

GHS Classification

ID185

Benomyl

CAS 17804-35-2

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	Classification not possible	-	-	-	Insufficient data available
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 applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Classification not possible	-	-	-	Insufficient data available
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Insufficient data 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	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Organic compounds containing oxygen (but not chlorine and fluorine) and the oxygen is chemically bonded only to carbon and hydrogen (but not to other elements).
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Classification not possible	-	-	-	Liquid at a test temperature, 55degC. 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)	Not classified	-	-	-	It was set as the outside of Category. Because of rat LD50 value: >10000mg/kg, and death is not observed in 10000mg/kg or less (Agricultural-Chemicals abstracts).
1 Acute toxicity (dermal)	Not classified	-	-	-	It was set as the outside of Category. Since rat LD50 value was >5000mg/kg and death was not observed in 5000mg/kg or less (Agricultural-Chemicals abstracts).
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)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	Since mild irritation was observed in the test on rats (Agricultural-Chemicals abstracts), it was classified as Category 3.
3 Serious eye damage / eye irritation	Classification not possible	-	-	-	No data available
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Category 1	(Respiratory sensitization)-; (Skin sensitization)Exclamation mark	(Respiratory sensitization)-; (Skin sensitization)Warning	(Respiratory sensitization)-; (Skin sensitization)May cause allergic skin reaction	Respirator: No data Skin: Classified as Category 1 because the skin sensitization test using guinea pigs showed 100% positive rate (agrochemical abstract).
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	The dominant lethal test using rats, which is an in vivo multi-generation mutagenicity test using germ cells, is negative (Agricultural-Chemicals abstracts). And the experts investigated and confirmed the validity of the classification as Category 2 in EU and the classification of the substance's germ cell mutagenicity as Category 3A in MAK (Germany) (MAK/BAT, 2005), based on the data indicating that aneuploidy is induced in the test using mouse oocytes, which is an in vivo mutagenicity test using germ cells (Mailhes JB, & Aardema MJ; 1992). So the substance was classified as Category 1B

6	Carcinogenicity	Not classified	-	-	-	It is classified into A4 (ACGIH 7th, 2001) according to ACGIH and is classified into Group C according to EPA. So it was set as the outside of Category.
7	Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	Since there was the increase of the average of appearance ratio of malformation per litter, and hydrocephalus in the dose no maternal toxicity in the 7-to-16-day-pregnant oral administration to rat (Agricultural-Chemicals abstracts), it is classified into Category 1B. Moreover, there is the description that there was malformation of embryo in the dose no general toxicity to maternal animals in pregnant rat and mouse administration test (JMPR (1995)).
8	Specific target organs/systemic toxicity following single exposure	Not classified	-	-	-	Since significant toxicity was not observed in taking orally and the transdermal medication examination using rat and mouse (Agricultural-Chemical abstracts), it was out of the Category.
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	Since the effects on the liver was observed in the three-month oral feeding administration tests with this medicine 50% dosage using dog and the two-year oral feeding administration tests using dog (Agricultural Chemicals abstracts) within the dosage of the guidance value range of Category 2, it was classified into Category 2 (liver).
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=0.012mg/L of fishes (American catfish) (EHC148, 1993).
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, not rapidly degrading (half life of carbendazim (hydrolysis product) was two months (under aerobic condition) and 25 months (under anaerobic condition) in water (EHC148, 1993)), though supposed less bioaccumulative(log Kow=2.12 (PHYSPROP Database, 2005)).