

GHS Classification

ID65

Endosulfan

CAS 115-29-7

Date Classified: Jul. 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	-	-	-	Solid (GHS definition)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Solid (GHS definition)
5 Gases under pressure	Not applicable	-	-	-	Solid (GHS definition)
6 Flammable liquids	Not applicable	-	-	-	Solid (GHS definition)
7 Flammable solids	Not classified	-	-	-	Non-combustible, substance itself does not burn. (HSDB (2006))
8 Self-reactive substances and mixtures	Classification not possible	-	-	-	No data available
9 Pyrophoric liquids	Not applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Not classified	-	-	-	Non-combustible, substance itself does not burn.(HSDB(2006)) It does not ignite, even if it contacts air. ((Bayer Crop Science Corporation) based on experience)
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible, substance itself does not burn.(HSDB(2006)) It does not generate heat, even if it contacts air. ((Bayer crop science corporations) based on experience)
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	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Classification not possible	-	-	-	No data available
15 Organic peroxides	Not applicable	-	-	-	There are no chemical groups associated with peroxide present in the molecule.
16 Corrosive to metals	Classification not possible	-	-	-	Test methods applicable to solid substances are not available.

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 2	Skull and crossbones	Danger	Fatal if swallowed	Based on LD50 = 37.4mg/kg calculated by statistical calculations from 14 LD50 values of a rat (9.6 to 355 mg/kg)(EHC 40 (1984), JMPR (1965, 1998), PIM 576 (2000)), it was set as Category 2.
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	It was set as Category 3. Based on both two rat LD50 values (1000 and 681mg/kg) (Agricultural-Chemicals abstracts) were classified into Category 3.
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Solid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	Based on that both male rats LC50 = 0.0346mg/L and female LC50 = 0.0126mg/L (Agricultural-Chemicals abstracts) were in the scope of category 1, it was classified into category 1.
2 Skin corrosion / irritation	Not classified	-	-	-	Based on the rabbit skin irritation test data where Draze score was zero(JMPR (1998)) , it was considered to "have no irritation" and classified as out of Category.
3 Serious eye damage / eye irritation	Not classified	-	-	-	From the result (JMPR (1998)) of "not irritaying to eyes" by the eye irritation test using a rabbit, it was classified out of Category.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Not classified	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	Respiratory sensitization: No data. Skin sensitization: Classified as out of category because of the "negative" result (agrochemical abstract) by the skin sensitization test (Maximization method, GLP) using guinea pigs.
5 Germ cell mutagenicity	Not classified	-	-	-	Because the mouse in vivo micronucleus test result is negative (Agricultural-Chemicals abstracts), the substance was regarded as outside the categories.
6 Carcinogenicity	Not classified	-	-	-	Based on being classified into A4 according to ACGIH (ACGIH (2001)), it was classified as out of Category. In addition, the increase of the generating frequency of the tumor relevant to administration is not observed in rat chronic toxicity and carcinogenicity annexation examination (1989) and mouse carcinogenicity tests (1988) (Agricultural-Chemicals abstracts).

7	Toxic to reproduction	Not classified	-	-	-	In the two-generation reproduction toxicity study of rat, except that there was the reduced weight gain in the maternal animals with highest dose, there was no effect for breeding and children (Agricultural-Chemicals abstracts). Moreover, there was no teratogenicity in the administration during pregnant period to rabbit and rat (Agricultural-Chemicals abstracts), and they were considered as on the outside of Category.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system)	Health hazard	Danger	Cause damage to organs (nervous system)	The substance was classified as Category 1 (nervous system). Based on the reports of effects on the nervous system, such as convulsions, disturbance of consciousness, dyspnea, in humans (ATSDR (2000), JMPR (1998)) and of effects on the nervous system, such as decrease in locomotor activity, convulsions, salivation, tremors, dyspnea, at the dosage lower than the guidance level for Category 1 in an acute oral test in rats (40, 50 and 100mg/kg) and in an inhalation toxicity study in rats (0.0123, 0.0036mg/L) (EHC40 (1984), ATSDR(2000), JMPR reports).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (kidneys); Category 2 (liver)	Health hazard	Danger; Warning	Causes damage to organs (kidneys) through prolonged or repeated exposure; May cause damage to organs (liver) through prolonged or repeated exposure	Since in the 90-day repeated oral administration study of rat, the observation of the degeneration of the proximal tubule within the limits of the guidance value (3.85mg/kg) of Category 1 and the acknowledgement of the hepatocellular degeneration Agricultural Chemicals abstracts) within the limits of the guidance value (23.41mg/(kg) in Category 2, they were classified into Category 1 (kidney) and Category 2 (liver). [Notes] As additional study, on the administration test to male rats for 30 days about 3 times as much dose of the 90-day repeated oral administration study, "Although the observation of the increase in the size and number of a lysosome in the proximal renal tubule, it is reversible change and the obstacle to the renal cell was not observed. On liver inspections, abnormalities in hepatic parenchyma and Kupffer cells were not observed, and liver weight increase was considered to be a result of the adjustment reaction relevant to the xenobiotic metabolism mechanism." This conclusion has been obtained. Moreover, no effect is showed by the chronic toxicity test (prescribed for 104 weeks by the 3.8mg/kg highest dosage) in rat. (Agricultural Chemicals abstracts)
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=0.2microg/L of Crustacea (Brown shrimp) (EHC40, 1984).
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 was Category 1, supposed not rapidly degrading (BIOWIN), though supposed less bioaccumulative (log Kow=3.83(PHYSPROP Database, 2005)).