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**MSDS** **Material Safety Data Sheet**



**AT&M Biomaterials Co., Ltd.**

24 hour Emergency Telephone

86 10 58742870

Non Emergency Service Telephone

86 10 58742850

No. 12 Yongcheng Bei Road, Yongfeng Industry Base, Haidian District, Beijing, China, 100094

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## Note

The Amalgam capsules for dental clinical use are manufactured by AT&M Biomaterials Co., Ltd. The product structure is **capsule type**. It is filled with Amalgam alloy in one end and mercury in the other end. The composition of alloy is 43%Ag, 32%Sn and 25%Cu. 50pcs of capsules are packed in a paper/plastic box, or plastic bag or plastic jar. We also supply packages of 500pcs. OEM service is available as well.

We have history of more than 20 years to produce the dental Amalgam capsules since 1986. Our facilities passed the ISO9001 quality insurance system and CE certificate. Our products hold 80% of domestic market and have exported to more than 40 countries.

We declare that the melting point of alloy is higher than 1000°C and the capsules are sealed very well without any leakage with accordance to relevant national packaging requirements. The aircraft, vessels and human will not be damaged during being shipped by sea or by air.

Therefore we only present the explanation of Mercury here.

# 1. Product Identification

**Synonyms:** Quicksilver; hydrargyrum; Liquid Silver

**CAS No.:** 7439-97-6

**Molecular Weight:** 200.59

**Chemical Formula:** Hg

# 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Mercury	7439-97-6	90 - 100%	Yes

# 3. Hazards Identification

## Emergency Overview

**DANGER! CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE FATAL IF SWALLOWED OR INHALED. HARMFUL IF ABSORBED THROUGH SKIN. AFFECTS THE KIDNEYS AND CENTRAL NERVOUS SYSTEM. MAY CAUSE ALLERGIC SKIN REACTION.**

## Potential Health Effects

### Inhalation:

Mercury vapor is highly toxic via this route. Causes severe respiratory tract damage. Symptoms include sore throat, coughing, pain, tightness in chest, breathing difficulties, shortness of breath, headache, muscle weakness, anorexia, gastrointestinal disturbance, ringing in the ear, liver changes, fever, bronchitis and pneumonitis. Can be absorbed through inhalation with symptoms similar to ingestion.

### Ingestion:

May cause burning of the mouth and pharynx, abdominal pain, vomiting, corrosive ulceration, bloody diarrhea. May be followed by a rapid and weak pulse, shallow breathing, paleness, exhaustion, tremors and collapse. Delayed death may occur from renal failure. Gastrointestinal uptake of mercury is less than 5% but its ability to penetrate tissues presents some hazard. Initial symptoms may be thirst, possible abdominal discomfort.

### Skin Contact:

Causes irritation and burns to skin. Symptoms include redness and pain. May cause skin allergy and sensitization. Can be absorbed through the skin with symptoms to parallel ingestion.

### Eye Contact:

Causes irritation and burns to eyes. Symptoms include redness, pain, blurred vision; may cause serious and permanent eye damage.

**Chronic Exposure:**

Chronic exposure through any route can produce central nervous system damage. May cause muscle tremors, personality and behavior changes, memory loss, metallic taste, loosening of the teeth, digestive disorders, skin rashes, brain damage and kidney damage. Can cause skin allergies and accumulate in the body. Repeated skin contact can cause the skin to turn gray in color. A suspected reproductive hazard; may damage the developing fetus and decrease fertility in males and females.

**Aggravation of Pre-existing Conditions:**

Persons with nervous disorders, or impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury may be more susceptible to the effects of the substance.

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## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

**Special Information:**

In the event of a fire, wear full protective clothing and self-contained breathing

apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Undergo hazardous reactions in the presence of heat and sparks or ignition. Smoke may contain toxic mercury or mercuric oxide. Smoke may contain toxic mercury or mercuric oxide.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Clean-up personnel require protective clothing and respiratory protection from vapor.

Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate misting. Sprinkle area with sulfur or calcium polysulfide to suppress mercury. Do not flush to sewer.

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Do not use or store on porous work surfaces (wood, unsealed concrete, etc.). Follow strict hygiene practices. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- OSHA Acceptable Ceiling Concentration:

mercury and mercury compounds: 0.1 mg/m<sup>3</sup> (TWA), skin

- ACGIH Threshold Limit Value (TLV):

inorganic and metallic mercury, as Hg: 0.025 mg/m<sup>3</sup> (TWA) skin, A4 Not classifiable as a human carcinogen.

- ACGIH Biological Exposure Indices:

total inorganic mercury in urine (preshift): 35 ug/g creatinine;

total inorganic mercury in blood (end of shift): 15 ug/l.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

**Personal Respirators:**

If the exposure limit is exceeded and engineering controls are not feasible, a half-face respirator with a mercury vapor or chlorine gas cartridge may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with a mercury vapor or chlorine gas cartridge may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Silver-white, heavy, mobile, liquid metal.

**Odor:**

Odorless.

**Solubility:**

Insoluble in water.

**Density:**

13.55

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

100

**Boiling Point:**

356.7C (675F)

**Melting Point:**

-38.87C (-38F)

**Vapor Density (Air=1):**

7.0

**Vapor Pressure (mm Hg):**

0.0018 @ 25C (77F)

Evaporation Rate (BuAc=1):

4

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## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

At high temperatures, vaporizes to form extremely toxic fumes.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Acetylenes, ammonia, ethylene oxide, chlorine dioxide, azides, metal oxides, methyl silane, lithium, rubidium, oxygen, strong oxidants, metal carbonyls.

### Conditions to Avoid:

Heat, flames, ignition sources, metal surfaces and incompatibles.

## 11. Toxicological Information

### Toxicological Data:

Investigated as a tumorigen, mutagen, reproductive effector.

### Reproductive Toxicity:

All forms of mercury can cross the placenta to the fetus, but most of what is known has been learned from experimental animals. See Chronic Health Hazards.

### Carcinogenicity:

EPA / IRIS classification: Group D1 - Not classifiable as a human carcinogen.

-----\Cancer Lists\-----

-----NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Mercury (7439-97-6)	No	No	3

## 12. Ecological Information

### Environmental Fate:

This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. This material is expected to significantly bioaccumulate.

### Environmental Toxicity:

This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a waste facility. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** RQ, MERCURY

**Hazard Class:** 8

Packing Group: III

**Information reported for product/size:** 1LB

### International (Water, I.M.O.)

**Proper Shipping Name:** MERCURY

**Hazard Class:** 8

Packing Group: III

**Information reported for product/size:** 1LB

### International (Air, I.C.A.O.)

**Proper Shipping Name:** MERCURY

**Hazard Class:** 8

Packing Group: III

**Information reported for product/size:** 1LB

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
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Mercury (7439-97-6)	Yes	Yes	No	Yes
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-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	DSL	NDSL	Phil.
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Mercury (7439-97-6)	Yes	Yes	No	Yes
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-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-	---SARA 313---
	RQ TPQ	List Chemical Catg.

Mercury (7439-97-6)	No	No	Yes	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient		CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Mercury (7439-97-6)		1	U151	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: No      (Pure / Liquid)

**WARNING:**

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

DANGER! CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE FATAL IF SWALLOWED OR INHALED. HARMFUL IF ABSORBED THROUGH SKIN. AFFECTS THE KIDNEYS AND CENTRAL NERVOUS SYSTEM. MAY CAUSE ALLERGIC SKIN REACTION.

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

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