



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 are not applicable to manufactured articles such as lamps. 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.

I. Product Identification

GE Fluorescent Lamps

GE Lighting
1975 Noble Road
Nela Park
E. Cleveland, OH 44112
(216) 266-2222

II. Lamp Materials and Hazardous Ingredients

Glass & Metal

The glass tube used in a standard fluorescent lamp is manufactured from soda-lime glass and is essentially similar but not identical to that used throughout the glass industry for bottles and other common consumer items. The end-caps on the lamp are generally aluminum while the wires in the lamps (called filaments or cathodes) are made of tungsten. None of these materials would present a potential hazard in the event of breakage of the lamp, aside from the obvious ones due to broken glass. Some fluorescent lamps (CovRguard™ products) use an external coating of polycarbonate to provide a shatter-resistant coating.

Phosphor

The fluorescent product line uses two different phosphor systems. One phosphor system (halophosphate) uses calcium chloro-fluoro-phosphate, with small amounts (less than 1-2% by weight the phosphor) of antimony and manganese, both of which are tightly bound in the phosphor matrix. The second phosphor system (SP/SPX) uses a mixture of rare earth elements such as lanthanum, and yttrium as either an oxide or as a phosphate, along with a barium/aluminum oxide. These phosphors produce better lamp efficiency and color rendition. The phosphor components may vary slightly depending on the color of the lamp (cool white, warm white, etc.). Also, in some lamps designed for reduced power



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consumption, a thin coating of tin oxide is placed on the inside of the glass prior to coating the glass with the phosphor.

Normally a 1.5 inch diameter (T12) fluorescent lamp has approximately 1 - 1.25 grams of the phosphor per foot of lamp. A standard four-foot lamp has about 4 - 5 grams of the phosphor coating its' inside length. The one-inch diameter (T8) lamp would have proportionally less phosphor due to its smaller size.

Mercury

Mercury is present in small amounts in all fluorescent lamps. The overall fleet average for all GE fluorescent lamps has been reduced by more than 85% since 1990 due to significant investments in new manufacturing technology. The amount of mercury present in any given lamp will vary depending on both the size of the lamp and the design life of the lamp. Smaller, shorter life lamps generally have lower mercury content.

III. Health Concerns

Phosphor

Except for small changes, it is essentially the same phosphor that has been in use in GE lamps for over fifty years. The Industrial Hygiene Foundation of the Mellon Institute found no significant adverse effects, either by ingestion, inhalation, skin contact, or eye implant, in a five-year animal study of the original phosphor. Also, there have been no significant adverse effects on humans by any of these routes during the many years of its manufacture or use. The phosphor is somewhat similar to the inert mineral apatites (calcium phosphate-fluorides) that occur in nature.

Antimony, manganese, yttrium and tin compounds are characterized by OSHA as hazardous chemicals, as are most inorganic compounds. However, due to their insolubility, relatively low toxicity and small amount present in the phosphor and the lamp, these materials do not present a significant hazard in the event of breakage of the lamp.

Barium and cadmium had been used as additives to the phosphor in lamps made prior to mid-1988 but are no longer used in the phosphor in current production. These materials are also considered hazardous chemicals. In addition, although the evidence is limited and conflicting, cadmium and certain cadmium compounds have been listed by the International Agency for Research on Cancer as possible human carcinogens.

Mercury

Neither the mercury nor the phosphor concentration in air produced as a result of breaking one or a small number of fluorescent lamps should result in significant exposures to the individual. However, when breaking a large number of lamps for disposal, appropriate industrial hygiene monitoring and controls should be implemented to minimize airborne levels or surface contamination. We recommend that the work be done in a well-ventilated area, and local exhaust ventilation or personal protective equipment may be needed.



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IV. Disposal Concerns

TCLP

A Toxicity Characteristic Leaching Procedure (TCLP) conducted on traditional fluorescent lamp designs for mercury may cause the lamps to be classified as a hazardous waste due to the mercury content. While small numbers of these lamps placed in ordinary trash may not appreciably affect the nature or method of disposal of the trash, under most circumstances disposal of large quantities may be regulated. You should review your waste handling practices to assure that you dispose of waste lamps properly. 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, go to www.lamprecycle.org. Reduced mercury fluorescent lamps that consistently pass the TCLP test are available and marketed by GE under the **ECOLUX**[®] trade name and are available in most lamp types. For more information on **ECOLUX** fluorescent lamps visit www.gelighting.com.