

GHS Classification

ID893

hafnium

CAS 7440-58-6

Date Classified: Sep. 20, 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	-	-	-	Although 25% or more of hydrated powder is classified into UNRTDG class 4.1, combustibility changes with production process and particle sizes. And it cannot be judged without performing defined test on the corresponding production process and the particle diameter of hafnium powder.
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	-	-	-	Although dry powder is classified into UNRTDG Class 4.2, the property could remarkably change according to its particle diameter, etc. So it cannot be judged unless the specified test is performed on real samples.
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Although dryness powder is classified into the UNRTDG class 4.2, property changes with particle diameter etc. remarkably. So it cannot be judged without a set test of real samples.
12 Substances and mixtures, which in contact with water, emit flammable gases	Classification not possible	-	-	-	Although there is the information on the flammability of moistened article (Bretherick (J) (5th, 1998) p607), no data based on a set test method.
13 Oxidizing liquids	Not applicable	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Containing no oxygen, chlorine and fluorine.
15 Organic peroxides	Not applicable	-	-	-	Inorganic substance
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)	Classification not possible	-	-	-	No data available
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
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	Classification not possible	-	-	-	Classification not possible due to lack of data
3 Serious eye damage / eye irritation	Classification not possible	-	-	-	Insufficient data available.
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)-	No data available
5 Germ cell mutagenicity	Classification not possible	-	-	-	No data available
6 Carcinogenicity	Classification not possible	-	-	-	No data available
7 Toxic to reproduction	Classification not possible	-	-	-	No data available

8	Specific target organs/systemic toxicity following single exposure	Classification not possible	-	-	-	Insufficient data available.
9	Specific target organs/systemic toxicity following repeated exposure	Hafnium and its compounds: Category 2 (liver)	Health hazard	Warning	Hafnium and its compounds: May cause damage to organs (liver) through prolonged or repeated exposure	As the information including toxicity test data in laboratory animals by repeated exposures of hafnium, and occupational exposures or epidemiological surveys and case reports etc. in humans have not been obtained, it was not able to be classified. On the other hand, in the 90-days feeding administration tests to the rat of hafnium tetrachloride, as the effects on the livers of the some animals of the 1000 ppm (equivalent for 50mg/kg/day) group, and the most animals of the 10000 ppm (equivalent for 500mg/kg/day) groups are observed (ACGIH 7th, 2001), in ACGIH, the recommended value of acceptable concentrations of hafnium and its compound is set as 0.5 mg/m3. Since the recommended value of acceptable concentrations of hafnium and its compound is set, there are histories which considered them as "the Hazardous Materials. Requiring Notification" provided in the 1st clause of Article 57-2 of the industrial safety and health laws. In consideration of the above histories, in the above tests which are made into the basis for setting of recommended value of acceptable concentrations by ACGIH, based on the description that the effects on the liver were observed in the 1000 ppm group in the Category 2 guidance value range (ACGIH 7th, 2001), it was classified into Category 2 (liver) about hafnium and its compound.
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	-	-	-	No data available
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	No data available.