

GHS Classification

ID497

CAS 7722-64-7

Physical Hazards

Potassium permanganate

Date Classified: Jul. 24, 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	—	—	—	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: 6.4g/100mL (20degC), ICSC (2004))
13 Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14 Oxidizing solids	Category 2	Flame over circle	Danger	May intensify fire; oxidizer	Inorganic compounds containing oxygen and classified as powerful oxidants (ICSC (2004)). Classified into Division 5.1 and Packing Group II (UN#1490) (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 4	Exclamation mark	Warning	Harmful if swallowed	Based on the rat LD50 (oral route) value of 750mg/kg (EHC, 17 (1981)).
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
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	Based on the description in the report on epidemiological studies of human exposure (CICAD 12 (1999)): "In a child, accidental ingestion of potassium permanganate (174 mg/kg) resulted in corrosion of the mouth, oesophagus and stomach." Also based on human epidemiological evidence of "redness, skin burns and pain" (ICSC (2003)). The substance is thus considered "corrosive to the skin" and classified into Category 1A-1C, though 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 epidemiological studies of human exposure (IUCILID (2000)): "highly corrosive." Also based on human epidemiological evidence of "redness, pain and severe deep burns" (ICSC (2003)). The substance is thus considered "corrosive to the eye." Classified into Category 1 since the hazard classification for skin corrosivity is Category 1A-1C.
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 and chromosome aberration tests), described in CICAD 12 (1999).
6 Carcinogenicity	Classification not possible	—	—	—	No data 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 sperm production and fetuses, described in EHC 17 (1981), though no data are available on parental toxicity.
8 Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs (respiratory organs)	"Acute inhalation exposure to high concentrations of manganese dusts (specifically MnO2 and Mn3O4) can cause an inflammatory response in the lung, which, over time, can result in impaired lung function. Lung toxicity is manifested as an increased susceptibility to infections such as bronchitis and can result in manganic pneumonia" (CICAD 12 (1999)).

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, nervous system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs, nervous system)	Based on the human evidence including "increased incidence of cases diagnosed as pneumonia" (EHC 17 (1981)), "weakness and impaired mental capacity, a syndrome similar to Parkinson's disease developed after about 9 months" (CICAD 12 (1999)). Also based on the evidence from animal studies: the substance "altered conditioned reflex activity" (EHC 17 (1981)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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 48 hours EC50=0.084mg/L(Potassium Permanganate Equivalent: 0.242mg/L) of the crustacea (Daphnia magna) (CERI Hazard Data, 2002).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity was Category 1 and bio-accumulation was low (BCF<81 (Existing Chemical Safety Inspections Data)), since it was a metallic compound, and the underwater action was unknown, it was classified into Category 1.