



LAMP MATERIAL INFORMATION SHEET

MATERIAL SAFETY DATA SHEETS (MSDS)

Information and Applicability

The Material Safety Data Sheet (MSDS) requirements of the Occupational Safety and Health Administration (OSHA) for chemicals do not apply to manufactured articles such as lamps. During normal use and operation no materials contained in a lamp are released.

The following contains applicable Material Safety Data Sheet Information

I. PRODUCT IDENTIFICATION

DAMAR® Metal Halide Lamps

DAMAR Worldwide 4 LLC
PO BOX 2347
Sarasota, FL 34230-2347

II. LAMP MATERIALS AND HAZARDOUS INGREDIENTS

- A. GLASS: These lamps consist of an inner quartz arc tube enclosed in an outer envelope of heat-resistant glass. Coated "M" series bulbs are made with phosphor material.
- B. PHOSPHOR: The phosphor used on the outer envelope of the coated lamps consists of yttrium vanadate phosphate. Like most vanadium compounds, this material is relatively insoluble and appears to have lower toxicity than vanadium pentoxide. However it may elicit some similar symptoms at high exposure levels. Irritation of the nasal passages and respiratory tract, cough, difficulty in breathing, and bronchitis may result from excessive inhalation exposure to vanadium pentoxide. However, the yttrium vanadium phosphate from the breakage of one or a small number of lamps should not result in a significant exposure.
- C. ARC TUBE: A small amount of mercury is found in the quartz arc tube. The mercury levels range from 5 milligrams in low wattage lamp up to 165mg in a 1500watt lamp. The arc tube also contains a small amount of inert argon gas used as a fill gas as well as a small amount of other materials used as an emission mix of the electrodes. There would still be no significant exposure from a broken lamp.

Also found in the arc tube are small amounts of scandium iodide, sodium and in some cases thorium iodide. None of these materials are known to be hazardous in the small quantities present in the arc tube. Aluminum oxide is the coating found at the end(s) of the arc tube which is generally considered to have a low order of toxicity.

- D. METALS: Within the lamp the support wires used in constructing the lamp are made from nickel-coated iron or stainless steel while the electrodes are tungsten. It is common for the metal halide type lamps to use a brass base and have lead-soldered connections to the base.

III. HEALTH CONCERNS

- A. **MERCURY EXPOSURE:** There should be no significant result in the air concentration of mercury resulting from the breakage of one or a small number of lamps. However, if breaking a large number of lamps for disposal the situation must be appropriately monitored with controls and equipment to control the airborne mercury and dust levels or surface contamination. It is recommended that such work be done in a well-ventilated area as well as a local exhaust ventilation and or person protective equipment.
- B. **ULTRAVIOLET (UV) RADIATION:** When operating the quartz arc tube generates a considerable amount of ultraviolet radiation. The outer glass envelope filters the UV to an acceptable level during normal use. However, if the outer envelope is broken, the UV filtering is lost. Metal-X-Vapor® bulbs have the following warning notice required under Federal Regulation 21 CFR 1040.30:

WARNING: THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INFLAMMATION FROM SHORTWAVE ULTRAVIOLET RADIATION IF THE OUTER ENVELOPE OF THE LAMP IS BROKEN OR PUNCTURED. DO NOT USE WHERE PEOPLE WILL REMAIN FOR MORE THAN A FEW MINUTES WITHOUT ADEQUATE SHIELDING. LAMPS THAT CAN PROTECT AGAINST ULTRAVIOLET RADIATION EXPOSURE EVEN WHEN THE OUTER ENVELOPE OF THE LAMP IS BROKEN OR PUNCTURED ARE COMMERCIALY AVAILABLE.

The self-extinguishing metal halide lamps mentioned above have order codes beginning with the letters "MT". Although the arc tube will have self-extinguished when the outer glass envelope of an "MT" lamp is broken, the support structure will still be electronically connected and could present an electrical shock hazard. Therefore, regardless of the type, if the outer glass envelope is broken, turn the power off before replacing the lamp.

IV. DISPOSABLE CONCERNS

- A. **TCLP:** A Toxicity Characteristic Leaching Procedure (TCLP) test conducted on a lamp for mercury or lead could cause the lamp to be classified as hazardous waste. Metal Halide lamps use mercury in the arc tube and lead solder on the base. Under normal use and handling the lead solder or mercury vapor should pose little risk. A small number of these lamps placed in an ordinary trash should not affect the nature or method of disposal of the trash in most states. However under some circumstances disposal of large quantities may be regulated. We recommend reviewing the waste handling practices to assure that you dispose of the waste lamps properly. Please check with state environmental departments regarding individual state disposal requirements.