

Metal Halide Lighting Systems

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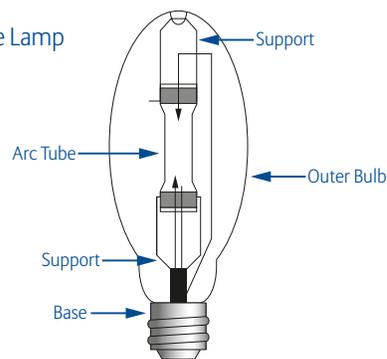
Introduction

Metal halide lighting systems represent one of the great innovations in lighting applications and remain the preferred technology for many commercial and industrial facilities throughout the United States. Today's systems provide a variety of light levels with high energy efficiency, long life and excellent color. The National Electrical Manufacturers Association (NEMA) estimates that there are close to 40 million metal halide systems installed in the United States alone, with the vast majority in commercial and industrial applications. These lamps consist of a clear quartz arc tube enclosed in gas-filled outer bulb. As useful and efficient as they are, however, metal halide lighting systems come with inherent risk exposures.

What is the Fire Risk?

Since metal halide lamps operate at elevated internal pressures compared with most other general purpose light sources, manufacturers historically have provided explicit instructions on their proper use. Operating pressure is 70-90 pounds per square inch (psi) and the temperature is 1650-2010 F. An arc tube rupture can eject hot particles and penetrate the the outer bulb if a shroud is not effective or present, which can release extremely hot glass and lamp parts into the surrounding space.

Metal Halide Lamp



Virtually all metal halide lamps reach end of life in a benign manner. Because of the high internal operating pressure of the arc tube, however, there is a potential for an arc tube rupture. With only a glass outer envelope surrounding the arc tube, the outer envelope may be breached by particles from an arc tube rupture. If this occurs, hot particles may be ejected from the lamp. The industry refers to an arc tube rupture as a "non-passive failure."

A number of small to large property losses have been, or have been suspected to be, caused by metal halide bulb failures, particularly within warehouse environments. The risk of loss greatly increases if the property is not, or inadequately, sprinkler protected.



Protection and Maintenance

To minimize hazards associated with metal halide lamps, be sure to:

- Replace metal halide lamps at or before the time recommended by the manufacturer.
- Turn off lamps at least once a week for a minimum of 15 minutes; if a lamp is near failure, it is better to fail during start-up rather than operating during high temperatures and pressures.
- For fixtures without a protective enclosure, follow the lamp manufacturer's installation specifications for clearance to combustible materials and lamp selection. Contact the fixture manufacturer for specific verification of the correct lamp selection.
- Replace damaged or scratched lamps and lenses.
- Protect lamps from contact with moisture, dust, oil, etc.
- Install new lights that comply with UL 1598 regulations, the standard which applies to luminaires for use in non-hazardous locations.

To help prevent failures due to lift trucks, require lift truck operator training that includes information on avoiding contact with light fixtures. Take precautions to restrict storage in areas where light fixtures are susceptible to damage by lift trucks.



An Allianz Risk Consulting representative can provide a field survey of your premises to evaluate the fire risk associated with metal halide lighting systems.

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