



## SECTION 1: Identification

**Manufacturer:** 3D Dental Design & Development LLC

**Address:** 16781 Chagrin Blvd Ste 434

**Telephone:** 877-605-8061

**E-mail:** [cs@3d-dent.com](mailto:cs@3d-dent.com)

**In Case of Emergency:** 800-424-9300

**Product Identifier:** Joy-Alloy – Alloy powder and mercury

### Product Use:

Indications: Intended for the use as a dental restorative material in the treatment of dental caries.

Limitations on Use: For use only by dental professionals

## SECTION 2: Hazards Identification

This product consists of a precapsulated system: mercury and a metal alloy powder. The health and physical hazards of this SDS are based on mercury.

### Classification:

CORROSIVE TO METALS - Category 1

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

### GHS label elements:

**Hazard statements :** May be corrosive to metals. Toxic if inhaled. May cause damage to organs through prolonged or repeated exposure

**Hazard pictograms :**



**Signal word:** Danger

### Precautionary statements

**Prevention :** For professional use only. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear respiratory protection. Keep only in original container. Use only in a well ventilated area. Do not breathe dust. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

**Response :** Absorb spillage to prevent material damage. Get medical attention if you feel unwell. If exposed or concerned - Get medical attention.

**IF INHALED:** Remove victim to fresh air and keep in a position comfortable for breathing. Immediately seek medical attention.

**Storage :** Store locked up. Store in corrosive resistant container with a resistant inner liner.

**Disposal :** Dispose of contents and container in accordance with all local, regional, national and international regulations.



**Hazards not otherwise classified:** None known

### SECTION 3: Composition/Information on ingredients

**Substance/Mixture:** Mixture

Other means of identification: Not available

#### CAS number/other identifiers

	CAS #	%
Mercury	7439-97-6	47*

\* ( % Based on final Amalgam composition by weight)

#### Other Ingredients

Alloy powder contains silver, tin, copper and/ or zinc metals.

Silver 40-72% Copper 5-25% Tin 25-32% Zinc 0-1% Palladium 0 - 0.5%

Powder to Mercury ratio : app. one to one

- Composition shown as a range to protect confidentiality or due to batch variation.

**Mercury is a chemical known to the State of California to cause birth defects or other reproductive harm.**

### SECTION 4: First Aid Measures

**Skin:** Wash thoroughly with soap and water. Use hand cream. If irritation persists, consult a physician.

**Eye:** Flush with water for at least 15 minutes. Consult a physician.

**Inhalation:** Move to fresh air. If irritation persists, consult a physician.

**Ingestion:** Contact a physician/poison center. May cause neurotoxic/nephrotoxic effects.

#### Most important symptoms/effects, acute and delayed

Inhalation : Fatal if inhaled.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

**Skin: Irritant/Sensitizer/Neurotoxin/Nephrotoxin**

**Acute Exposure:** May cause redness and irritation. **Chronic Exposure:** Possible sensitization, dermatitis and swelling. Mercury may be absorbed through intact skin causing urinary problems

**Eyes: Irritant.**

**Acute Exposure:** Contact may cause irritation. Mercury is corrosive and may cause corneal injury or burns. **Chronic Exposure:** Mercury may be deposited in the lens of the eye, causing visual disturbances.

**Inhalation: Irritant/Sensitizer/Neurotoxin**

**Acute Exposure:** Inhalation of mercury vapor can cause cough, fever, nausea, and vomiting. **Chronic Exposure:** Inhalation of high concentrations mercury



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vapor over a long period causes mercurialism. Findings are extremely variable & include tremors, salivation, stomatitis, loosening of teeth, blue lines on gums, pain & numbness in extremities.

#### **Ingestion: Neurotoxic/nephrotoxic**

**Acute Exposure:** May cause nausea, vomiting, kidney damage and nerve effects. **Chronic**

**Exposure:** Symptoms include Central Nervous System (CNS) disorders.

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

**Notes to physician :** Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**Specific treatments :** No specific treatment.

In case of major fire and large quantities: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

### **SECTION 5: Fire Fighting Measures**

**Extinguishing Media:** Carbon dioxide, dry chemical foam

Unsuitable extinguishing media: Do not use water jet.

**Special Fire Fighting Procedures:** Firefighters should wear self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode when fighting a fire in an area containing mercury.

