

GHS Classification

ID874

nitrogen dioxide

CAS 10102-44-0

Date Classified: Sep. 1, 2005 (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	-	-	-	Gas (GHS definition)
2 Flammable gases	Not classified	-	-	-	Non-combustible (ICSC(J), 1997)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Category 1	Flame over circle	Danger	May cause or intensify fire; oxidizer	UNRTDG Class: 2.3, Subsidiary risks Class: 5.1
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 that it corrodes steel at the time of wetting (HSDB (Access on Sep. 2005)), 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 1	Skull and crossbones	Danger	Fatal if inhaled	It was considered as Category 1 based on rat LC50 (4 hours) value: 88ppm (RTECS, 2005, HSDB, 2005) and rat LC50 (1 hour) value: 0.22mg/L (4-hour equivalent of 58ppm) (RTECS, 2005).
1 Acute toxicity (inhalation: dust, mist)	Not applicable	-	-	-	Gas (GHS definition)
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Gas (GHS definition)
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	It was set as Category 2 from description that the skin was stimulated (ICSC (J) (1997), HSFS (2000)).
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Based on the description that the eyes are stimulated seriously (ICSC (J), (1997), and HSFS (2000)), it was set as Category 2A-2B.
4 Respiratory/skin sensitization	respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	-	-	-	No data available
5 Germ cell mutagenicity	Not classified	-	-	-	There are negative result with the chromosome aberration test on mouse spermatogenous cell using germ cells which is an in vivo mutagenicity test (EHC 188, 1997), negative result with chromosome aberration test on mouse peripheral lymphocyte which is an in vivo mutagenicity test using somatic cells and the micronucleus test on mouse red corpuscles (EHC 188, 1997). So it was classified as out of Category.
6 Carcinogenicity	Not classified	-	-	-	Not classified because of "A4" (ACGIH, 7th, 2001)
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	It was classified into Category 2 based on the description that specific reproductive toxicity (increase in postimplantation death) was observed at the dose causing general toxicity to maternal animals in an pregnant rat inhalation exposure test (EHC 188 (1997)).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (lung)	Health hazard	Danger	Cause damage to organs (lung)	From description in ACGIH (7th, 2001), PATTY (4th, 1994), and EHC 188 (1997) that the influence on lung function and accumulation of pulmonary edemas were seen in evidence of human exposure, it was set as Category 1 (pneumoconiosis)
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (lung, immune system)	Health hazard	Danger	Causes damage to organs (lung, immune system) through prolonged or repeated	Based on the description that prolonged exposures cause lung diseases in the human (ACGIH (7th, 2001), EHC 188 (1997), and PATTY (4th, 1994)), the description that resistance to infections declines in the human (EHC 188 (1997) and PATTY (4th, 1994)), and the description that in the laboratory animals by repeated inhalation exposures, the effects on the lung and immunity declines were observed with the concentration in the Category 1 guidance value range (ACGIH (7th, 2001), EHC 188 (1997), and PATTY (4th, 1994)), it was classified into Category 1(lung, immune systems).
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 3	-	-	Harmful to aquatic life	It was classified into Category 3 from 96-hour LC50=38520microg/L of Crustacea (Redtail prawn) (AQUIRE, 2003).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Toxicity factor is considered to be strong acid as aqueous solution, but toxic effect is eased by the buffer action in the environmental water.