

GHS Classification

ID998

CAS 7783-06-4

Physical Hazards

Hydrogen sulfide

Date Classified: Jun. 20, 2006 (Environmental Hazards: Mar. 31, 2006)

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

| Hazard class | Classification | symbol | signal word | hazard statement | Rational for the classification |
|---|-----------------------------|--------------|-------------|--|--|
| 1 Explosives | Not applicable | - | - | - | Gas (GHS definition) |
| 2 Flammable gases | Category 1 | - | Danger | Extremely flammable gas | Ignitable when in a mixture of 13% or less by volume in air. UNRTDG Class: 2.3, Subsidiary risks Class: 2.1 |
| 3 Flammable aerosols | Not applicable | - | - | - | Not aerosol products |
| 4 Oxidizing gases | Not classified | - | - | - | UNRTDG Class: 2.2, Subsidiary risks Class: 2.1 |
| 5 Gases under pressure | Liquefied gas | Gas cylinder | Warning | Contains gas under pressure; may explode if heated | Critical temp: >-50degC (Partially liquid at temperatures above -50degC) |
| 6 Flammable liquids | Not applicable | - | - | - | Gas (GHS definition) |
| 7 Flammable solids | Not applicable | - | - | - | Gas (GHS definition) |
| 8 Self-reactive substances and mixtures | Not applicable | - | - | - | Gas (GHS definition) |
| 9 Pyrophoric liquids | Not applicable | - | - | - | Gas (GHS definition) |
| 10 Pyrophoric solids | Not applicable | - | - | - | Gas (GHS definition) |
| 11 Self-heating substances and mixtures | Not applicable | - | - | - | Gas (GHS definition) |
| 12 Substances and mixtures, which in contact with water, emit flammable gases | Not applicable | - | - | - | Gas (GHS definition) |
| 13 Oxidizing liquids | Not applicable | - | - | - | Gas (GHS definition) |
| 14 Oxidizing solids | Not applicable | - | - | - | Gas (GHS definition) |
| 15 Organic peroxides | Not applicable | - | - | - | Gas (GHS definition) |
| 16 Corrosive to metals | Classification not possible | - | - | - | Although there is information on caustics to various metals (HSDB (2006)), test methods suitable for gaseous substances are not established. |

Health Hazards

| Hazard class | Classification | symbol | signal word | hazard statement | Rational for the classification |
|---|---|---------------------|-------------|-------------------------------|--|
| 1 Acute toxicity (oral) | Not applicable | - | - | - | Gas (GHS definition) |
| 1 Acute toxicity (dermal) | Not applicable | - | - | - | Gas (GHS definition) |
| 1 Acute toxicity (inhalation: gas) | Category 2 | Skin and crossbones | Danger | Fatal if inhaled | It was considered as Category 2 based on the lower value of 444ppm. (from rat LC50 (4 hours): 444ppm (industrial hygiene academic society recommendation (2001), ACGIH (2001)), and 700mg/m3 (equivalent: 503ppm) (CICAD (2003)). |
| 1 Acute toxicity (inhalation: dust, mist) | Not applicable | - | - | - | Gas (GHS definition) |
| 2 Skin corrosion / irritation | Classification not possible | - | - | - | Classification not possible due to lack of data |
| 3 Serious eye damage / eye irritation | Category 2A | Exclamation mark | Warning | Causes serious eye irritation | There is the description that irritant symptoms, such as angle conjunctivitis, punctate erosion of the cornea, watering of the eye, and photophobia, were acknowledged by contacting high hydrogen sulfide gas to the human eye directly (CICAD, 2003), and on the description that the ocular irritation was acknowledged with the hydrogen sulfide gas in the concentration of 16-32mg/m3 (10.5-21.0ppm) in several hours after exposure (EHC, 1981). So we judged that it had severe irritant property to the eye, and we classified it as Category 2A. |
| 4 Respiratory/skin sensitization | Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible | - | - | - | No data available |
| 5 Germ cell mutagenicity | Classification not possible | - | - | - | Although one strain has weak positive information by the reverse mutation test using the bacterial cell of in vitro, there is no data about other indices. So it cannot classify. |
| 6 Carcinogenicity | Not classified | - | - | - | Since it is evaluated as I (there is no data appropriate for carcinogenicity evaluation.) in the classification of EPA, it was considered as the outside of Category. |

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|----|--|---|---------------|--------|---|---|
| 7 | Toxic to reproduction | Classification not possible | - | - | - | Although extension of childbirth time was observed in the organic formative period and the perinatal period in a raton exposure test using rats, there was no effects on fetus (CICAD, 2003). Moreover, before rat mating, in gestation and lactation periods inhalation exposure tests, although the denaturation of the minute pipe was observed in the spermary of the male of parental animals, it did not affect fertility property (CICAD, 2003). Therefore, it was judged that each influence is minimum. Moreover, increase in spontaneous abortions was observed in occupational exposure in humans, and they are also exposed to sulfur dioxide, carbon disulfide, etc. Moreover, the increase in the natural abortion in the group exposed to hydrogen sulfides exceeding 4ug/m3 over the year is not significant enough (CICAD, 2003). Therefore, since the data is inadequate for classifying about reproductive toxicity, it cannot be classified. |
| 8 | Specific target organs/systemic toxicity following single exposure | Category 1 (central nervous system, heart cardiovascular system, respiratory) | Health hazard | Danger | Cause damage to organs (central nervous system, heart cardiovascular system, respiratory) | The substance was classified as Category 1 (central nervous system, cardio-vascular system, respiratory system) based on the following reports: symptoms such as nausea, headaches, deliria, equilibrium damage, deterioration of memory, neurobehavioral changes, olfactory paralysis, unconsciousness, tremors and convulsions, and arrhythmia and elevation of blood pressure are observed after a single exposure inhalation in humans (CICAD, 2003). And unconsciousness and respiratory paralysis resulting in deaths (IRIS, 2006), and decrease in conditioned avoidance response and tissue damage to airway mucosa were observed after a single exposure inhalation at the dosage within the guidance values of Category 1 in rats, and mild irritation to nasal mucosa was observed after a single exposure inhalation in mice (CICAD, 2003). |
| 9 | Specific target organs/systemic toxicity following repeated exposure | Classification not possible | - | - | - | Classification not possible due to lack of data |
| 10 | Aspiration hazard | Not applicable | - | - | - | Gas (GHS definition) |

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=0.0071mg/L of fishes (Fathead minnows (ECETOC TR91, 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. |