**Specific hazards arising from the chemical:** Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Special protective actions for fire fighters:** In case of major fire and large quantities: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Hazardous thermal decomposition products:** Decomposition products may include the following materials: metal oxide/oxides - Mercuric oxide (HgO), Mercury (vapor)

### **SECTION 6: Accidental Release Measures**

#### **Personal precautions, protective equipment and emergency procedures**

##### For non-emergency personnel:

For professional use only. Handle with extreme care. Avoid contact with mercury. Avoid inhalation of mercury. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

##### For emergency responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".

##### Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution



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(sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Personal precautions: Avoid contact with skin.

Disposal: Dispose of according to local or state regulations.

**Steps to be taken in case material is released or spilled:** Isolate the area and begin clean-up immediately. Do not touch spilled material. For professional use only. Handle with extreme care. Avoid contact with mercury. Avoid inhalation of mercury. Do not touch or walk through spilled material. Prompt cleanup and removal are necessary. Cover all liquid droplets with a commercially available mercury vapor suppressant. Do not allow to flow off into the drains or waters. Never use a vacuum cleaner to clean up mercury. The vacuum will put mercury into the air and increase exposure.

Collect the droplets using specialized mercury vacuum cleaners.

## SECTION 7: Handling and Storage

### **Precautions for safe handling:**

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

General hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

**Waste Disposal Method:** Material should not be allowed to enter sewers. All scrap mercury liquid and set alloy must be sent for reclamation by a commercial metal recycling facility.

### **Conditions for safe storage, including any incompatibilities**

Store in a cool, dry place away from ignition sources. Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers.

**Other precautions:** Use according to directions. Wash hands thoroughly before smoking or eating.

## SECTION 8: Exposure controls/Personal Protection

	Exposure limit
<b>Mercury</b>	OSHA PEL Z2 (United States, 2/2013). CEIL: 1 mg/10m <sup>3</sup>
	NIOSH REL (United States, 10/2013). Absorbed through skin. TWA: 0.05 mg/m <sup>3</sup> , (as Hg) 10 hours. Form: Hg Vapor
	CEIL: 0.1 mg/m <sup>3</sup> , (as Hg) Form: Other than Hg Vapor
	ACGIH TLV (United States, 6/2013). Absorbed through skin.

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TWA: 0.025 mg/m<sup>3</sup>, (as Hg) 8 hours. Form: Inorganic

OSHA PEL 1989 (United States, 3/1989). Absorbed through skin. TWA: 0.05

mg/m<sup>3</sup>, (as Hg) 8 hours. Form: Vapor



### Personal Protective Equipment (PPE)

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory Protection (Specify Type): AVOID BREATHING OF VAPORS. HIGHLY TOXIC - IRRITANT - SENSITIZER.** Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.

### VENTILATION:

**Local Exhaust:** Use in a well ventilated area to keep exposure under 0.05mg/m<sup>3</sup>.

**Protective Gloves:** Chemical resistant or latex gloves required

**Eye Protection:** Safety glasses with side shields. Full face shields

**Work/Hygiene Practices: USE ONLY ACCORDING TO DIRECTIONS.**

**Wash thoroughly after handling.** Handle in accordance with good personal hygiene and safety practices. These practices include avoiding unnecessary exposure.

## SECTION 9: Physical and Chemical Properties

**Boiling Point:** 674 °F (mercury)

**Specific Gravity (H<sub>2</sub>O = 1):** 13.35

**Vapor Pressure (mm Hg):** 0.0012 mm Hg @ 68 °F

**Melting Point:** -38 °F

**Vapor Density:** N/E

**Evaporation Rate:** N/E

**Solubility in Water:** 0.0002g/100g water @ 68 °F

**Physical state:** Solid. [Precapsulated dental amalgam: Metal alloy powder / Mercury (Mobile liquid.)]

**Appearance and Odor:** *Powder:* Odorless dark-gray alloy of silver, tin, copper and/or zinc.

*Liquid:* Mercury is a silvery, mobile, odorless liquid.

## SECTION 10: Stability and Reactivity

**Stability:** Stable

**Conditions to Avoid:** High temperatures.

**Incompatibility (Material to Avoid):** Halogens, ammonia, and strong oxidizing agents.

**Hazardous Decomposition Byproducts:** Mercury Vapor.

**Hazardous Polymerization:** Will not occur

## SECTION 11: Toxicological Information

**Acute toxicity:** Not Available

**Conclusion/Summary:** Based on the criteria of the protocol, this product is considered non-cytotoxic per ISO 10993-5.

**Information on toxicological effects**

**Acute toxicity:** Not available

**Irritation/Corrosion**



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Skin : Corrosive to metal. Non-corrosive to skin.

