



MATERIAL SAFETY DATA SHEET

Section 1 – Chemical Product and Company Identification

Product Name: Mercury Relays & Tilt Switches
Company Name: MDI Incorporated
25028 US 12 East, P.O. Box 710
Edwardsburg, Michigan, 49112 USA
Emergency Telephone Number:
For other information: (269) 663-8574
www.mdius.com / berndt@mdi.us

Section 2 – Hazardous Ingredients/Identifier

Chemical Name: Mercury (Quick Silver, Liquid Silver)
• OSHA PEL 0.10 mg(Hg)/m³ (Ceiling Level)
REL 0.05 mg(Hg).m³
• ACGIH TLV 0.05 Mg(Hg)/m³ TWA 100
• CAS No. 7439-97-6
Reportable Quantity 1 lb.

Section 3 – Physical and Chemical Characteristics

Boiling Point: 357°C (675°F)
Specific Gravity (H₂O =1) : 13.6
Vapor Density (air =1) : 7.0
Evaporation Rate (BuAc=1): 4
Solubility in Water: Negligible (less than 0.1%)
Reactivity in Water: n/a
Melting Point: -39°C (-38°F)
Vapor Pressure : 0.0012 mmHg @ 20°C
0.0127 mmHg @ 50°C
Appearance and Odor: Silver-White, Liquid Metal, Heavy, no odor

Section 4 – Fire and Explosion Data

Flash Point: n/a
Flammable Limits: n/a
Auto-ignition Temp: n/a
Extinguisher Media: Dry Chemical, Carbon Dioxide, Water
Spray or Foam
Special Fire Fighting Procedures: For large fires use water spray or foam.
Caution: Use the proper extinguishing agent for the type of fire.
Unusual Fire and Explosive Hazards: Use water in flooding amounts as a fog. Avoid breathing corrosive and poisonous vapors.
Keep up wind. Do not allow water runoff to enter sewers or waterways.

Section 5 – Physical Hazards (Reactivity Data)

Stability: Stable
Conditions to Avoid: Does not readily ignite. Flammable poisonous gases may accumulate in containers. May ignite combustibles (wood, paper oil).
Incompatible materials to avoid violent reaction: Acetylinic compounds, Ammonia, Boron, Diiodophosphoide; Ethylene Oxide; Metals (Aluminum, Potassium, Lithium, Sodium, Rubidium); Methyl Azide; Methylsilane; Oxygen; Oxidants (Bromine, Peroxyfornic, Chlorine Dioxide, Nitric Acid, Tercarbonylnickel, Nitro methane, Silver Perchlorate).
Hazardous Decomposition Products: Thermal decomposition products include toxic mercury vapors and oxygen.

Section 6 – Health Hazards

California Proposition 65 Warning: "Warning: This product contains mercury, a chemical know to the State of California to cause birth defects or other reproductive harm."
Elemental Hg liquid and vapor is toxic due to its liquid solubility, lack of charge and membrane permeability. Inhaled vapors (80 percent) diffuse rapidly through alveolar membranes into the blood and are systematically transported to the body tissues, including the brain. Exposure to high conc. (>28 mg/m³) of vapors for brief periods can cause pneumonitis, chest pains, dyspnea,



coughing, later stomatitis, gingivitis and salivation occur. Hg can be absorbed slowly through the skin. Chronic symptoms involve the CNS with tremors and various neuropsychiatric disturbances. The TLV would be exceeded if the contents of a small Hg clinical thermometer were dispersed in a closed 100 feet by 100 feet by 15 feet room. GI uptake of Hg is low (5 percent).

First Aid:

Eye Contact: Flush with running water for 15 minutes under the eyelids.

Skin Contact: Remove contaminated clothing. Wash affected area with soap and water.

Inhalation: Remove to fresh air. Restore and/or support breathing as needed. Administer oxygen for chemical pneumonitis.

Ingestion: Gastric lavage with five percent solution of sodium formaldehyde sulfoxylate followed by two percent NaHCO₃ and finally leaves 250 cc of sodium formaldehyde sulfoxylate in the stomach.

Skin Contact: Irritant/sensitizer/Neurotoxin/Nephrotoxin.

Acute Exposure: May cause redness and irritation. Sensitization dermatitis may occur in previously exposed worker. Substance may be absorbed through intact skin causing anuria.

Routes of Entry:

Eye Contact: Irritant.

Acute Exposure: Contact may cause irritation. Solutions are corrosive and may cause corneal injury or burns.

Chronic Exposure: Mercury may be deposited in the lens of the eye causing visual disturbances.

Ingestion: Neurotoxin/Nephrotoxin.

Acute exposure: When ingested. Necrosis begins immediately in the mouth, throat, esophagus and stomach. Within a few minutes violent pain, profuse vomiting and severe purging may occur. Patients may die within a few minutes from fluid/electrolyte losses and peripheral vascular collapse but death (from uremia) is usually delayed five to 12 days.

Inhalation: Irritant/Sensitizer/Neurotoxin. 28 mg/m³ immediately dangerous to life or health.

Acute Exposure: Inhalation of a high concentration of mercury vapor can cause almost immediate dyspnea cough, fever, nausea and vomiting, diarrhea, stomatitis salivation and metallic taste. Symptoms may resolve or may progress to necrotizing bronchiolitis pneumonitis, pulmonary edema and pneumothorax. This syndrome is often fatal in children. Acidosis and renal damage with renal failure may occur. Inhaling volatile organic mercurials in high concentrations causes metallic taste, dizziness, slurred speech, diarrhea and sometimes fatal convulsion.

