GHS Classification

ID247 Zinc sulphate

CAS 7733-02-0 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 (HSDB, 2006)
8	Self-reactive substances and mixtures	Not classified	—	—	—	The kick-off temperature is considered to exceed 75degC. According to HSDB (2006), anhydrous zinc sulfate forms when its hydrates are heated above 238degC, and at about 680degC, SO3 separates from the compound, forming 3ZnO.2SO3.
9	Pyrophoric liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
10	Pyrophoric solids	Not classified	—	—	—	Non-flammable (HSDB, 2006)
11	Self-heating substances and mixtures	Not classified	—	—	—	Non-flammable (HSDB, 2006)
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	—	—	—	Stable to water (water solubility: 57.75g/100g (25degC), Lide (84th, 2003))
13	Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14	Oxidizing solids	Classification not possible	—	—	—	Classification not possible due to lack of data, though being organic compounds containing oxygen bound to the elements other than carbon and hydrogen
15	Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
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 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 1,260mg/kg calculated from the testing data of rat LD50 (oral route) of 1,710mg/kg (CERI Hazard Data 98-1 (1999), EHC 221 (2001)), 2,940mg/kg (CERI Hazard Data 98-1 (1999), EU-RAR No.46 (2004)), 920mg/kg and 2,280mg/kg (EU-RAR No.46 (2004)). These data might probably refer to hydrates, and not anhydrides. Note: As for the classification of 7-hydrate, refer to "ID1108, CAS# 7446-70-0."
1	Acute toxicity (dermal)	Classification not possible	—	—	—	No data available
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: vapour)	Classification not possible	—	—	—	No data available. Note: As for the classification of 7-hydrate, refer to "ID1108, CAS# 7446-70-0."
1	Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available Note: As for the classification of 7-hydrate, refer to "ID1108, CAS# 7446-70-0."
2	Skin corrosion / irritation	Classification not possible	—	—	—	No data available. Note: As for the classification of 7-hydrate, refer to "ID1108, CAS# 7446-70-0."
3	Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the description in the report on rabbit eye irritation tests (exposure duration unknown) (EU-RAR No.46 (2004)): "Yellow/white spots were observed in the tissue of the lower eyelid, nictitating membrane and/or sclera in all animals from day 7 until termination. These spots were described as signs of necrosis," "severe ocular irritation." Also based on the description of the human health effects (CERI Hazard Data 2001-29 (2002)): "The substance produced grayish pigmentation of the cornea, leaving the crystalline lens spotted after recovery." The substance is thus considered to be a very strong irritant. These data might probably refer to hydrates. Note: As for the classification of 7-hydrate, refer to "ID1108, CAS# 7446-70-0."
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Not classified	(Respiratory sensitization)— (Skin sensitization)—	(Respiratory sensitization)— (Skin sensitization)—	(Respiratory sensitization)— (Skin sensitization)—	Respiratory sensitization: No data available Skin sensitization: Based on the description in the report on guinea pig skin sensitization tests (EU-RAR No.46 (2004)): "Zinc sulphate is not considered a skin sensitization." Also based on the description in the report on mouse skin sensitization tests (IUCLID (2000)): "Not sensitizing."
5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on negative data on multi-generation mutagenicity tests (dominant lethal tests), the absence of data on germ cell mutagenicity tests in vivo and germ cell genotoxicity tests in vivo, and positive data on somatic cell mutagenicity tests in vivo (micronucleus tests and chromosome aberration tests), described in ATSDR (2005), EU-RAR No.46 (2004), EHC 221 (2001) and CERI Hazard Data 2001-29 (2002).
6	Carcinogenicity	Classification not possible	—	—	—	Classification not possible based on expert judgment in the absence of existing classification (though some toxicity data are available).
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 reproduction/development (decreased male/female fertility and implantation), described in EU-RAR No.46 (2004), ATSDR (2005) and EHC 221 (2001) (though no data are available regarding parental toxicity).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (kidneys, liver, respiratory organs)	Health hazard	Danger	Causes damage to organs (kidneys, liver, respiratory organs)	Based on the human evidence: "... the kidneys were damaged and proteinuria, glucosuria and acetonuria were detected," "... vomiting, diarrhea, jaundice, oliguresis were noted; autopsy findings consisted of renal tubular necrosis, hyaline membrane in the lung and changes in the liver" (CERI Hazard Data 2001-29 (2002)).

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (pancreas, adrenal, vascular system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (pancreas, adrenal, vascular system)	Based on the human evidence including "islet cell hypertrophy and betacell vacuolization were observed," "hypertrophy of suprarenal cortical cells, and increased lipid" (ATSDR (1980)), "obstructive vascular disease" (ATSDR (1980)).
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 hours LC50=0.061mg/L(Zinc Sulfate Equivalent=0.151mg/L) of the fish (Cutthroat Trout) (EHC221, 2001).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Since although acute toxicity was Category 1 and bio-accumulation was low (BCF=242 (existing chemical safety inspections data)), it was a metallic compound, and the underwater action was unknown, it was classified into Category 1.