

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.1
Creation Date: July 15, 2019
Revision Date: April 26, 2024

SECTION 1: Identification

1.1 GHS Product identifier

Product name Hg Standard Solution

1.2 Other means of identification

Product number LINS000234
Other names -

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Category 2, Inhalation
Specific target organ toxicity – repeated exposure, Category 1
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1
Reproductive toxicity, Category 1B

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H330 Fatal if inhaled
H372 Causes damage to organs through prolonged or repeated exposure
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

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.
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P203 Obtain, read and follow all safety instructions before use.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

Response

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P320 Specific treatment is urgent (see ... on this label).
P319 Get medical help if you feel unwell.
P391 Collect spillage.
P318 IF exposed or concerned, get medical advice.

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

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Hg Standard Solution	Mercury	7439-97-6	231-106-7	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

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

Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

No immediate symptoms. As poisoning becomes established, slight muscular tremor, loss of appetite, nausea, and diarrhea are observed. Psychic, kidney, and cardiovascular disturbances may occur. (USCG, 1999)

4.3 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 available 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 patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Mercury and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Excerpt from ERG Guide 172 [Gallium and Mercury]: Use extinguishing agent suitable for type of surrounding fire. Do not direct water at the heated metal. (ERG, 2016)

5.2 Specific hazards arising from the chemical

Behavior in Fire: Not flammable (USCG, 1999)

5.3 Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable non-metallic containers as far as possible. Do NOT wash away into sewer.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable non-metallic containers as far as possible. Do NOT wash away into sewer.

6.3 Methods and materials for containment and cleaning up

The following treatment processes have shown possible applicability for spill countermeasures: clarification/sedimentation >99% removal; clarification/ sedimentation with chemical addition: (alum) >62% removal, (alum, polymer) 88% removal, (lime) >96% removal, (BaCl₂) 87% removal, and (polymer) 99% removal.

SECTION 7: Handling and storage

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Well closed. Storage temperature: Ambient; Venting: Open

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 0.025 mg/m³, as TWA; (skin); A4 (not classifiable as a human carcinogen); BEI issued. EU-OEL: 0,02 mg/m³ as TWA. MAK: (inhalable fraction): 0.02 mg/m³; peak limitation category: II(8); skin absorption (H); sensitization of skin (SH); carcinogen category: 3B; pregnancy risk group: D

Biological limit values

no data available

8.2 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.

8.3 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 local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Mercury is an odorless, silvery metallic liquid. Insoluble in water. Toxic by ingestion, absorption and inhalation of the fumes. Corrosive to aluminum. Used as a catalyst in instruments, boilers, mirror coatings.
Colour	Silver-white, heavy, mobile, liquid metal; solid mercury is tin-white
Odour	Odorless
Melting point/freezing point	-38.9°C
Boiling point or initial boiling point and boiling range	356.5°C
Flammability	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	Not flammable (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	1.55 mPa.sec (15.5 millipoise) at 20 deg C
Solubility	Insoluble (NIOSH, 2016)
Partition coefficient n-octanol/water	0.62
Vapour pressure	<0.01 mm Hg (20 °C)
Density and/or relative density	13.54
Relative vapour density	7 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Upon heating, toxic fumes are formed. Decomposes on heating. This produces toxic fumes. Reacts violently with ammonia and halogens. This generates fire and explosion hazard. Attacks aluminium and many other metals. This produces amalgams. Heating mercury vapor produces mercuric oxide, which is highly irritating to mucous membranes and more likely than elemental mercury vapor to adversely affect the lungs. Elemental mercury reacts with most metals. Elemental mercury reacts with many acids. Elemental mercury reacts vigorously with ground mixtures of sodium carbide. Mercury reacts with acetylenic compounds, ammonia, azides, oxygen, oxidants, and halogens.

