

GHS Classification

ID780

osmium tetroxide

CAS 20816-12-0

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 classified	-	-	-	Not an explosive substance, though containing metal- oxygen (Os-O) bonds.
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
8 Self-reactive substances and mixtures	Not classified	-	-	-	Although it has bond of metals oxygen (Os-O), it is a class 6.1 in the UN classification. (It is not a class 4.2 (spontaneous combustibility)).
9 Pyrophoric liquids	Not applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Not classified	-	-	-	Non-combustible
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to solid (melting point <= 140degC) substances are not available.
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	-	-	-	Stable to wate (the water solubility is obtained)
13 Oxidizing liquids	Not applicable	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not classified	-	-	-	Not classified in UNRTDG Class: 5.1 though it is an oxidizing agent.
15 Organic peroxides	Not applicable	-	-	-	Inorganic compound
16 Corrosive to metals	Classification not possible	-	-	-	No data available on corrosion to metals

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 3	Skull and crossbones	Danger	Toxic if swallowed	SPECIES: Mouse ENDPOINT: LD50 VALUE: 162 mg/g REFERENCE SOURCE: PATTY(5th, 2001)
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Solid (GHS definition)
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	It was classified as Category 1A-1C based on the information that it has corrosive effects and caused serious dermatitis and blister on human cases(ACGIH (2001)) and (PATTY (5th, 2001)).
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Since it was Category 1A-1C on the skin, and severe irritations are indicated in the human cases and also in the animals tests (ACGIH(2001),(PATTY(5th, 2001)), it was set as Category 1.
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)-	Since there was no data of respiratory sensitization and skin sensitization, we could not classify about them.
5 Germ cell mutagenicity	Classification not possible	-	-	-	It gave positive by DNA repair test for the in vitro data (PATTY (5th, 2001)), however, there was no in vivo data. Therefore we could not classify it.
6 Carcinogenicity	Classification not possible	-	-	-	No data available
7 Toxic to reproduction	Classification not possible	-	-	-	Classification not possible due to lack of data

8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory, liver, kidneys, adrenal, spleen)	Health hazard	Danger	Cause damage to organs (respiratory, liver, kidneys, adrenal, spleen)	Bronchitis, pulmonary edemas, and the denaturation pathological change of liver are seen in human cases (PATTY (5th, 2001)). So it is classified into Category 1 (respiratory systems, liver). Moreover, by the exposure test of the rabbit, although it was mainly seen in lungs in 125mg (24 – 28 h), in addition degeneration and hyperaemia was seen in liver, kidney, spleen, and adrenal gland. So it is classified into Category 1 (kidney, spleen, adrenal).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs); Category 2 (kidneys, liver, adrenal, spleen, hematopoietic system)	Health hazard	Danger; Warning	Causes damage to organs (respiratory organs) through prolonged or repeated exposure; May cause damage to organs (kidneys, liver, adrenal, spleen, hematopoietic system) through prolonged or repeated exposure	Pulmonary edema is observed in the human case (ACGIH (2001)). In the animal studies, bronchial compression is observed in 50mg/kg (45–60 days) dose to the rabbit (PATTY (5th, 2001)) and it was classified into Category 1 (respiratory systems) because of above results. Moreover, since prostration and denatures of liver, the sclerosis of a spleen, and the fatty degeneration of the kidney and the adrenal gland in 50mg/kg (45–60 days) dose to a rabbit, and chronic anemia according to initial superactivity of marrow in 50mg/kg (60 days) dose to the guinea pig were observed (PATTY (5th, 2001)), it was classified into Category 2 (kidney,liver,adrenal, spleen, hematopoietic systems).
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	-	-	-	Insufficient data available.
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	Classification not possible due to lack of data