

GHS Classification

ID479

Sodium fluoride

CAS 7681-49-4

Date Classified: Aug. 22, 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 applicable	—	—	—	Containing no chemical groups with explosive or self-reactive properties
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: 4.0g/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 fluorine. Classified into Division 6.1 (UN#1690) (UN Recommendations 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 3	Skull and crossbones	Danger	Toxic if swallowed	Based on the LD50 value of 100 mg NaF/kg calculated from the testing data of rat LD50 (oral route) of 31mg fluoride/kg, 52 mg fluoride/kg, 54 mg fluoride/kg, 85.5 mg fluoride/kg, 101.3 mg fluoride/kg, 126.3 mg fluoride/kg (ATSDR (2003)), 32 mg fluoride/kg and 51.6 mg fluoride/kg (IARC 27)
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: dust, mist)	Classification not possible	—	—	—	No data available
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	Based on the description in the report on rat skin irritation tests (ATSDR (2003)): "the occurrence of superficial necrosis, edema and inflammation" (though the results are those of 24 hour application). The substance is thus considered to have severe and irreversible effects, and classified into Category 1A-1C. However, it should be placed in Category 1A from the viewpoint of safety if further subclassification is needed.
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 (EHC 227 (2002)): "Corneal epithelial loss and conjunctival necrosis were noted." The substance is thus considered to have severe and irreversible effects on the eye and classified into 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) —	Respiratory sensitization: No data available Skin sensitization: No data available
5 Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on the absence of data on multi-generation mutagenicity tests, 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, chromosome aberration tests), described in NTP DB (Access on May, 2006), ATSDR (2003), NTP TR393 (1990) and EHC 227 (2002).
6 Carcinogenicity	Not classified	—	—	—	Due to the fact that the substance is classified as Category A4 (Fluorides) by ACGIH (2001) and Category 3 (inorganic, used in drinking-water) by IARC (1987).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of histological changes in reproductive organs and reduced fertility of parental animals, along with the evidence of skeletal and visceral abnormalities in fetuses at maternally toxic doses, described in ATSDR (2003) and EHC 227 (2002).
8 Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, liver, heart, kidneys)	Health hazard	Danger	Causes damage to organs (nervous system, liver, heart, kidneys)	Based on the human evidence: "Pathological examination revealed hemorrhagic pulmonary edema, hemorrhagic gastritis and brain edema. Hemorrhagic pulmonary edema was probably due to aspiration of vomit. Cloudy swelling in the liver, heart and kidneys were noted." (ATSDR (2003)).

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, kidneys, nervous system) Category 2 (heart, tooth, bone)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs, kidneys, nervous system) May cause damage to organs through prolonged or repeated exposure	Based on the evidence from animal studies including "whitish discoloration and weakening of the incisor teeth, increased incidence of interstitial nephritis, renal tubular dilatation, dehydration, somnolency, hunchback position, whitish discoloration and abnormal pain in the teeth, fluoridation of the teeth, and osteosclerosis" (NTP TR393 (1990)), "pulmonary edema, multiple calcinosis/degeneration of the myocardium" (ATSDR (2003)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1 (respiratory organs, kidneys, nervous system) and Category 2 (heart, tooth, bone).
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 3	—	—	Harmful to aquatic life	It was classified into Category 3 from 96 hours EC50=23.3mg/L of the crustacea (Mysid Shrimp) (IUCLID, 2000).
11 Hazardous to the aquatic environment (chronic)	Category 3	—	—	Harmful to aquatic life with long lasting effects	Although acute toxicity was Category 5 and bio-accumulation was low (BCF<6.4 (Existing Chemical Safety Inspections Data)), since it was a metallic compound and the underwater action was unknown, it was classified into Category 3.