10.2 Chemical stability

Slightly volatile at ordinary temp; when pure, does not tarnish on exposure to air at ordinary temp, but when heated to near boiling point, slowly oxidizes to mercuric oxide (HgO)

10.3 Possibility of hazardous reactions

Vapors are heavier than air and will collect and stay in poorly-ventilated or low-lying areas. Hazardous concentrations may develop quickly in enclosed, poorly-ventilated, or low-lying areas. MERCURY forms an explosive acetylide when mixed with acetylene. Can form explosive compounds with ammonia (a residue resulting from such a reaction exploded when an attempt was made to clean it off a steel rod [Chem. Eng. News 25:2138. 1947]. Chlorine dioxide (also other oxidants, such as: chlorine, bromine, nitric acid, performic acid), and mercury explode when mixed [Mellor 2, Supp. 1:381. 1956]. Methyl azide in the presence of mercury is potentially explosive [Can. J. Chem. 41:1048. 1963]. Ground mixtures of sodium carbide and mercury can react vigorously [Mellor 5:848. 1946-47]. Ammonia forms explosive compounds with gold, mercury, or silver. (Eggeman, Tim. "Ammonia". Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 2001.).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously.

10.6 Hazardous decomposition products

Dangerous when heated, it emits highly toxic fumes.

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

EPA: Elemental mercury - Not classifiable as to its carcinogenicity. There is inadequate or no human and animal evidence of carcinogenicity. Methyl mercury & mercuric chloride - Possible hum. IARC: Metallic & inorganic mercury - Not classifiable as to carcinogenicity to humans; Methyl mercury - Possibly carcinogenic to humans. NTP: Not evaluated

Reproductive toxicity

Elemental mercury Studies on the reproductive and developmental effects of elemental mercury in humans have shown mixed results. One study did not see an association between mercury exposure and miscarriages, while another revealed an increase in the rate of spontaneous abortions. Another study showed a higher than expected frequency of birth defects, which was not confirmed in a fourth study. (1,) Inorganic Mercury No information is available on the reproductive or developmental effects of inorganic mercury in humans. Animal studies have reported effects including alterations in testicular tissue, increased resorption rates, and abnormalities of development. (1,) Methyl mercury A large number of human studies on the systemic effects of methyl mercury have been carried out. This is the result of two large scale poisoning incidents in Japan and Iraq and several epidemiologic studies investigating populations that consume large quantities of fish. (1,2) Oral exposure to methyl mercury has been observed to produce significant developmental effects in humans. Infants born to women who ingested high concentrations of methyl mercury exhibited CNS effects, such as mental retardation, ataxia, deafness, constriction of the visual field, blindness, and cerebral palsy. At lower methyl mercury concentrations, developmental delays and abnormal reflexes were noted. (1,) Considerable new data on the health effects of methyl mercury are becoming available. Large studies of fish and marine mammal consuming populations in Seychelles and Faroe Islands are being carried out. Smaller scale studies also describe effects around the U.S. Great Lakes. (1,)

STOT-single exposure

The substance is irritating to the skin. Inhalation of the vapour may cause pneumonitis. The substance may cause effects on the central nervous system and kidneys. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

The substance may have effects on the central nervous system and kidneys. This may result in irritability, emotional instability, tremors, mental and memory disturbances and speech disorders. May cause inflammation and discoloration of gums. Cumulative effects are possible. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

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

12.1 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

12.2 Persistence and degradability

Methylmercury is formed naturally in aquatic and terrestrial environments from elemental mercury. ... methylation is likely to occur in upper sedimentary layers of sea or lake bottoms.

12.3 Bioaccumulative potential

Upon entering an aqueous system, virtually any mercurial cmpd may be microbially converted to methylmercury. Mercurial cmpd

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 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

14.1 UN Number

ADR/RID: UN2809 (For reference only, please check.)	IMDG: UN2809 (For reference only, please check.)	IATA: UN2809 (For reference only, please check.)
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14.2 UN Proper Shipping Name

ADR/RID: MERCURY (For reference only, please check.)	IMDG: MERCURY (For reference only, please check.)	IATA: MERCURY (For reference only, please check.)
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14.3 Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.) IMDG: 8 (For reference only, please check.) IATA: 8 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.)	IMDG: III (For reference only, please check.)	IATA: III (For reference only, please check.)
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14.5 Environmental hazards

ADR/RID: Yes	IMDG: Yes	IATA: Yes
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14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Mercury	Mercury	7439-97-6	231-106-7
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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date April 26, 2024

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 suggested. There is no odour warning even when toxic concentrations are present. Do NOT take working clothes home.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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