1: Identification

Product identifier

Product name: Mercury

Stock number: 00522
CAS Number: 7439-97-6
EC number: 231-106-7
Index number: 080-001-00-0

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

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency telephone number:
During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

2: Hazard(s) identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS06 Skull and crossbones
Acute Tox. 2 H330 Fatal if inhaled.

GHS08 Health hazard
Repr. 1B H360 May damage fertility or the unborn child.
STOT RE 1 H372 Causes damage to the central nervous system, the kidneys, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

T+; Very toxic
R26: Very toxic by inhalation.
T; Toxic
Repr. Cat. 2
R61-48/23: May cause harm to the unborn child. Toxic: danger of serious damage to health by prolonged exposure through inhalation.
N; Dangerous for the environment
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hazards not otherwise classified
No information known.

Label elements

Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labeled according to the CLP regulation.

Hazard pictograms

GHS06 GHS08

Signal word Danger
Hazard statements
H330 Fatal if inhaled,
H360 May damage fertility or the unborn child.
H372 Causes damage to the central nervous system, the kidneys, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P284 [In case of inadequate ventilation] wear respiratory protection.
P281 Use personal protective equipment as required.
P320 Specific treatment is urgent (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification
D1A - Very toxic material causing immediate and serious toxic effects
D2A - Very toxic material causing other toxic effects
E - Corrosive material

(Contd. on page 2)
3: Composition/information on ingredients

Chemical characterization: Substances
CAS# Description: 7439-97-6 Mercury
Identification number(s):
EC number: 231-106-7
Index number: 080-001-00-0

4: First-aid measures

Description of first aid measures
General information
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing
Seek medical treatment.

Information for doctor
Most important symptoms and effects, both acute and delayed No further relevant information available.
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5: Fire-fighting measures

Extinguishing media
Suitable extinguishing agents
Product is not flammable. Use fire fighting measures that suit the surrounding fire.

Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Toxic metal oxide fume

Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.

Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7: Handling and storage

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.

Information about protection against explosions and fires: The product is not flammable.

Conditions for safe storage, including any incompatibilities

Storage
Requirements to be met by storerooms and receptacles: No special requirements.

Further information about storage in one common storage facility:
Store away from metals.
Store away from halogens.

Specific end use(s) No further relevant information available.
8: Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

7439-97-6 Mercury (100.0%)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL (USA)</td>
<td>Long-term: 0.1 mg/m³ as Hg, see OSHA standard interpretation memo</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>Long-term value: 0.05* mg/m³ as Hg, *Vapor, Skin</td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>Long-term value: 0.025 mg/m³ as Hg, Skin, BEI</td>
</tr>
<tr>
<td>EL (Canada)</td>
<td>Long-term value: 0.025 mg/m³ Skin, R</td>
</tr>
<tr>
<td>EV (Canada)</td>
<td>Long-term value: 0.025 mg/m³ as Hg, Skin</td>
</tr>
</tbody>
</table>

Ingredients with biological limit values:

7439-97-6 Mercury (100.0%)

| BEI (USA) | 35 µg/g creatinine |
| Medium: urine | Time: prior to shift |
| Parameter: Total inorganic mercury (background) |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEI (USA)</td>
<td>15 µg/L</td>
</tr>
<tr>
<td>Medium: blood</td>
<td>Time: end of shift at end of workweek</td>
</tr>
<tr>
<td>Parameter: Total inorganic mercury (background)</td>
<td></td>
</tr>
</tbody>
</table>

Additional information: No data

Exposure controls

Personal protective equipment

General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use self-contained respiratory protective device in emergency situations.

Protection of hands: Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9: Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Silver-colored</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not determined.</td>
</tr>
<tr>
<td>pH-value</td>
<td>Not determined.</td>
</tr>
</tbody>
</table>

Change in condition

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range</td>
<td>-38.87 °C (-38 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>356.73 °C (674 °F)</td>
</tr>
<tr>
<td>Sublimation temperature / start</td>
<td>Not determined</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Not determined</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Not determined</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not determined</td>
</tr>
<tr>
<td>Lower</td>
<td>Not determined</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor pressure at 20 °C (68 °F):</td>
<td>0.00163 hPa</td>
</tr>
<tr>
<td>Density at 20 °C (68 °F):</td>
<td>13.534 g/cm³ (112.941 lbs/gal)</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water:</td>
<td>Not miscible or difficult to mix</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>Not determined</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not determined</td>
</tr>
<tr>
<td>dynamic:</td>
<td>Not determined</td>
</tr>
<tr>
<td>kinematic:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10: Stability and reactivity

Reactivity
No information known.

