

# SPECTRO-UV PRODUCT SAFETY DATA SHEET METAL HALIDE SUNLAMPS

## Lamp Material Information Sheet

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### Material Safety Data Sheets (MSDS)

Information and Applicability

The Material Safety Data Sheet (MSDS) requirements of the Occupational Safety and Health Administration (OSHA) for regulated chemicals, under , 29 CFR 1910.1200 (C) are **not applicable** to manufactured articles. Metal Halide lamps are classified as articles, and therefore exempt from this regulation.

No material contained in a lamp is released during normal use and operation.

The following information is provided as a service to our customers. The following Lamp Material Information Sheet contains applicable Material Safety Data Sheet Information.

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### Section 1. Manufacturer and Product Identification

**Product:** High Pressure Metal Halide Lamps

**Applicable Lamp Types:** MHL Types with Wattage Ratings 250W-2000W

**Manufacturer / Supplier:** Spectro-UV

4 Dubon Court, Farmingdale NY 11735 USA

**Emergency Information:** Phone number: 866-230-7305

### Section 2. Lamp Materials and Hazardous Ingredients

#### **General**

The lamp's main body consists of a quartz glass envelope which contains an inert gas, a small amount of mercury and a metal halide compound. The lamp has two internal electrodes made of coiled tungsten. The electrodes are connected to lead wires consisting of nickel or stainless steel wires and a strip of molybdenum foil. The lead wires are terminated by metal contacts that are embedded in ceramic material.

#### **Materials** (that may be used in all, or some, MH sunlamps)

Quartz, Fused - lamp envelope

Tungsten - electrode material

Mercury - necessary for the arc discharge

Fel<sub>2</sub> - metal halide compound

Ceramic compound - bases

Ar / Xenon - fill gas

Kr<sup>85</sup> - isotopic starting aid mixed in inert gas

Molybdenum - metallic foil lead in strip

Nickel or Stainless Steel - lead wires and external contacts

Gold - internal reflective coating

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### Section 3. Health Concerns/Hazard Identification

#### Ultraviolet (UV) Radiation

These lamps can emit ultraviolet radiation that may be harmful to eyes and skin. These discharge lamps are not open fixture rated and should only be used in enclosed fixtures with ultraviolet absorbing filter glass. Do not operate these lamps if the ultraviolet absorbing filter glass is broken or not installed. For additional information on protection from UV radiation, visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/uburns.html>

#### Mercury Exposure

A MSDS declaration for Mercury can be downloaded from:

<http://www.virginmercury.com/pdf/MSDS.pdf>.

#### **Emergency Overview: Warning for Lamps During Operation**

These lamps operate under very high pressure conditions and at high temperature and may unexpectedly shatter

- ❖ These lamps generate ultraviolet (UV) radiation which may cause skin irritation and serious eye damage with prolonged exposure. Do not expose bare skin directly or indirectly to the lamp emission (otherwise, it could cause skin irritation) In tanning applications, always use in a fixture equipped with a timer.
- ❖ Do not look directly or indirectly at the light from the lamp without adequate eye protection (otherwise it could cause eye pain or damage to vision).
- ❖ Do not bump, apply excessive stress or scratch the lamp as the lamp is a glass product filled with high pressure gas (otherwise, it could cause an injury from lamp breakage).
- ❖ Do not open the lamp housing during lamp operation or until the lamp has properly cooled down after the lamp has been turned off. The internal pressure of the lamp is especially high when in operation and immediately after it is turned off (otherwise, it could cause an injury from lamp breakage).
- ❖ Do not touch the lamp during lamp operation or until the lamp has properly cooled down after the lamp is turned off (otherwise, it could cause a burn).
- ❖ Do not operate the lamp in close proximity to paper, cloth or any other combustible material near the lamp, nor cover the lamp with such materials during lamp operation or until the lamp has properly cooled down after the lamp has been turned off (otherwise, it could cause a fire).
- ❖ Turn off the power supply to the lamp when installing or removing the lamp to or from equipment (otherwise, it could cause an electric shock).
- ❖ In the event of a bulb rupture, a limited amount of mercury vapor could be emitted into the room. To avoid inhaling this mercury vapor (which is toxic and can be harmful to the lungs and nervous system) the room of use should be thoroughly ventilated for some period (at least for 30 minutes - Time is depending on room size, room conditions and ventilation).

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### POTENTIAL HEALTH CONCERNS - Lamp Materials

There are no known health hazards from exposure to lamps that are not energized and are intact.

No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

**NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards and/or NIOSH Pocket Guide to Chemical Hazards** lists the following effects of overexposure to the chemicals/materials listed below when they are inhaled, ingested or contacted with skin or eyes. Note: applies to material forms to which individuals may be practically exposed.

**Mercury** - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains and shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes

**Iron Iodide** - Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include epigastric pain, diarrhea, vomiting, nausea, and hematemesis occur.

**Kr<sup>85</sup>** - In the event that a lamp breaks, traces of Kr<sup>85</sup> immediately disperse into the air. Krypton gas and its radioactive isotope are inert. (they do not react with other substances) and are not absorbed by the body.

**Argon / Xenon Gas** - Acute or chronic respiratory conditions may be aggravated by overexposure to this gas. The volume of these gases in a lamp is well below the concentration sufficient to be hazardous.

### Section 4. First-Aid Measures

Measures listed below refer to the situation where a person came in contact with one of those substances mentioned in the former paragraph (being Mercury, Iron Iodide, Kr<sup>85</sup>, Argon or Xenon gases) and developed symptoms of discomfort irritation or pain.

