

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 02/12/2010

Reviewed on 02/11/2010

**1 Identification of substance:****Product details:****Product name:** Mercury(II) chloride**Stock number:**

A17472

L00387

**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Emergency Phone: (978) 521-6300

CHEMTREC: (800) 424-9300

Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Mercury(II) chloride (CAS# 7487-94-7)

**Identification number(s):****EINECS Number:** 231-299-8**Index number:** 080-010-00-X**3 Hazards identification****Hazard description:**

T+ Very toxic

N Dangerous for the environment

**Information pertaining to particular dangers for man and environment**

R 28 Very toxic if swallowed.

R 34 Causes burns.

R 48/24/25 Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.

R 62 Possible risk of impaired fertility

R 68 Possible risk of irreversible effects.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

|            |   |
|------------|---|
| HEALTH     | 4 |
| FIRE       | 0 |
| REACTIVITY | 1 |

Health (acute effects) = 4

Flammability = 0

Reactivity = 1

**GHS label elements****Danger**

3.1/2 - Fatal if swallowed.

**Danger**

3.9/1 - Causes damage to organs through prolonged or repeated exposure.

3.5/2 - Suspected of causing genetic defects.

3.7/2 - Suspected of damaging fertility or the unborn child.

**Danger**

3.2/1B - Causes severe skin burns and eye damage.

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**Warning**

4.1/1 - Very toxic to aquatic life with long lasting effects.

**Prevention:**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

Use personal protective equipment as required.

**Response:**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/attention.

Immediately call a POISON CENTER or doctor/physician.

Get medical advice/attention if you feel unwell.

Specific treatment (see on this label).

Rinse mouth.

Wash contaminated clothing before reuse.

Collect spillage.

**Storage:**

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

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**

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Hydrogen chloride (HCl)

Toxic metal oxide fume

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

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**Measures for cleaning/collecting:**

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

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****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:** The product is not flammable**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Store away from oxidizing agents.

Store away from strong bases.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and 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.

**Components with limit values that require monitoring at the workplace:**

Mercury, inorganic compounds (as Hg)

mg/m<sup>3</sup>

ACGIH TLV

0.025 (skin)

Not classified as a human carcinogen

Austria MAK

0.05

Belgium TWA

0.1 (skin)

Denmark TWA

0.05 (skin)

Finland TWA

0.05

France VME

0.05 (skin) (vapor)

Germany MAK

0.1

Hungary TWA

0.02; 0.04-STEEL

Japan OEL

0.05

Korea TLV

0.025 (vapor) (skin)

Netherlands MAC-TGG

0.05; 0.5-MAC-K

Norway TWA

0.05

Poland TWA

0.025 (vapors); 0.2-STEEL (vapors)

Sweden NGV

0.05

Switzerland MAK-W

0.01 (skin)

United Kingdom TWA

0.025

USA PEL

0.1-Ceiling

**Additional information:** No data**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.

Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.**Protection of hands:** Impervious gloves**Eye protection:**

Safety glasses

Tightly sealed goggles

Full face protection

**Body protection:** Protective work clothing.

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**9 Physical and chemical properties:****General Information**

|               |          |
|---------------|----------|
| <b>Form:</b>  | Powder   |
| <b>Color:</b> | White    |
| <b>Odor:</b>  | Odorless |

**Change in condition**

|   |                       |
|---|-----------------------|
| <b>Melting point/Melting range:</b>     | 280-282°C (536-540°F) |
| <b>Boiling point/Boiling range:</b>     | 302°C (576°F)         |
| <b>Sublimation temperature / start:</b> | Not determined        |

|                     |                |
|---------------------|----------------|
| <b>Flash point:</b> | Not applicable |
|---------------------|----------------|

|                              |                |
|------------------------------|----------------|
| <b>Ignition temperature:</b> | Not determined |
|------------------------------|----------------|

|                                   |                |
|-----------------------------------|----------------|
| <b>Decomposition temperature:</b> | Not determined |
|-----------------------------------|----------------|

|                             |   |
|-----------------------------|---|
| <b>Danger of explosion:</b> | Product does not present an explosion hazard. |
|-----------------------------|---|

**Explosion limits:**

|               |                |
|---------------|----------------|
| <b>Lower:</b> | Not determined |
| <b>Upper:</b> | Not determined |

|                        |                |
|------------------------|----------------|
| <b>Vapor pressure:</b> | Not determined |
|------------------------|----------------|

|                                |                        |
|--------------------------------|------------------------|
| <b>Density at 20°C (68°F):</b> | 5.44 g/cm <sup>3</sup> |
|--------------------------------|------------------------|

