Chemical Safety Data Sheet MSDS / SDS

Cyanogen bromide SDS

Revision Date:2024-04-25 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Cyanogen bromide

CAS: 506-68-3

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

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SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 2, Oral
Acute toxicity - Category 1, Dermal

Skin corrosion, Sub-category 1B
Acute toxicity - Category 2, Inhalation
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled
H314 Causes severe skin burns and eye damage
H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P262 Do not get in eyes, on skin, or on clothing.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P284 [In case of inadequate ventilation] wear respiratory protection.
P273 Avoid release to the environment.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.
P320 Specific treatment is urgent (see ... on this label).
P391 Collect spillage.

Storage

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Cyanogen bromide
Common names and synonyms:	Cyanogen bromide
CAS number:	506-68-3
EC number:	208-051-2
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Refer for medical attention . See Notes. Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!).

Most important symptoms/effects, acute and delayed

Super toxic; probable oral lethal dose in humans is less than 5 mg/kg or a taste (less than 7 drops) for a 70 kg (150 lb.) person. Vapors are highly irritant and very poisonous. Individuals with chronic diseases of the kidneys, respiratory tract, skin, or thyroid are at greater risk of developing toxic cyanide effects. (EPA, 1998)

Indication of immediate medical attention and special treatment needed, if necessary

Cyanokit is indicated for the treatment of known or suspected cyanide poisoning. ... If clinical suspicion of cyanide poisoning is high, Cyanokit should be administered without delay.... Cyanokit (hydroxocobalamin for injection) 5 g is a cyanide antidote package which contains two colorless 250 mL glass vials, each of which contains 2.5 g dark red lyophilized hydroxocobalamin, pH adjusted with hydrochloric acid, two transfer spikes, one IV administration set, one quick use reference guide and one package insert. The action of Cyanokit in the treatment of cyanide poisoning is based on its ability to bind cyanide ions. ...Caution should be exercised when administering other cyanide antidotes simultaneously with Cyanokit, as the safety of co-administration has not been established. If a decision is made to administer another cyanide antidote with Cyanokit, these drugs should not be administered concurrently in the same IV line. Cyanide

SECTION 5: Firefighting measures

Suitable extinguishing media

If material involved in fire: Extinguish fire using agent suitable for type of surrounding fire. (Material itself does not burn or burns with difficulty.) Use foam, dry chemical, or carbon dioxide. Cool all affected containers with flooding quantities of water. Do not use water on material itself. If large quantities of combustibles are involved, use water in flooding quantities of spray and fog.

Specific hazards arising from the chemical

Cyanogen bromide is not combustible itself, but impure cyanogen bromide decomposes rapidly and tends to explode. A violent reaction may take place on contact with large quantities of acid. Vapors are highly irritating. When material is heated to decomposition, it emits very toxic fumes of cyanide and bromide. Avoid water, acids. Avoid physical damage, contact with acids or water, and store away from a location where water may be needed for fire control. (EPA, 1998)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

In the event of a spill, sweep up cyanogen bromide, place in an appropriate container, and dispose of properly. Respiratory and appropriate impermeable protective gloves and clothing should be worn while conducting cleanup of this highly toxic substance.

SECTION 7: Handling and storage

Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs. See Chemical Dangers. Dry. Well closed.Cyanogen bromide can polymerize violently on prolonged storage at ambient temperature. ... /In the laboratory/ Containers of cyanogen bromide should be kept tightly sealed and stored under nitrogen in a secondary container in a refrigerator.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.3 ppm as STEL

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles, face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use closed system or ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Cyanogen bromide is a colorless to white crystalline solid with a penetrating odor. It is slightly soluble in water. It is gradually decomposed by water and very rapidly by acids to give off hydrogen bromide, a flammable and poisonous gas. Contamination with many materials can cause rapid decomposition of the material. It is toxic by inhalation of its vapors or by the hydrogen cyanide from decomposition or by ingestion. Toxic oxides of nitrogen are produced in fire involving this material. It is used in gold extraction, to make other chemicals, and as a fumigant.

Colour:	White hygroscopic needles
Odour:	Penetrating
Melting point/freezing point:	49-54°C
Boiling point or initial boiling point and boiling range:	61-62°C
Flammability:	Not combustible but forms flammable gas on contact with water or damp air. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	61.4°C
Auto-ignition temperature:	Not Applicable. Not flammable. (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	In water, soluble with hydrolysis
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	100 mm Hg (22.6 °C)
Density and/or relative density:	1.443
Relative vapour density:	3.65 (vs air)

Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating and on contact with acids. This produces highly toxic and flammable hydrogen cyanide (see ICSC 0492) and corrosive hydrogen bromide (see ICSC 0282). Reacts with strong oxidants. Reacts slowly with water and moisture. This produces hydrogen bromide and hydrogen cyanide. Attacks many metals in the presence of water.

Chemical stability

Cyanogen bromide is moderately endothermic ... & shows evidence of instability.

Possibility of hazardous reactions

NoncombustibleThe vapour is heavier than air.CYANOGEN BROMIDE is not combustible itself, but impure cyanogen bromide decomposes rapidly and tends to explode. A violent reaction may take place on contact with large quantities of acid. Avoid physical damage, contact with acids or water, and store away from a location where water may be needed for fire control. [EPA, 1998]. Benzene and cyanogen halides yield HCl as a byproduct (Hagedorn, F. H. Gelbke, and Federal Republic of Germany. 2002. Nitriles. In Ullmann's Encyclopedia of Industrial Chemistry. Wiley-VCH Verlag GmbH & Co. KGaA.).

Conditions to avoid

no data available

Incompatible materials

Reacts with acids, water to release highly toxic hydrogen cyanide.

Hazardous decomposition products

If involved in a fire decomposes to produce toxic gases.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is severely irritating to the eyes, skin and respiratory tract. Inhalation of the vapour may cause lung oedema. See Notes. The effects may be delayed. The substance may cause effects on the cellular respiration. This may result in convulsions, unconsciousness and respiratory failure. Medical observation is indicated. Exposure could cause death.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill) length 33-75 mm; Conditions: freshwater, static, 23 deg C, pH 7.6-7.9, hardness 55 mg/L CaCO3; Concentration: 240 ug/L for 96 hr /formulated product

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1889 (For reference only, please check.)
IMDG: UN1889 (For reference only, please check.)
IATA: UN1889 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: CYANOGEN BROMIDE (For reference only, please check.)
IMDG: CYANOGEN BROMIDE (For reference only, please check.)
IATA: CYANOGEN BROMIDE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)
IMDG: 6.1 (For reference only, please check.)
IATA: 6.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)
IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Sublimes at room temperature. The symptoms of lung oedema often do not become manifest until a few hours have

passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered. Commercial products are generally solutions in chloroform.