**Glass Cuts:** Perform normal first aid procedures. Seek medical attention, as required.

**Inhalation:** If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

**Ingestion:** Seek medical attention.

**Contact, Skin:** Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

**Contact, Eye:** Wash eyes immediately with water for at least 15 minutes. Seek medical attention.

### Section 5. Fire and explosion data

**Warning: Unexpected lamp rupture may cause injury, fire, or property damage. Do not use lamp beyond rated life and adhere to all applicable caution and warranty notices.**

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An arc tube rupture can burst and shatter the glass resulting in the discharge of glass fragments and extremely hot quartz particles ( $\pm 1000^{\circ}\text{C}$ ). There is risk of personal injury, property damage, burns, and fire.

Further guidance on the application and use of Quartz Metal Halide lamps, see attached NEMA document LSD 25, **Best Practices for Metal Halide Lighting System, plus Questions and Answers about lamp Ruptures in Metal halide Lighting System.**

### Section 6. Accidental release measures

*Ventilation Recommendation - in view of concentrations of mercury vapor*

Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. limits. If such ventilation is unavailable, use respirators.

***If lamps are broken, ventilate area (if necessary) where breakage occurred, Clean-up with Mercury vacuum cleaner or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust and mercury vapor.***

See also additional Handling Information – Section 9: Broken Lamps

### Section 7. Handling – Precautions for safe usage

#### ***Lamp installation / replacement***

##### Handling

- ❖ Only use the lamp in the equipment for which it is approved and only after reading and understanding the operating manual for such equipment. Do not make any other use of the lamp (otherwise, it could cause lamp breakage or damage to the equipment).
- ❖ Do not touch quartz envelope with bare hands. If quartz envelope is dirty, wipe with alcohol-soaked clean cloth (otherwise, a dirty lamp could cause lamp breakage or shorten lamp life).
- ❖ Do not subject the lamp to vibration or shock (otherwise, it could cause lamp breakage or shorten lamp life).
- ❖ Do not throw away the original packaging and the protective cover, if attached, as they will be needed in transporting or disposing of the lamp.
- ❖ Store the lamp in its original protective packaging and the protective cover.

##### Installation and Removal

- ❖ Before installing the lamp in equipment, make sure that there is no rust, burning or discoloration where electrical connections are made between the lamp and the equipment.
- ❖ Install the lamp in the correct polarity (otherwise, it could cause lamp breakage or shorten lamp life).

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- ❖ Install the lamp properly in the equipment, without twisting, bending or otherwise applying excessive stress to the lamp (otherwise, it could cause lamp breakage, failure of the lamp to remain in place or shorten lamp life).
- ❖ Where applicable, properly attach the lamp lead wire to the terminal, and without applying excessive stress to the lamp (otherwise, it could cause overheating or smoke).
- ❖ Use proper care in installing or removing the lamp (otherwise it could cause lamp breakage or damage to the equipment).

### Use

- ❖ Do not use where volatile substances are present (otherwise, it could cause fire or explosion).
- ❖ When a lamp has been used for longer than its rated life it must be replaced. **The risk of lamp breakage increases the longer the lamp is used beyond its rated life in the application.**

### Section 8. Disposal Considerations

#### TCLP (Toxicology Characteristic Leaching Procedure)

Disposal of these lamps is regulated in many states. Many businesses in the United States manage these lamps as Universal Waste.

Some states require all mercury containing lamps to be recycled, contact your state environmental department for any regulation that may apply. To check state regulations or locate a recycler, go to: <http://www.lamprecycle.org/>

#### **Waste Disposal Method.**

At the end of rated life, when lamp is removed from service, dispose of in accordance with local Universal Waste laws. (Note: Lamps are stamped with Hg mark indicating that mercury is contained therein).

### Section 9. Special handling information - Broken Lamps

#### Lamp Breakage

- ❖ In the event the lamp ruptures during operation, leave the area and ventilate the area for at least 30 minutes. There is a possibility of inhaling mercury fumes (inhaling mercury fumes could be harmful to health).
- ❖ After the lamp and lamp housing have cooled down, remove any remaining mercury with packing tape, a thin paper or a syringe.
- ❖ Place any collected mercury and the materials used for collecting mercury in an airtight non metallic container.

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**Ventilation:** Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators.

**Eye Protection:** OSHA specified safety glasses, goggles or face shield are recommended, if lamps are being broken.

**Protective Clothing:** Protective, non-permeable gloves are recommended for dealing with broken lamps.

**Hygienic Practices:** After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics or using toilet facilities.

### Section 10. Regulatory information

Air transportation mode, applicable International regulation: ICAO (IATA) - 2.7 DOT No. UN 2809. CFR 173.4 Also DOT 49CFR Ch.1, §173.164

These mercury containing lamps being shipped in the manufacturer's original packaging are not regulated by law using truck or during ocean shipment. As a waste, spent lamps would be regulated in several states within the US as well as in other regions in the world.

Lamps are regulated in the United States by the CDRH, an agency of the Food and Drug Administration. Spectro-UV Lamps are certified to conform to applicable provisions of 21 CFR 1040.20.

### Section 11. Other Information and Legal Disclaimer

Although Spectro-UV believes the information contained in this Product Safety Data Sheet (PSDS) to be reliable, no guarantee is made as to its accuracy or completeness, and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

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