

GHS Classification

ID308

Barium nitrate

CAS 10022-31-8

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 classified	—	—	—	No data available though being nitrates, containing chemical groups with explosive properties. Classified into Divisions 5.1 and 6.1 (UN#1446) (UN Recommendations on the Transport of Dangerous Goods)
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	—	—	—	Classified as oxidizing solids, though being nitrates, containing chemical groups with explosive properties. Classified into Divisions 5.1 and 6.1 (UN#1446) (UN Recommendations on the Transport of Dangerous Goods)
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: 8.7g/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 according to ICSC (2004). Classified as "Division 5.1: oxidizing substances" by the UN Recommendations on the Transport of Dangerous Goods. However, it can be included in Category 2 or 3, given the fact that it has subsidiary risks corresponding to Division 6.1 and is assigned to Packing Group II (UN#1446). The substance is placed in Category 2 from the
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 355mg/kg (EHC 107 (1990)).
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 3	—	Warning	Causes mild skin irritation	Based on the evidence of "mild irritation" from rabbit skin irritation tests (though the only available results are those of 24 hour application).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	The substance is classified into Category 2A as available eye irritation studies in rabbits provide no description of corrosivity, though they provide the evidence of "severe irritation."
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	Classification not possible	—	—	—	No data available
6 Carcinogenicity	Classification not possible	—	—	—	No data available
7 Toxic to reproduction	Classification not possible	—	—	—	No data available
8 Specific target organs/systemic toxicity following single exposure	Category 1 (cardiovascular system, muscle) Category 2 (nervous system, kidneys) Category 3 (respiratory tract irritation, narcotic effects)	Health hazard	Warning	May cause damage to organs (nervous system, kidneys) (Respiratory tract irritation) May cause respiratory irritation (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence: "Intentional or accidental ingestion of barium compounds causes gastroenteritis (vomiting, diarrhoea, abdominal pain), hypokalemia, cardiac arrhythmias and skeletal muscle paralysis" (CICAD 33 (2001)), "irritates the eye, skin, respiratory tract; may cause hypokalemia; may cause heart/muscle disorder; may lead to death" (ICSC (J) (2004)), "clinical symptoms included spastic sural pain, hyperalgesia, decreased light reaction, loss of toe reflex, generalized intermittent velleation; the sinus rhythm was interrupted by ventricular extrasystole" (IUCILID (2000)), "paresthesia, weakness" (RTECS (2006)). Also based on the evidence from animal studies including "paresis of the hind limbs accompanied by convulsion" (IUCILID (2000)), "somnia, tetany" (RTECS (2006)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2. The priority rating of some studies used for the survey of "epidemiological findings/occupational exposure (human health effects)" is 2, and the effects are classified into Category 1 (cardiovascular system, muscle), Category 2 (nervous system, kidneys) and Category 3 (respiratory tract irritation, narcotic effects).

9	Specific target organs/systemic toxicity following repeated exposure	Classification not possible	-	-	-	No data available
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)	Not classified	-	-	-	It was classified into Not classified from 96 hours LC50=ca.1900mg/L of the fish (<i>Gasterosteus Aculeatus</i>) (IUCRID, 2000).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since it was not water-insolubility (the water-solubility =87000mg/L (HSDB, 2004)), and acute toxicity was low, it was classified into Not classified.