Keystone Technologies, LLC.

LAMP MATERIAL INFORMATION SHEET

MATERIAL DATA SAFETY DATA SHEET (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

Type:T5 lamp series

Company Add: Po Box 246, Ambler, PA, 19002

II. LAMP MATERIALS AND HAZARDOUS INGREDIENTS

Glass & Metal

The glass tube used in T5 straight tube lamps are manufactured from none- lead glass . The cathodes in the lamps are made of tungsten, The tungsten coil is covered by emission material. The emission material consists of triple carbonate,ZrO_2, 5% Nitrocellulose Butyl acetate, Butyl acetate in the tube in quantity of 1-10 mg/lamp depending on types. The pins at the end of each cap are made of copper alloy, which contain 3.8% lead by weight. 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.

Phosphor

The fluorescent product line uses two different phosphor systems. One phosphor system uses calcium chloro-fluoro-phosphate, with small amounts (less than 1-2% by weight the phosphor) of antimony and manganese. The second phosphor system uses a mixture of rare earth elements such as yttrium, Europium, Cerium, Terbium as either an oxide or as a phosphate, aluminate. These phosphors produce better lamp efficiency and color rendition. The phosphor components may vary slightly depending on the color of the lamp(cool white, day light, etc.). Normally a 0.625 inch diameter (T5) fluorescent lamp has approximately 1.2-2.8 grams of the phosphor in it. It depends on the type.

Mercury

Mercury is present in small amounts in all fluorescent lamps. The overall fleet average for all **'Keystone Technologies, LLC.'** fluorescent lamps is less than 5 milligrams.

The amount of mercury present in any given lamp will vary depending on both the size of the lamp and on the equipment that was used in its manufacture, This average is lower than that from several years ago, and **'Keystone Technologies, LLC.'** is currently working to further lower the amounts of mercury used in its fluorescent lamp products.

III. HEALTH CONCERNS

Phosphor

Except for small changes, it is essentially the same phosphor that has been in use in our lamps for over 45 years. No significant adverse effects, either by ingestion, inhalation, skin contact, or eye implant, were found in a five-year animal study of the original phosphor by the Industrial Hygiene Foundation of the Mellon Institute. 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) which occur in nature.

Yttrium,Europium,Cerium,Terbium,manganese barium and magnesium 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.

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.

UV

The UV content emitted by the CFLs complies with the reqirement (Photobiological safety, ANSI/IESNA RP-27.3-96, min 8h UV PET).

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 effect 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.