COMPACT FLUORESCENT LAMP MATERIAL SAFETY DATA INFORMATION SHEET

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 in a lamp is released during normal use and operation.

The following information is provided as a service to our customers, and the following information contains usual Material Safety Data Sheet information. Bayco fluorescent bulbs may come from a variety of reliable and quality sources, among them General Electric and Philips and the Bayco Products Manufacturing facilities.

I. PRODUCT IDENTIFICATION
Bayco Products Fluorescent Lamps
Bayco Products Inc.
10425 Plano Road, Suite 400, Dallas TX, 75238
214-342-0288

II. LAMP MATERIALS AND HAZARDOUS INGREDIENTS

Glass and Metal
The glass tube used in a compact fluorescent lamp is made from soda-lime glass and is very similar but not identical to that used throughout the glass industry for bottles and other common consumer items. The end-cap on the lamps is aluminum while the wires inside the lamps are made of tungsten. None of these materials would present a potential hazard in the event of lamp breakage, aside from the obvious problems of broken glass.

Phosphor
There are two types of different phosphor systems. One (halophosphate) uses calcium chloro-fluoro-phosphate, with small amounts (less than 1-2% by weight of the phosphor) of antimony and manganese, both of which are tightly bound in the phosphor matrix. The second phosphor system 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 or warm or bright white, etc.). Normally a ½” diameter bi-pin fluorescent lamp has about 0.044 grams (1/20th gram) of the phosphor coating its inside length.

Mercury
While mercury is present in small amounts in all fluorescent lamps, the overall fleet average for all Bayco fluorescent lamps is at about 2 milligrams, or 0.002 grams, which is much lower than the industry average for fluorescent lamps. And Bayco is currently working to further lower the amounts of mercury used in its lamps.

III. HEALTH CONCERNS

Phosphors
No significant adverse effects, either by ingestion, inhalation, skin contact or eye implant, were found in a five-year animal study of phosphor by the Industrial Hygiene Foundation of the Mellon Institute.
Also, no significant adverse effects on humans by any of these routes have been found during the many, many years that fluorescents have been made and used.

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 lamp breakage.

*Please note that barium and cadmium have not been used in fluorescent lamps since mid-1988.

**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. However, if breaking a large number of lamps for disposal, appropriate industrial hygiene monitoring and controls should be implemented to minimize airborne levels or surface contamination. Dispose of large amounts of fluorescent bulbs in a well-ventilated area, and local exhaust ventilation or personal protective equipment may be needed.

**IV. DISPOSAL CONCERNS**

**TCLP**
A Toxicity Characteristic Leaching Procedure (TCLP) conducted on traditional fluorescent lamp designs for mercury would most likely 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 and contact your state environmental department for any regulations that may apply.

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