



PRODUCT SAFETY DATA SHEET¹

May 2020

PRODUCT: 50- 2000 Watt Metal Halide (MH) & High Pressure Sodium (HPS) Lamps

SECTION 1: MANUFACTURER

Manufacturer's Name and Address: Venture Lighting International, Inc.
7905 Cochran Road, Suite 300
Glenwillow, OH, 44139

SECTION 2: HAZARDOUS INGREDIENTS²

	<u>OSHA PEL</u> <u>(TWA- mg/m³)</u>	<u>ACGIH TLV</u> <u>(TWA- mg/m³)</u>	<u>PERCENTAGE</u> <u>%</u>
Mercury (7439-97-6)	0.1(C) skin	0.025 skin	< 0.1
Lead as solder (7439-92-1)	0.05	0.05	< 0.01
Metal Halide as Na, NaI or ScI ₃ (7553-56-2)	1.0-Ceiling	1.0-Ceiling	< 0.01
Thorium (elemental) (USNRC limits: Less than 0.0055 mCi/ lamp)			< 0.01
Krypton-85 gas (USNRC limits: Less than 30 mCi/ lamp)			< 0.01
Yttrium Vanadate (13566-12-6)	1.0	1.0	< 0.01
Inert ingredients			> 99.98

SECTION 3: PHYSICAL DATA

This item is a metal halide or high pressure sodium high intensity discharge (HID) lamp; chemical characteristics are not applicable.

SECTION 4: FIRE AND EXPLOSION DATA

Under extreme heat, the outer glass envelope might melt or crack. The inner arc tube is composed of silicon dioxide (quartz) or alumina (ceramic) which is a refractory material. Implosion will occur if the outer glass envelope is cracked or broken.

HID lamps and their arc tubes operate at extremely high temperatures and may rupture as a result of misapplication, system failure or other factors. This type of failure may release extremely hot gases, and lamp parts into the surrounding environment. Detailed safety precautions to minimize this risk are included in Section 9.

Lamps are non-combustible; use extinguishing agents suitable for surrounding fire.

¹ MSDS's are **not** required by the U.S. Occupational Safety and Health Agency for manufactured articles such as lamps

² Lamps may contain all or just some of these materials

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SECTION 5: REACTIVITY DATA

Stability: Lamp is stable under normal handling conditions. Lamp envelope may break if dropped, causing implosion. This may result in the scattering of glass fragments.

Incompatibility: Glass envelope will react with hydrofluoric acid.

Polymerization: Will not occur.

SECTION 6: HEALTH HAZARD DATA

Other than a physical burn from a hot lamp, there are no known health hazards from exposure to intact lamps.

UV Hazard: These lamps comply with Federal Standard 21 CFR 1040.30, including the following warning notice: WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured and the lamp continues to operate. Do not use where people will remain for more than a few minutes when the outer envelope is broken or punctured, unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available.

Krypton-85 and Thorium: Some lamps contain an US NRC exempted quantity of radioactive Krypton-85 (less than 0.1 mCi), and an US NRC "unimportant quantity" of elemental radioactive thorium (less than 0.002 mCi). From the extremely small quantities of Krypton-85 and thorium in each lamp, the maximum dose rate at the surface of a lamp is less than 0.5 mrem / hr.

The maximum exposure to someone holding one of these lamps continuously for one year is less than 5 mrem. This is less than 0.1% of the U.S. Nuclear Regulatory Commission's (USNRC's) maximum permissible occupational exposure (5000 mrem / yr), and less than 5% of the USNRC's maximum permissible non-occupational exposure (100 millirem / yr), and less than 2% of the average background radiation of 300 mrem / yr in the U.S. Therefore, there is no significant risk of radiation exposure to anyone from handling either a whole or broken lamp.

Mercury and Metal Halide Salts: The lamp's outer envelope is composed of borosilicate glass. The arc tube inside the glass outer envelope is composed of quartz (MH lamps) or alumina (HPS lamps). Breakage of the glass envelope and the arc tube may result in exposure to small quantities of mercury (5-250 mg) and metal halide salts. No adverse effects are expected from occasional exposure to broken arc tubes. However, as a matter of good practice, breakage should be avoided.