**Solubility in / Miscibility with**

|                              |        |
|------------------------------|--------|
| <b>Water at 20°C (68°F):</b> | 74 g/l |
|------------------------------|--------|

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Oxidizing agents

Bases

Ammonia

Copper

Alkali metals

**Dangerous reactions** Reacts with alkali metals.**Dangerous products of decomposition:**

Hydrogen chloride (HCl)

Toxic metal oxide fume

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

|                    |          |                               |
|--------------------|----------|-------------------------------|
| Oral               | LD50     | 6 mg/kg (mouse)               |
|                    |          | 1 mg/kg (rat)                 |
|                    | LDLo     | 29 mg/kg (human)              |
| Dermal             |          | 86 mg/kg (man)                |
|                    | LD50     | 41 mg/kg (rat)                |
| Inhalative         | LCLo/10M | 300 mg/m <sup>3</sup> (mouse) |
| Irritation of skin | severe   | 500 mg/24H (rabbit)           |
| Irritation of eyes | severe   | 50 µg/24H (rabbit)            |

**Primary irritant effect:****on the skin:** Corrosive effect on skin and mucous membranes.**on the eye:** Strong corrosive effect.**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Reproductive effects have been observed on tests with laboratory animals.

Tumorigenic effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:**

Acute and chronic exposure to inorganic mercury can cause salivation with metallic taste, pain on chewing, gingivitis, colitis, stomatitis, kidney damage, and central nervous system damage. The latter can cause tremors, convulsive or shaking movements and psychic disturbances such as memory loss, insomnia, loss of confidence, irritability and depression. Excessive exposure may result in death.

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**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - excitement.  
 Behavioral - somnolence (general depressed activity).  
 Behavioral - muscle weakness.  
 Behavioral - convulsions or effect on seizure threshold.  
 Behavioral - tremor.  
 Behavioral - ataxia.  
 Behavioral - fluid intake.  
 Behavioral - food intake (animal).  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - phosphatases.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other transferases.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other enzymes.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects.  
 Biochemical - Metabolism (Intermediary) - other proteins.  
 Biochemical - Metabolism (Intermediary) - other.  
 Biochemical - Metabolism (Intermediary) - lipids including transport.  
 Blood - changes in leukocyte (WBC) count.  
 Blood - changes in erythrocyte (RBC) count.  
 Blood - pigmented or nucleated red blood cells.  
 Blood - other changes.  
 Blood - changes in other cell count (unspecified)  
 Cardiac - other changes.  
 Brain and Coverings - other degenerative changes.  
 Endocrine - other changes.  
 Endocrine - changes in adrenal weight.  
 Endocrine - evidence of thyroid hypofunction.  
 Endocrine - changes in thymus weight.  
 Endocrine - adrenal cortex hyperplasia.  
 Gastrointestinal - gastritis.  
 Gastrointestinal - ulceration or bleeding from stomach.  
 Gastrointestinal - ulceration or bleeding from duodenum.  
 Gastrointestinal - ulceration or bleeding from large intestine  
 Gastrointestinal - necrotic changes.  
 Gastrointestinal - other changes.  
 Gastrointestinal - nausea or vomiting.  
 Gastrointestinal - tumors.  
 Gastrointestinal - hypermotility, diarrhea.  
 Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis).  
 Kidney, Ureter, Bladder - interstitial nephritis.  
 Kidney, Ureter, Bladder - other changes in urine composition.  
 Kidney, Ureter, Bladder - urine volume decreased.  
 Kidney, Ureter, Bladder - other changes.  
 Kidney, Ureter, Bladder - changes in kidney weight.  
 Kidney, Ureter, Bladder - changes in bladder weight.  
 Kidney, Ureter, Bladder - changes in both tubules and glomeruli.  
 Kidney, Ureter, Bladder - proteinuria.  
 Kidney, Ureter, Bladder - Kidney tumors.  
 Kidney, Ureter, Bladder - hematuria.  
 Liver - liver function tests impaired.  
 Liver - other changes.  
 Liver - hepatitis (hepatocellular necrosis), diffuse  
 Liver - changes in liver weight.  
 Lungs, Thorax, or Respiration - respiratory obstruction.  
 Lungs, Thorax, or Respiration - respiratory stimulation.  
 Lungs, Thorax, or Respiration - dyspnea.  
 Musculoskeletal - changes in teeth and supporting structures.  
 Nutritional and Gross Metabolic - changes in metals, not otherwise specified.  
 Nutritional and Gross Metabolic - weight loss or decreased weight gain.  
 Related to Chronic Data - death.  
 Related to Chronic Data - changes in testicular weight.  
 Reproductive - Paternal Effects - spermatogenesis (including genetic material, sperm morphology, motility, and count).

