

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 Compact Fluorescent Lamps. No material contained in a lamp is released during normal use and operation.

The following information is provided as a courtesy or service to our customers. The following Lamp Material Information Sheet contains applicable Material Safety Data Sheet information.

## 1. PRODUCT AND COMPANY IDENTIFICATION

LBL Lighting

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## 2. LAMP MATERIALS AND HAZARDOUS INGREDIENTS

### Glass & Metal

The glass tube used in a standard compact 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 lamp bases are generally nickel-plated copper or nickel-plated Aluminum. The coils in the lamps (called filaments or cathodes) are made of tungsten. An emission material covers the tungsten coil. The emission materials consist of triple oxide (BaO, CaO, SrO) + ZrO<sub>2</sub> in a quantity of 4-12 mg/lamp depending on type. None of these materials would present a hazard in the event of breakage of the lamp, aside from the obvious ones due to broken glass. Some fluorescent lamps use an external coating of polycarbonate to provide a shatter-resistant coating.

### Phosphor

The 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. The phosphor components may vary slightly depending on the color of the lamp (SPX30, SPX35, etc.). Compact fluorescent lamps typically have a maximum of 1.5 grams of phosphor. Total phosphor weight will vary by lamp size and type.

### Mercury

Mercury is present in small amounts in all fluorescent lamps. The amount of mercury present is typically 5 mg or less) in any given compact fluorescent lamp will vary depending on the lamp type. The amount is lower than that from several years ago, and LBL Lighting is currently working to further lower the amounts of mercury used in its fluorescent lamp products.

### Electronic Ballast for Self-Ballasted Compact Fluorescent Lamp

The electronic ballast is built into the lamp housing. The ballast consists of parts that are essentially similar, but not identical, to those used throughout the electronics industry for other common consumer articles.

### Plastic Material

The plastic housing is typically made of PBT (Polybutylene-terephthalate) or PET (Polyethylene-terephthalate) fire retarded plastic with a bromine-containing polymer and antimony oxide. The plastic housing is glass fiber filled. This product consists primarily of high molecular weight polymers that are not hazardous.

## 3. HEALTH CONCERNS

### Phosphor

Except for small changes, it is essentially the same phosphor that has been in use in our lamps for over twenty 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 reported in humans by any of these routes during the many years of its manufacture and use. The phosphor is somewhat similar to the inert mineral apatite (calcium phosphate-fluorides) that occur in nature. Antimony, manganese, yttrium and tin compounds are characterized by OSHA as hazardous chemicals, as are most metals. 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.

**Mercury**

Neither the mercury nor the phosphor concentration in air produced as a result of breaking one or a small number of compact fluorescent lamps should result in significant exposures to the individual. Where a large quantity of lamps is intentionally broken, for example, in a drum-top crusher, work should be done in a well-ventilated area, and local exhaust ventilation or personal protective equipment may be needed. Also, appropriate industrial hygiene monitoring and controls should be implemented to minimize airborne levels or surface contamination. LBL Lighting recommends lamp recycling when large quantity lamp disposal is required. See: [www.lamprecycle.org](http://www.lamprecycle.org) for a list of lamp recyclers.

**UV**

The Ultraviolet energy emitted by compact fluorescent lamps complies with the Photobiological safety requirements in IESNA RP-27.1 & IESNA RP27.3. (CFL lamps also comply with CIE S009: 2002.)

**4. DISPOSAL CONCERNS****TCLP**

A Toxicity Characteristic Leaching Procedure (TCLP) test conducted on traditional compact fluorescent lamp designs for mercury could possibly cause the lamps to be classified as a hazardous waste due to the mercury content or lead content (in the case of screw-based compact fluorescent lamps). While small numbers of these lamps placed in ordinary trash may not appreciably affect the nature or method of disposal of the trash, under many circumstances disposal of large quantities may be regulated. Lamp recycling is recommended for large quantity disposal. Review your waste handling practices to assure that lamps are disposed properly and 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](http://www.lamprecycle.org).

**Electronic Ballast**

Traditional Electronic Ballast screw-based compact fluorescent lamps would most likely fail the TCLP test for Lead. Dispose in accordance with local regulations; recycling is recommended for large quantity disposal. Lead-free Ballasts meet the EC directive 2002/95/EC for RoHS (Restriction of Hazardous Substances).

**Plastic Material**

The plastic material used in a compact fluorescent lamp can be recycled during the lamp recycling process.