Lead: The lead is in a solid metal state and does not represent any significant hazard to a person handling either an intact or broken lamp.

Yttrium Vanadate: Breakage of coated outer jacket glass may cause the release of Yttrium Vanadate phosphor powder, which can cause irritation of the nose, throat, and respiratory tract. Breakage should be avoided.

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Emergency and First Aid Procedure:

Inhalation: If respiratory discomfort or irritation develops, move to fresh air.

Skin Contact: Thoroughly wash affected area with mild soap and water. Seek medical attention if irritation persists. Use normal first aid for glass cuts and hot glass burns.

SECTION 7: PRECAUTIONS FOR SAFE HANDLING AND USE

Normal precautions should be taken for collection of broken glass and/or quartz or alumina, in the event of lamp breakage.

Waste Disposal Method:

The U.S. Environmental Protection Agency (USEPA) has enacted the Universal Waste rule to facilitate the consolidation of consumer products containing hazardous materials that have been widely disseminated throughout society. Many states have adopted mercury-containing lamps under their State plan. This rule allows shipment under a bill of lading to a recycling facility. In lieu of this path the U.S. EPA requires a determination to be made if mercury-containing lamps are hazardous waste by the Toxicity Characteristic Leachate Procedure (TCLP). TCLP tests of used or spent fluorescent, incandescent, and HID lamps may cause these lamps to be classified as hazardous waste. Mercury can be reclaimed from spent lamps; and, in fact, most Venture lamps use reclaimed mercury.

A TCLP test for lead from the lead solder on the lamp bases could cause the lamp to be classified as a hazardous waste. The lead used in the solder for such lamps should pose little risk of exposure from handling.

Each lamp contains less than 0.01% by weight of mercury and lead, less than 0.1 mCi of radioactive Krypton-85, and less than 0.02 mCi of radioactive thorium. From these very small quantities, no significant adverse effects are expected from occasional exposure to lamps being broken. However, as a matter of good practice, breakage should be avoided. Prolonged or frequent exposure to broken envelopes should be avoided.

In any case, spent lamps should be disposed in accordance with applicable Federal, State, and Local requirements.

SECTION 8: CONTROL MEASURES

Respiratory Protection:

An appropriate respirator should be used if large volumes of lamps are being broken for disposal.

Ventilation:

Avoid inhalation of any airborne dust. Provide local exhaust when breaking large quantities of lamps for disposal.

Hand and Eye Protection:

Appropriate hand and eye protection (e.g. gloves and safety glasses) should be worn when disposing of lamps or handling broken glass.

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SECTION 9: OTHER SAFETY PRECAUTIONS

In order to minimize the risk of lamp rupture, the following precautions should be taken:

- o Group re-lamping at or before the rated end of life.
- o Turning off the lamp for 15 minutes at least once each week, in any application where lamps are burned continuously 24 hours per day, seven days per week. This will cause lamps approaching end of life to fail simply by failing to re-ignite.
- o Using lamps in proper configurations and in proper luminaires, as indicated by lamp designation:
 - **Type-E** Lamps must be used only in suitably enclosed luminaires.
 - **Type-O** Lamps can be operated in either open or enclosed luminaires in compliance with specified burning position limits; otherwise, an enclosed luminaire is required. These lamps are equipped with shrouded arc tubes and meet the containment requirements of ANSI C78.387, Annex A. Venture Type-O lamps are easily identified by the "MP" or "MPI" in the order code.

STATEMENT OF LIABILITY-DISCLAIMER

The information and recommendations contained in this document are reliable and accurate as of the date prepared to the best of **Venture Lighting International, Inc.**'s knowledge. No warranty, guarantee, or representation, expressed or implied, is made by **Venture Lighting International, Inc.** as to the accuracy, suitability, completeness, absolute correctness or sufficiency of any representation contained in this and other publications; **Venture Lighting International, Inc.** assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances. Data may be subject to change.