GHS Classification

ID571 Phosphorus (yellow)

CAS 12185-10-3 Date Classified: Mar. 23, 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	–	–	–	UNRTDG No. 1381, Class: 4.2, Subsidiary risks Class: Class: 6.1, PG I
8	Self-reactive substances and mixtures	Not classified	–	–	–	Classified in UNRTDG No. 1381, Class: 4.2, Subsidiary risks Class: 6.1, PGI
9	Pyrophoric liquids	Not applicable	–	–	–	Solid (GHS definition)
10	Pyrophoric solids	Category 1	Flame	Danger	Catches fire spontaneously if exposed to air	UNRTDG No. 1381, Class: 4.2, Subsidiary risks Class: 6.1, PGI
11	Self-heating substances and mixtures	Not applicable	–	–	–	Pyrophoric solids
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	–	–	–	UNRTDG No. 1381, Class: 4.2, Subsidiary risks Class: Class: 6.1, PGI
13	Oxidizing liquids	Not applicable	–	–	–	Solid (GHS definition)
14	Oxidizing solids	Not applicable	–	–	–	Containing no oxygen , chlorine and fluorine.
15	Organic peroxides	Not applicable	–	–	–	Containing no -0-0- structure
16	Corrosive to metals	Not classified	–	–	–	UNRTDG No. 1381, Class: 4.2, Subsidiary risks Class: Class: 6.1, PGI

Health Hazards

	Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1	Acute toxicity (oral)	Category 1	Skull and crossbones	Danger	Fatal if swallowed	Rat LD50 = 3.76 mg/kg (male), 3.03 mg/kg (female) (ATSDR (1997)). Estimated lethal dose for humans in oral is 1-2 mg/kg (PATTY (5th, 2001), ACGIH (2001), ATSDR (1997), HSDB (2005), IUCLID (2004)). Even if based on any data, it is set as Category 1.
1	Acute toxicity (dermal)	Category 1	Skull and crossbones	Danger	Fatal in contact with skin	Rat LD50 = approx. 29mg/kg and 100mg/kg. The former higher toxicity was adopted and it was set as Category 1.
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 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	There are descriptions that it causes burn when contacting human skin (ACGIH (2001), ATSDR (1997), ICSC (2004)), and that it originates not only in thermals but in corrosive effects (ATSDR (1997)). Moreover, also in the animal studies, it is evaluated as "corrosive" or "necrosis" (IUCLID (2004), ATSDR (1997)). Based on what mentioned above, it was classified as Category 1A-1C.
3	Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	A serious injury accompanied by a eyelids convulsion, photophobia and lacrimation by touching the human eye, or corneal cloudings is caused (PATTY (5th, 2001), HSDB (2005)). Or redness, a pain, eyesight loss, and a serious burn are indicated (ICSC (2004)). So it was set as Category 1.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	–	–	–	No data available
5	Germ cell mutagenicity	Classification not possible	–	–	–	Classification not possible due to lack of data
6	Carcinogenicity	Classification not possible	–	–	–	Classification not possible due to lack of data

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the undorn child	It is described that in the rat study (generation study) with administration covering two reproductive cycles from 80 days before mating, mortality of mother animals was observed with high doses, most of them (13/16) occured during delivery period, and that administration of yellow phosphorus may be the possible cause (IRIS (1991)). Since although concentration of the death to an delivery period is considered to be an adverse effects to reproduction, influence of maternal toxicities cannot be denied, either, it was classified into Category 2. In addition, inhibition of growth and survival of a child was observed in lactation period with the administration starting three weeks before mating and the effect on lactation is suggested as a cause of this (ATSDR (1997)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (liver, kidneys, digestive system, blood system, central nervous system); Category 3 (respiratory tract irritation)	Health hazard	Danger	Cause damage to organs (liver, kidneys, digestive system, blood system, central nervous system); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract	It was classified into Category 1(liver, kidney, digestive systems, hematopoietic systems, central nervous systems), since there are reports or descriptions that it affects to wide range of organs, such as the liver, kidney, gastrointestinal system, haematopoietic system, central nerves by acute exposure of this product to human (ACGIH (2001), PATTY (5th, 2001), IRIS (1991), HSDB (2005)). Moreover, it was classified into Category 3 (respiratory irritant) due to the respiratory irritant by short time exposures is also observed (ATSDR (1997)). In addition, the reason of the death in the examination of mouse is that mucosal swellings or mucus secretions occurred by irritation, the airway was closed and died by suffocation (ATSDR (1997)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (bone, blood)	Health hazard	Danger	Causes damage to organs (bone, blood) through prolonged or repeated exposure	According to human case reports or epidemiological study, "a necrosis of a jaw part and bony destruction, so" called "phossy jaw" is reported (IRIS (1991), PATTY (5th, 2001), ATSDR (1997)) , and the denaturation of the mouth and anemia are also reported (PATTY (5th, 2001), ATSDR (1997)).) Moreover, effects on bone is observed also the animal studies (IRIS (1991).). The effects above were considered to be serious toxicity, it was classified in Category 1 (a bone, hematologic)
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 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96-hour LC50=2microg/L of fishes (Bluegill) (AQUIRE, 2003).
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, and behavior in water and bioaccumulative potential are unknown.