

GHS Classification

ID328

Dithallium sulfate

CAS 7446-18-6

Date Classified: Oct. 23, 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	—	—	—	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	—	—	—	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	—	—	—	Not aerosol products
4 Oxidizing gases	Not applicable	—	—	—	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	—	—	—	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	—	—	—	Non-flammable (ICSC, 2004)
8 Self-reactive substances and mixtures	Not classified	—	—	—	No data available, though in summary, containing chemical groups with self-reactive properties. Classified into Division 6.1 (UN#1707) Thallium compounds (excluding those with specific product names, and pesticides) (ICSC, 2004)) (UN Recommendation on the Transport of Dangerous Goods)
9 Pyrophoric liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	—	—	—	Non-flammable (ICSC, 2004)
11 Self-heating substances and mixtures	Not classified	—	—	—	Non-flammable (ICSC, 2004)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	—	—	—	Stable to water (water solubility: 4.87g/100mL (20degC), ICSC (2004))
13 Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not classified	—	—	—	No data available, though being inorganic compounds containing oxygen. Classified into Division 6.1 (UN#1707) Thallium compounds (excluding those with specific product names, and pesticides) (ICSC, 2004)) (UN Recommendation on the Transport of Dangerous Goods).
15 Organic peroxides	Not applicable	—	—	—	Not organic compounds
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 the LD50 value of 10mg/kg calculated from the rat LD50 (oral route) of 10mg/kg, 15mg/kg, 25mg/kg and 76mg/kg (EHC 182 (1996)).
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	Based on the rat LD50 (dermal route) value of 500mg/kg (EHC 182 (1996)).
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
2 Skin corrosion / irritation	Classification not possible	—	—	—	Human epidemiological studies indicate skin irritation potential: "May be absorbed! Redness" (ICSC (2000)). However, classification is not possible as the severity of the effects is not presented.
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Based on the description in the report on human epidemiological studies (ICSC (2000)): "Redness, Pain." Although classified into Category 2A-2B in the absence of data on the severity of the effects, the substance should be placed in Category 2A from the viewpoint of safety if further subclassification is needed.
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) —	Respiratory sensitization: No data available Skin sensitization: No data available
5 Germ cell mutagenicity	Classification not possible	—	—	—	No data available
6 Carcinogenicity	Not classified	—	—	—	Due to the fact that the substance is classified as Category D by EPA (1990).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of adverse effects on the testes and pup development (cartilage dysplasia, learning disability) (though no data are available regarding parental toxicity), described in IRIS (2006), EHC 182 (1996), ATSDR (1992), ACGIH (7th, 2001) and PATTY (4th, 1999).
8 Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, respiratory organs, cardiovascular system, skin)	Health hazard	Danger	Causes damage to organs (nervous system, respiratory organs, cardiovascular system, skin)	Based on the human evidence: "While the finding of neurological effects was consistent among case reports, death was attributable to cardiac or respiratory failure" (ATSDR (1992)), "thallium intoxication occurred in 48 cases and 26 children exhibited neurological abnormalities when later examined" (ACGIH (7th, 2001)), "a child showed no reflex movements of the legs in the second week, while another child showed no neurological symptoms apart from a massive alopecia in the second week" (EHC 182 (1996)). Also based on the evidence from animal studies: "caused direct effects on the respiratory apparatus, in addition to decreasing vasomotor reactivity" (EHC 182 (1996)), "reported included T-wave fluttering, prolonged Q-T intervals, heart block, atrial and ventricular ectopic rhythms, and ST-segment depression or elevation" (ATSDR (1992)), "may cause alopecia" (ICSC (J)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1. Refer to "ID0327: Thallium Nitrate (CAS No.10102-45-1)."

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (skin, nervous system, testes)	Health hazard	Danger	causes damage to organs through prolonged or repeated exposure (skin, nervous system, testes)	Based on the evidence from animal studies: "induced alopecia," "electrophysiological effect, and about 50% of the animals developed Wallerian degeneration," "there was a dose-related increase in the incidence of alopecia" (EHC 182 (1996)), "the following testicular effects were observed: disarrangement of the tubular epithelium, cytoplasmic vacuolation and distention of the smooth endoplasmic reticulum of the Sertoli cells" (IRIS (2002)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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)	Classification not possible	—	—	—	Classification not possible due to lack of data
11 Hazardous to the aquatic environment (chronic)	Classification not possible	—	—	—	Classification not possible due to lack of data