



Product Safety Data Sheets (PSDS) – Ceramic Metal Halide Lamp

GE brand Ceramic Metal Halide lamps, manufactured by GE Lighting, are exempt from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are “articles.” The following information is provided by GE Lighting as a courtesy to our customers and trade partners.

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

I. Product Identification

GE Ceramic Metal Halide Lamps – CMH®

Applicable Lamp Types: ConstantColor® CMH®

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II. Health and Safety Information

II.1. Ultraviolet (UV) Radiation

North America

The CMH arc tube, when operating, generates a considerable amount of ultraviolet radiation. The UV is filtered to acceptable levels by the “UV Control” quartz capsule or by the glass outer envelope during normal use. However, if the quartz capsule or outer envelope is broken, the UV filtering is lost. CMH Lamps designed for distribution in the North American market that could pose a risk of UV hazard will have the following R-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 outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes 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.*”**

This lamp certified to comply with FDA radiation performance standards, 21 CFR Subchapter J. USA: 21 CFR 1040.30 Canada: SOR/80-381”

The self-extinguishing feature referred to above does not currently exist for CMH lamp types. Further, if the outer envelope of the lamp is broken, its support structure will still be electrically connected and could present an electrical shock hazard. Therefore, regardless of the type, if the outer envelope of the lamp is broken, turn the power off before replacing the lamps.

For additional information on protection from UV radiation, visit the FDA website for more information:
<http://www.fda.gov/Radiation-EmittingProducts/RadiationSafety/AlertsandNotices/ucm116540.htm>



Europe, Middle East, Africa, Asia, Latin America

In addition to, or in lieu of the UV marking requirements for North America, CMH lamps may be marked with symbols corresponding to the specific effective radiant UV power as specified in IEC 62035. Furthermore, risk group labeling may also be affixed to the lamp or packaging to provide lamp system guidance as specified in IEC/TR 62471. These markings and labels harmonize with adherence to exposure limits and protective measures within Directive 2006/25/EC regarding risks arising from artificial non-coherent optical radiation.

II.2. Lamp Materials Exposure

-- There are no known health concerns that result from exposure to intact lamps or to occasional exposure to broken lamps. The possibility of glass cuts is the primary hazard of broken lamps if the ceramic arc tube remains intact. The constituents identified below are contained within the durable inner arc tube of the lamp.

Mercury Exposure

The concentration of mercury in the atmosphere resulting from the breakage of one or a small number of lamps should result in no significant exposure to the individual. If breaking a large number of lamps for disposal or storing failed lamps with broken arc tubes, see Disposal Concerns in Section IV, and the Special Handling Information in Section VI.

Thallium Exposure

Thallium is a cumulative poison and can be absorbed through the skin. Toxic fumes could be emitted if heated to decomposition. Avoid breaking the ceramic arc tube. If the arc tube is broken, handle in a well-ventilated area, with local exhaust ventilation. Personal protective equipment including wearing of gloves is recommended.

Low Level Radiation Emitter Exposure - Krypton-85

Low levels of radioactive Krypton-85 gas may be present in the argon gas contained within the lamp arc tube. The argon and Kr-85 gases are chemically inert. Radioactive materials do not escape from an intact arc tube, and the air concentration of Kr-85 resulting from the breakage of one or a small number of lamps will result in no significant exposure to the individual. For a CMH arc tube with Kr-85 activity level ranging 2.5-9300 Bq, the expected gamma emitter dose rate would be 7.55E-8 to 2.81E-4 μ Sv/h at a distance of 10.0 cm assuming no shielding from lamp or package. In the unlikely event of arc tube breakage, traces of Krypton-85 gas immediately disperses in the air. Krypton gas and its radioactive isotope are inert (they do not react chemically with other substances) and are not absorbed by the body. Breakage of the outer envelope will not result in release of Krypton-85.

"The radiological consequences for members of the public, including lighting industry and other involved professionals, were demonstrated to be insignificant during the entire life cycle of the lamps, including waste disposal", according to IAEA-TECDOC-1679.¹

¹ *Exemption from Regulatory Control of Goods Containing Small Amounts of Radioactive Material*, (IAEA-TECDOC-1679, 2012) available at <http://www-pub.iaea.org/books/iaeabooks/8834/Exemption-from-Regulatory-Control-of-Goods-Containing-Small-Amounts-of-Radioactive-Material>



Quartz and Ceramic

Quartz in the form of fused or amorphous silica has not been identified as a carcinogen. The ceramic arc tube is made of polycrystalline alumina (PCA) and is a material generally considered to have a low order of toxicity.