Eyes : Corrosive to metal. Non-corrosive to the eyes.

Over-exposure signs/symptoms: Vapor may be irritating to eyes and respiratory system.

Respiratory : May cause respiratory irritation.

Over-exposure signs/symptoms: Inhalation of vapor/ mist may result in lung edema.

#### Test: Sensitization

Product name	Route of exposure	Species	Result
Joy Alloy	Skin	Guinea pig	Passed: Non sensitizer

#### Test: Irritation

Joy Alloy	Oral Musocal	Hamster	Non irritant to oral mucosa
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Carcinogenicity: Not Available

Reproductive toxicity: Not available

Teratogenicity: Not available

Aspiration hazard: Not available

#### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Mercury	Category 1	Not determined	Nervous system

#### Information on the likely routes of exposure:

Routes of entry anticipated: Oral, Dermal, Inhalation.

#### Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Fatal if inhaled.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

#### Symptoms related to the physical, chemical and toxicological characteristics:

*Inhalation:* Adverse symptoms may include the following:

reduced fetal weight, increase in fetal deaths, skeletal malformations, salivation, metallic taste, Eye irritation, respiratory tract irritation, coughing, pulmonary edema, wheezing and breathing difficulties, headache, fever, nausea or vomiting diarrhea, abdominal cramps and pain, muscle weakness / pain, mental confusion or disorientation

*Eye contact :* No specific data.

*Skin contact:* Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations

*Ingestion:* Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations.

#### Delayed & immediate effects, chronic effects from short and long term exposure

*Short term exposure*

Potential immediate effects : Not available.

Potential delayed effects : Not available

*Long term exposure:*

Potential immediate effects : Not available.



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Potential delayed effects : Not available.

**Potential chronic health effects:** Not available

**Conclusion/Summary :** Prolonged or repeated exposure to mercury vapor and/or particles may cause mercury poisoning (Mercurialism). Chronic inhalation of mercury affects the nervous system (central nervous system and peripheral nervous system) and leads to neuropsychiatric disturbances.

**General :** Causes damage to organs through prolonged or repeated exposure.

**Carcinogenicity :** No known significant effects or critical hazards.

**Mutagenicity :** No known significant effects or critical hazards.

**Teratogenicity :** May damage the unborn child.

**Developmental effects :** No known significant effects or critical hazards.

**Fertility effects :** No known significant effects or critical hazards.

### Numerical measures of toxicity

*Acute toxicity estimates*

Route: Inhalation (dusts and mists)

ATE value: 0.05011 mg/l

**Further information:** Avoid exposure of mercury to pregnant person.

## SECTION 12: Ecological Information

Ecotoxicity: The product must not enter effluent, ground water, surface water or the soil.

Mobility : No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

## SECTION 13: Disposable considerations

Any disposal practice must be in compliance with local and national regulations.

For disposal contact an expert for chemical waste, at your local-, federal or

state waste department. Disposal of this product, solutions and any by-products should at all times

comply with the requirements of environmental protection & waste disposal legislation and any regional local authorities requirements.

## SECTION 14: Transport Information

### IATA and IMDG:

**Product:** Amalgam Capsule

**Contains:** Mercury

**Proper Shipping Name:** Mercury contained in manufactured articles

**UN Number:** UN 3506

**Packing Group:** III

**Class (sub risk):** 8 (6.1) Corrosive & Toxic

Material is regulated under Transport CFR 49 §173.4b De minimis exceptions.

## SECTION 15: Regulatory Information

This product is classified as a medical device under EC Directives, US and Canadian regulations

**HMIS (Hazardous Material Identification System) Rating:**



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H3 F0 R0 (Health, Flammability, Instability/Reactivity)

[HMIS Index: 4 - Severe Hazard; 3 - Serious Hazard; 2 - Moderate Hazard; 1 - Slight Hazard; 0 - Minimum Hazard]

### California Proposition 65 WARNING:

This product contains mercury, a chemical known to the State of California to cause birth defects or other reproductive harm.

### SECTION 16: Other Information

Date of revision: 15.10.15

#### Key to abbreviations :

ATE = Acute Toxicity Estimate

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IMDG = International Maritime Dangerous Goods

UN = United Nations

### CAUTION: PRODUCT FOR PROFESSIONAL USE

The information on this safety sheet is based on presently available data and to our best knowledge for the correct handling of the product under normal conditions. Any use of this product in any way not indicated on this sheet or use of this product together with any other process/procedure will be exclusively under the user's responsibility.