

GHS Classification

ID664

2-Norbornene, 5-ethylidene-

CAS 16219-75-3

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	Classification not possible	-	-	-	Classification not possible due to lack of data, though the substance contains unsaturated C-C bonds as chemical groups associated with explosive properties present.
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 3	Flame	Warning	Flammable liquid and vapour	Category 3 because of its flash point: 38 to 38.33degC(Hommel, 1991)
7 Flammable solids	Not applicable	-	-	-	Liquid (GHS definition)
8 Self-reactive substances and mixtures	Classification not possible	-	-	-	Classification not possible due to lack of data, though the substance contains unsaturated C-C bonds as chemical groups with self-reactive properties present.
9 Pyrophoric liquids	Not classified	-	-	-	Flash point: 272degC (SIDS, 2004)
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 no oxygen, fluorine and chlorine.
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Organic compounds 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 5	-	Warning	May be harmful if swallowed	It was set as Category 5 based on LD50=2276 mg/kg calculated by LD50 value of 4 examination of the oral administration in rats of SIDS (2004), ACGIH (2001), and PATTY (5th, 2001).
1 Acute toxicity (dermal)	Not classified	-	-	-	Based on the description of LD50 = 8253mg/kg in rabbit percutaneous toxicity studies (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 4	Exclamation mark	Warning	Harmful if inhaled	Since the saturated vapor pressure concentration of this product is 5518ppm, it is thought that inhalation toxicity study was done with vapor. Based on the data 2717ppm of the male (SIDS (2004)) which is the lowest among LC50 values for rat 4-hour inhalation test for both sex, it was classified as Category 4 based on the technological direction.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	There are descriptions that it has skin irritativeness and caused redness on humans (PATTY (5th, 2001)), and the result of the rabbit skin irritation study with four hour application was "slight" to "mild" (SIDS (2004)). Therefore, it was classified as Category 3.
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	Based on the statement of "slight eye irritant" in a rabbit eye irritation test (SIDS (2004)), and based on that irritation was acknowledged in the eye by humans test (ACGIH and (2001), PATTY (5th, 2001)), it was set as Category 2B.
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	Not classified	-	-	-	Based on the negative statement in the rat dominant lethality examination (SIDS (2004)), we classified it as Out Of Category.
6 Carcinogenicity	Classification not possible	-	-	-	No data available

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Since there is the description that there is the effect to parent reproduction (testicular tissue disorder, ovarian dysfunction and the decrease of the implantation rate and of the delivery rate), and the neonatal growth (the reduction of total delivery count, the number of the alive neonatal and the number of 4-day-long alive neonatal) with dose causing the general toxicity to parent animals (the Health, Labor and Welfare Ministry reports (2005), SIDS (2004), HSDB (2005)), it is classified into the Category 2
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system); Category 2 (gastrointestinal tract); Category 3 (respiratory tract irritation)	Health hazard; Exclamation mark	Danger; Warning	Cause damage to organs (central nervous system); May cause damage to organs (gastrointestinal tract); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)	There is the description that there are the malevolence/vomiting, headache, confusing, dyspnoea (PATTY (5th, 2001)), and it is classified into Category 1 (central nervous system). And there is the description that there is the irritation to nose, throat in the steam exposure to human, and it is classified into Category 3 (respiratory irritation). There is the description that there is the diarrhea, gastrointestinal bleeding, and gastrointestinal distension in the dose of the guidance value range (2000 > = C > 1000mg/kg) of Category 2 in the dermal administration to rabbit. So it is classified into Category 2 (digestive tract).
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (liver)	Health hazard	Warning	May cause damage to organs (liver) through prolonged or repeated exposure	In the repeated administrate oral toxicity examination using a rat, hepatocyte vacuolation is seen by the dosage in the range of Category 2 of a guidance value (10-100 mg/kg/day) (Health, Labor and Welfare Ministry reports (2005)), and in rat repeated administrate inhalation toxicity studies, morphological change and hardening of liver, and the degeneration of hepatocytes were observed with dosage (1.165 mg/L/6 hr/day) little higher than the upper limit of the range of Category 2 of a guidance value (0.2-1.0 mg/L/6 hr/day) (SIDS (2004)). Also in dog repeated dose inhalation toxicity studies, fibrillization of liver, the increase in deviation enzyme, and hyperplasia biliary tract are mentioned with the dosage of guidance value within the limits of Category 2(SIDS (2004)). It was classified to as Category 2 (liver) based on the above information.
10	Aspiration hazard	Category 1	Health hazard	Danger	May be fatal if swallowed and enters airways	It was classified into Category 1 based on the description of severe pneumonia by aspiration in human (PATTY (5th, 2001)), and the description that when the fluid is swallowed, there is a risk of chemical pneumonitis by aspiration (ICSC (J), (1999)).

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=3.3 mg/L of Crustacea (Daphnia magna) (MOE eco-toxicity tests of chemicals, 1998).
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=160 (existing chemical safety inspections data)).