)	Category 3	-	-	Harmful to aquatic life with long lasting effects	Classified into Category 3, since acute toxicity was Category 3 and not rapidly degrading (BOD: 6% (existing chemical safety inspections data)), though less bio-accumulative (BCF=36 (existing chemical safety inspections data)).