Lead Solder

Lead may be present in the solder on some lamp bases. Lead is not a health hazard with intact lamps. The concentration of lead resulting from the breakage of one or a small number of lamps should result in no significant exposure to the individual.

III. 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 warning notices.

An arc tube rupture can burst and shatter the outer quartz or glass bulb resulting in the discharge of glass fragments and extremely hot quartz or ceramic particles (as high as 1100°C / 2012°F). There is a risk of personal injury, property damage, burns, and fire. Use in enclosed luminaire which complies with UL1598 or IEC 60598. GE also offers self-shielded lamps suitable for operation in open luminaires.

Caution and warning notices for each GE product may be viewed online at <http://www.gelighting.com/>

Further guidance on the application and use of Ceramic Metal Halide lamps is available from NEMA document LSD 25, Best Practices for Metal Halide Lighting System, Plus Questions and Answers about Lamp Ruptures in Metal Halide Lighting Systems. LSD 25 may be viewed online at <http://www.nema.org/>

In the case of fire where these lamps may be present, it is recommended to wear self-contained breathing apparatus in case of toxic fumes.

IV. Disposal Information

GE Lighting recommends that all mercury-containing lamps be recycled.

All Metal Halide lamps contain mercury in the arc tube. Ceramic Metal Halide lamps with Edison Screw base caps may use lead solder. A Toxicity Characteristic Leaching Procedure (TCLP) test conducted on the lamp for lead or mercury could cause the lamp to be classified as a hazardous waste in the United States. Many businesses in the United States manage these lamps as Universal Wastes.

Some states require all mercury containing lamps to be recycled, contact your state environmental department for any regulations that may apply. To check state regulations or to locate a recycler in the US, go to <http://www.lamprecycle.org/> or call 1-800-435-4448.

In European Union Member States these lamps shall be disposed and collected separately from universal waste. Lamps will be marked with the WEEE (Waste Electrical and Electronic Equipment) label in compliance with Article 14(4) of Directive 2012/19/EU and European standard EN 50419. Please refer to the provisions of local regulations to ensure compliance.

If breaking a large number of lamps for disposal or storing failed lamps with broken arc tubes, appropriate monitoring, controls, and equipment should be implemented to control airborne mercury and dust levels, low level radiation emitter levels or surface contamination. Such work should be done in a well-ventilated area, with local exhaust ventilation. Personal protective equipment including wearing of gloves is recommended.



V. Lamp Transportation

CMH lighting products contain materials that may be HMT regulated under specific circumstances.

MERCURY

Mercury may be regulated as a hazardous material in transportation. On January 1st, 2013, the unique UN identification number for mercury contained in manufactured articles such as lamps was changed from UN2809 Class 8, to UN3506 Class 8 with a 6.1 toxic subsidiary risk. The regulatory limits for UN3506 are transportation mode specific, with the limits for air shipment being the most restrictive. Air limits are based on the amount of mercury per lamp as well as the amount of mercury per package.

MERCURY PLUS LOW-LEVEL RADIATION EMITTING MATERIALS

The inner arc tubes of High Intensity Discharge lamps may also contain small quantities of the low-level radiation emitting materials Krypton-85 in addition to mercury. These lamps may be HMT regulated depending on the makeup of the individually shipped consignment. Certain consignments may be classified as UN2911 Excepted package, with certain packages in those consignments regulated as UN3506. The UN2911 limits apply to all transport modes. Consult appropriate shipping guidance for package regulatory limits.

VI. Special Handling Information – For Broken Lamps Exposure Control / Personal Protection

- If arc tubes are broken, ventilate area where breakage occurred.
- Use adequate general and local exhaust ventilation to minimize exposure levels. Open windows and doors and use fans to displace vapors.
- Use appropriate NIOSH approved respirator.
- Use OSHA approved safety glasses or goggles, puncture resistant gloves and protective or old clothing.
- Avoid generating dust during clean-up.
- Avoid mercury dust generation. To avoid dispersing spilled mercury, do not spray water on it. Use specially equipped mercury vacuum systems or eyedroppers.
- Do not use standard vacuum cleaners during clean-up. Optionally, sweep up all particles, or using disposable gloves wipe up with a damp cloth or paper towel and place all waste in puncture resistant closed container or double-bag. Dispose of materials according to local regulations.
- Practice personal hygienic protocol. Wash thoroughly before eating, drinking, smoking, handling tobacco products, applying cosmetics, or using toilet facilities. Dispose of contaminated clothing.
- Seek competent medical assistance for any concerns or if exposures are experienced.

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