Chronic Exposure: Inhalation of mercury vapors and dust over a long period causes mercurialism. Findings extremely variable and include tremors, salivation, loosening of the teeth, blue lines on the gums, pain and numbness in the extremities, nephritis, diarrhea, anxiety, headaches, weight loss, anorexia, mental depression, insomnia, irritability and instability, hallucinations and evidence of mental deterioration.

Section 7 – Special Precautions and Spill/Leak Procedures

Store in closed unbreakable containers (polyethylene) in a cool, dry, well-ventilated area away from sources of heat. Protect containers from physical damage. Mercury evaporates very slowly. Spilled Hg forms many tiny globules that will evaporate faster than a single pool and can develop a significant concentration of vapors in an unventilated area. Such vapors can be poisonous, especially if breathed over a long period of time. Heated Hg evolves into high levels of toxic vapors.

DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO SO WITHOUT RISK. FOR SMALL SPILLS, CLEANUP MATERIAL WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. A MERCURY SPILL KIT MAY ALSO BE USED FOR SMALL SPILLS IN THE WORKPLACE.

Section 8 – Special Protection Information/Control Measures

Provide adequate exhaust ventilation to meet TLV requirements in the workplace. Operations requiring a Hg surface should reduce the temperature of Hg to limit vaporization and minimize vapor exposure by using a local exhaust.

Self-contained breathing apparatus can be used up to 5 mg/m³ with a full facemask. Positive pressure-type air supplied breathing equipment has been recommended above 5mg/m³. Avoid eye contact by use of chemical safety glasses. Wear rubber gloves and protective clothing appropriate for the work situation. Separate work and street clothing. Store work clothing in special lockers.

Showers to be taken before changing to street clothes. Provide pre-placement and periodic medical exams for those regularly exposed to Hg, with emphasis directed to CNS, skin, lungs, liver, kidneys and G.I. tracts

WHMIS – D2B,E Poison UN 2809

HMS – 3-0-0 Corrosive 8

MDI Incorporated provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

Prepared by: MDI Engineering Department

Phone Number: (269) 663-8574

01-13-2012 JJS



MERCURY DISPLACEMENT INDUSTRIES, INC.

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(800) 634-4077

Mercury Clean-up Instructions

Because of the attraction that mercury has for gold (and to a lesser extent, silver), rings, watches, pens and other items made from or plated with gold or silver should be removed before starting clean-up. Wearing safety glasses is recommended. After removing power to the relay and taking appropriate precautions to avoid electrical shock, use disposable gloves to remove the relay and transfer it to the sealable plastic disposal container. The mercury can often be consolidated and picked-up using thin cardboard or plastic. Care should be taken to avoid spilling mercury on the floor and to avoid tracking mercury on the floor to other areas. Mercury pickup is often easier if the mercury is first sprayed with water. The water slows the evaporation of the mercury and reduces the tendency of the mercury to roll and spread. On flat surfaces, mercury (and water) can be centralized for pickup using a squeegee. If a shop vac is used, the exhaust should be vented outside and the unit considered contaminated and reserved for mercury pick-up. A small amount of water in the bottom will help reduce the mercury vapors exhausted. Special mercury recovery vacuums that filter out the mercury vapors are also available, but expensive.

When crude mercury pickup is complete, use the treated sponge in the mercury clean-up kit to absorb the small droplets of mercury that remain. Dampen the sponge with water and rub the area you want clean. As mercury is picked up it will react (amalgamate) with the material in the surface of the sponge and turn it silvery color. The amalgamated mercury in the sponge will help it pick-up mercury better, so you want to work from edges of the used areas of the sponge.

As an intermediate step to clean-up, the evaporation of mercury can be reduced by covering it with calcium polysulfide or flowers of sulfur. Another way of amalgamating the mercury for better pick-up is with a paste of zinc powder and dilute (5-10%) sulfuric acid. This should be worked into the surface to be cleaned and then swept up after it has dried. Residue should wash away with soap and water.

All clean-up items containing mercury (sponge, gloves sweeper contents ...) should be put in a sealable plastic disposal container with the relay and returned to MDI or otherwise disposed of properly. After clean-up is complete, wash with soap and water.

While mercury vapors are hazardous and precautions should be taken to minimize breathing them, mercury does not evaporate rapidly. Hazardous concentrations usually take a few hours to build up. You may want to use a fan to disperse the vapors. Avoid excessive heat since mercury vaporizes much more readily when warm. Do not smoke during the cleanup process or use cigarettes that may have mercury on them, since mercury contaminated cigarettes can produce unusually high mercury vapor levels in their smoke.

Shipping information:

Address:

Classification UN2809
Hazard Class 8 (Corrosive)
Packing Group III
Reportable Quantity 1-Pound

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Contactors - Relays - Switches

<http://www.mdious.com>

MDI Product Return Form

Company: _____

Address: _____

City/State/Zip: _____

Contact Name/Title: _____

Phone: _____

E-Mail: _____

Reason for return of units:

Disposal/Recycling
Receipt Requested to _____ (E-mail Address)

Warranty Evaluation

Credit Reference No. _____

Replacement Reference No. _____

Failure Symptoms: _____

Application Information (load, voltages, currents, operation rates, ect):

Time in Service: _____

Ship to: MDI Inc.
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Edwardsburg, MI 49112