Chemical stability
Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions
No dangerous reactions known.

(Contd. on page 4)
Incompatible materials:
Aluminum/aluminum alloys.
Magnesium
Copper and copper alloys
Halogens

Hazardous decomposition products: Toxic metal oxide fume

11: Toxicological information
Information on toxicological effects
Acute toxicity:
Fatal if inhaled.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: No irritant effect.
Eye irritation or corrosion: No irritant effect.
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
Carcinogenicity:
EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.
IARC-3: Not classifiable as to carcinogenicity to humans.
ACGIH A4: Not classifiable as a human carcinogen: inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.
Reproductive toxicity:
May damage fertility or the unborn child.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.
Specific target organ system toxicity - repeated exposure:
Causes damage to the central nervous system, the kidneys, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.
Specific target organ system toxicity - single exposure: No effects known.
Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12: Ecological information
Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Ecototoxicological effects:
Remark: Very toxic for aquatic organisms
Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
Very toxic for aquatic organisms
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13: Disposal considerations
Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14: Transport information
UN-Number
DOT, IMDG, IATA UN2809
UN proper shipping name
DOT RQ Mercury
IMDG, IATA MERCURY
Transport hazard class(es)
DOT
Class 8 Corrosive substances.
Label 8+6.1
IMDG, IATA
Class 8 (CT1) Corrosive substances
Label 8+6.1
Packing group
DOT, IMDG, IATA III
Environmental hazards: Environmentally hazardous substance, liquid
### Special precautions for user

**Warning:** Corrosive substances

**EMS Number:** F-A,S-B

**Seperation groups:** Heavy metals and their salts (including their organometallic compounds), mercury and mercury compounds

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

### Transport/Additional information:

| DOT | 1 lbs, 0.454 kg |
| Marine Polluant (DOT) | No |
| UN "Model Regulation" | UN2809, Mercury, 8 (6.1), III |

### 15: Regulatory information

#### Safety, health and environmental regulations/legislation specific for the substance or mixture

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. All components of this product are listed on the Canadian Domestic Substances List (DSL).

#### SARA Section 313 (specific toxic chemical listings)

| 7439-97-6 | Mercury |

#### California Proposition 65

**Prop 65 - Chemicals known to cause cancer** Substance is not listed.

**Prop 65 - Developmental toxicity**

| 7439-97-6 | Mercury |

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

#### Information about limitation of use:

For use only by technically qualified individuals.

This product is subject to a Significant New Use Rule (SNUR) promulgated under Section 5(a)(2) of the Toxic Substances Control Act (TSCA). See 40 CFR 721.

This product is being sold for research and development use.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

#### Other regulations, limitations and prohibitive regulations

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**REACH - Pre-registered substances** Substance is listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Health, Safety and Environmental Department.

**Abbreviations and acronyms:**

| RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) |
| ICAO: International Civil Aviation Organization |
| ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) |
| IMDG: International Maritime Code for Dangerous Goods |
| DOT: US Department of Transportation |
| IATA: International Air Transport Association |
| GHS: Globally Harmonized System of Classification and Labelling of Chemicals |
| EIEEC: European Inventory of Existing Commercial Chemical Substances |
| CAS: Chemical Abstracts Service (division of the American Chemical Society) |
| HIMS: Hazardous Materials Identification System (USA) |
| WHMIS: Workplace Hazardous Materials Information System (Canada) |
| LC50: Lethal concentration, 50 percent |
| LD50: Lethal dose, 50 percent |
| vPvB: very Persistent and very Bioaccumulative |
| ACCIH: American Conference of Governmental Industrial Hygienists (USA) |
| OSHA: Occupational Safety and Health Administration (USA) |
| NTP: National Toxicology Program (USA) |
| IARC: International Agency for Research on Cancer |
| EPA: Environmental Protection Agency (USA) |