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Reproductive - Fertility - abortion.  
 Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).  
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.  
 Reproductive - Effects on Embryo or Fetus - extra-embryonic structures (e.g., placenta, umbilical cord)  
 Reproductive - Effects on Newborn - weaning or lactation index (e.g., # alive at weaning per # alive at day 4).  
 Reproductive - Effects on Newborn - growth statistics (e.g.%, reduced weight gain).  
 Reproductive - Effects on Embryo or Fetus - other effects to embryo.  
 Reproductive - Specific Developmental Abnormalities - Central Nervous System.  
 Reproductive - Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow).  
 Reproductive - Fertility - other measures of fertility.  
 Reproductive - Effects on Newborn - live birth index (measured after birth)  
 Reproductive - Effects on Newborn - viability index (e.g., # alive at day 4 per # born live).  
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).  
 Reproductive - Effects on Embryo or Fetus - fetal death.  
 Reproductive - Effects on Newborn - behavioral.  
 Reproductive - Effects on Embryo or Fetus - cytological changes (including somatic cell genetic material)  
 Reproductive - Specific Developmental Abnormalities - other developmental abnormalities.  
 Reproductive - Maternal Effects - oogenesis.  
 Reproductive - Maternal Effects - uterus, cervix, vagina.  
 Reproductive - Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)  
 Reproductive - Paternal Effects - testes, epididymis, sperm duct.  
 Reproductive - Fertility - male fertility index (e.g. # males impregnating females per # males exposed to fertile nonpregnant females)  
 Reproductive - Paternal Effects - prostate, seminal vesicle, Cowper's gland, accessory glands.  
 Reproductive - Paternal Effects - other effects on male.  
 Sense Organs and Special Senses (Olfaction) - effect, not otherwise specified.  
 Skin and Appendages - tumors.  
 Tumorigenic - active as anti-cancer agent.  
 Tumorigenic - neoplastic by RTECS criteria.  
 Tumorigenic - equivocal tumorigenic agent by RTECS criteria.  
 Vascular - BP elevation not characterized in autonomic section.  
 Vascular - change in plasma or blood volume.  
**Subacute to chronic toxicity:**  
 Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.  
**Additional toxicological information:**  
 To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
 Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
 Possible risk of impaired fertility.  
 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 components in this product.

**12 Ecological information:****Ecotoxicological effects:****Remark:** Very toxic for fish**General notes:**

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.

Do not allow material to be released to the environment without proper governmental permits.

Very toxic for aquatic organisms

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**13 Disposal considerations****Product:****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****DOT regulations:**

**Hazard class:** 6.1  
**Identification number:** UN1624  
**Packing group:** II  
**Proper shipping name (technical name):** MERCURIC CHLORIDE  
**Label:** 6.1

**Land transport ADR/RID (cross-border)**

**ADR/RID class:** 6.1 (T5) Toxic substances  
**Danger code (Kemler):** 60  
**UN-Number:** 1624  
**Packaging group:** II  
**Special marking:** Symbol (fish and tree)  
**Description of goods:** 1624 MERCURIC CHLORIDE

**Maritime transport IMDG:**

**IMDG Class:** 6.1  
**UN Number:** 1624  
**Label:** 6.1  
**Packaging group:** II  
**Marine pollutant:** No  
**Proper shipping name:** MERCURIC CHLORIDE

**Air transport ICAO-TI and IATA-DGR:**

**ICAO/IATA Class:** 6.1  
**UN/ID Number:** 1624  
**Label:** 6.1  
**Packaging group:** II  
**Proper shipping name:** MERCURIC CHLORIDE

**UN "Model Regulation":** UN1624, MERCURIC CHLORIDE, 6.1, II**Environmental hazards:** Environmentally hazardous substance, solid; Marine Pollutant**15 Regulations****Product related hazard informations:****Hazard symbols:**

T+ Very toxic

N Dangerous for the environment

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**Risk phrases:**

- 28 Very toxic if swallowed.  
 34 Causes burns.  
 48/24/25 Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.  
 62 Possible risk of impaired fertility  
 68 Possible risk of irreversible effects.  
 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Safety phrases:**

- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
 45 In case of accident or if you feel unwell, seek medical advice immediately.  
 60 This material and its container must be disposed of as hazardous waste.  
 61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**Special labeling of certain preparations:**

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

**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).

**Information about limitation of use:**

For use only by technically qualified individuals.

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

**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 MSDS:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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