Chemical Safety Data Sheet MSDS / SDS

Hydroxylamine 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: Hydroxylamine

CAS: 7803-49-8

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

Explosives, Unstable explosive
Corrosive to metals, Category 1

Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Dermal
Skin irritation, Category 2
Serious eye damage, Category 1
Skin sensitization, Category 1
Specific target organ toxicity – single exposure, Category 3
Carcinogenicity, Category 2
Specific target organ toxicity – repeated exposure, Category 2
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)

H200 Unstable explosive
H290 May be corrosive to metals
H302 Harmful if swallowed
H312 Harmful in contact with skin
H315 Causes skin irritation
H318 Causes serious eye damage
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation
H351 Suspected of causing cancer
H373 May cause damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P203 Obtain, read and follow all safety instructions before use.
P250 Do not subject to grinding/shock/friction/....
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P234 Keep only in original packaging.
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P271 Use only outdoors or in a well-ventilated area.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.

Response

P370+P372+P380+P373 In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P390 Absorb spillage to prevent material damage.
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P317 Get medical help.
P321 Specific treatment (see ... on this label).
P362+P364 Take off contaminated clothing and wash it before reuse.
P332+P317 If skin irritation occurs: Get medical help.
P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P317 If skin irritation or rash occurs: Get medical help.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.
P318 IF exposed or concerned, get medical advice.
P391 Collect spillage.

Storage

P401 Store in accordance with...
P406 Store in a corrosion resistant/...container with a resistant inner liner.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P503 Refer to manufacturer/supplier... for information on disposal/recovery/recycling.
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:	Hydroxylamine
Common names and synonyms:	Hydroxylamine
CAS number:	7803-49-8
EC number:	232-259-2
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention. See Notes.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. 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

Rinse mouth. Refer for medical attention . See Notes.

Most important symptoms/effects, acute and delayed

INHALATION: Moderately toxic by inhalation and oral routes with the following symptoms possible: headache, vertigo, tinnitus, dyspnea, nausea and vomiting, cyanosis, proteinuria and hematuria, jaundice, restlessness, and convulsion. Methemoglobinemia has been reported. EYES: Corrosive - highly irritating. SKIN: Irritating or corrosive to skin. INGESTION: Moderately toxic by inhalation and oral routes with the following symptoms possible; headache, vertigo, tinnitus, dyspnea, nausea and vomiting, cyanosis, proteinuria and hematuria, jaundice, restlessness, and convulsion. Methemoglobinemia has been reported. (USCG, 1999)

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

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patent can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Cover skin burns with dry sterile dressings after decontamination . /Organic bases/Amines and related compounds/

SECTION 5: Firefighting measures

Suitable extinguishing media

Not combustible. Extinguish fire using agent suitable for surrounding fire. Fight fire from protected location or maximum possible distance. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Explosive decomposition may occur under fire conditions.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Nitrogen oxides - toxic fumes - react with water or steam to produce heat and corrosive liquids - can react violently with reducing materials. Behavior in Fire: May explode when exposed to heat or flame. Explodes at 265°F. (USCG, 1999)

Special protective actions for fire-fighters

Use water in large amounts, alcohol-resistant foam, powder. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance

into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with hot surfaces. 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

Fireproof. Separated from incompatible materials. See Chemical Dangers. Cool. Dry. Well closed.Separate from oxidizing materials. store in a cool, dry, well-ventilated location. store away from heat, oxidizers, and sunlight. Outside or detached storage is preferred.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK sensitization of skin (SH)

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 face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Hydroxylamine is an odorless white crystalline solid. Sinks and mixes with water. (USCG, 1999)
Colour:	Colorless cyrstals
Odour:	no data available
Melting point/freezing point:	7°C
Boiling point or initial boiling point and boiling range:	>100°C
Flammability:	Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	265° F (USCG, 1999)
Auto-ignition temperature:	265° F (USCG, 1999)

Decomposition temperature:	<70°C
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Very sol in water, liq ammonia, methanol; sparingly sol in ether, benzene, carbon disulfide, chloroform
Partition coefficient n-octanol/water:	-1.5
Vapour pressure:	9 mm Hg (40 °C)
Density and/or relative density:	1.078g/mLat 25°C
Relative vapour density:	(air = 1): 1.1
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

May explode on heating above 70°C or when exposed to open flame. Decomposes rapidly at room temperature, especially in the presence of moisture and carbon dioxide, and violently on heating. This produces toxic fumes including nitrogen oxides. The solution in water is a weak base. Reacts violently with oxidants, metals such as finely divided zinc, some metal oxides, copper(II)sulfate and phosphorus chlorides. This generates fire and explosion hazard.

Chemical stability

Unstable; rapid decomp at room temp in presence of atmospheric moisture & co2

Possibility of hazardous reactions

Dangerous fire hazard when exposed to heat, flame, and oxidizers. May ignite spontaneously in air if a large surface area is exposed (e.g. precipitate on paper).HYDROXYLAMINE is a white solid, thermally unstable, decomposes rapidly at room temperature or when dissolved in hot water by internal oxidation-reduction. It should be stored below 10° C [Bailar, 1973, vol. 2, p. 272].

Explosive reaction with strong oxidizers (chromium trioxide, potassium dichromate) or powdered zinc upon heat. Reaction with zinc or calcium produces explosive bishydroxylamides. It ignites on contact with cupric sulfate, alkali metals (sodium, potassium), oxidants (e.g., barium oxide, barium peroxide, lead dioxide, potassium permanganate, chlorine), phosphorus trichloride and pentachloride. It reacts vigorously with hypochlorites, pyridine, carbonyls [Sax, 9th ed., 1996, p. 1875]. On contact with organic materials in thin layer (e.g., crystals on filter paper), it may ignite spontaneously in air. It explodes when heated above 70° C [Brauer, 1963, vol. 1, p. 502]. During a distillation process, an explosion occurred. Potassium hydroxide is thought to be involved in the explosion. Employees in the plant complained of chest pains and suffered chemical burns. Five people were killed by the explosion.

Conditions to avoid

no data available

Incompatible materials

Incompatible with carbonyls; pyridine. Vigorous reaction with hypochlorites.

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of NOx /nitrogen oxides/.

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 corrosive to the eyes. The substance is irritating to the skin and respiratory tract. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization. The substance may have effects on the blood. This may result in the formation of methaemoglobin and consequent anaemia.

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

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

An estimated BCF of 3 was calculated for hydroxylamine(SRC), using an estimated log Kow of -1.2(1,SRC) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for hydroxylamine can be estimated to be 14(SRC). According to a classification scheme(2), this estimated Koc value suggests that hydroxylamine is expected to have very high mobility in soil. A pKa of 5.94(3) indicates that hydroxylamine will partially exist in the protonated form in moist soils(SRC) and cations adsorb to soil stronger than neutral compounds.

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: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (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

Not 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

Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of nausea, vomiting and cyanosis do not become manifest until several hours have past. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. The relation between odour and the occupational exposure limit cannot be indicated. Decomposition during storage may cause a build-up of pressure in the container. See ICSC 0709.