Safety Data Sheet

Section 1: Identification

1) Product and Company Information

Product name: Fluorescent lamp (tube)
Company name: ZHEJIANG SUPER LIGHTING ELECTRIC APPLIANCE CO., LTD
Address: Jinyun Industrial Area, Zhejiang, China.
Department in charge: Technology Development Division
Tel : +86-578-3183333
Fax : +86-578-3183555

2) Description and Applicability

The Safety Data Sheet (SDS) 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 Safety Data Sheet information.

Section 2: Hazard(s) Identification

1) Phosphor

Except for small changes, it is essentially the same phosphor that has been in use in our 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 apatite (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 also been used as additives to the phosphor in lamps made prior to mid-1988 but cadmium is 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.

2) 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.

Section 3: Composition/Information on Ingredients

Glass& Metal, Phosphor, Hg

1) 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 use an external coating of polycarbonate to provide a shatter-resistant coating.

2) 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 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 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.

3) Mercury

Mercury is present in small amounts in all fluorescent lamps. The overall fleet average for all Super fluorescent lamps has been reduced 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.

Section 4: First-Aid Measures

Normal first aid procedure for glass cuts if such occur through lamp breakage.

Section 5: Fire-Fighting Measures

Fire and explosion data are not applicable. Under extreme heat glass envelope might melt or crack.

Section 6: Accidental Release Measures

Respiratory Protection: None. NIOSH-approved respirator might be used if large volumes of lamps are being broken for disposal. Ventilation: Avoid inhalation of any airborne dust. Provide local exhaust when disposing large quantities of lamps. Hand and Eye Protection: Appropriate hand and eye protection should be worn when disposing of lamps or handling broken glass.

Section 7: Handling and Storage

No special action should be taken, except handle with care and avoid pressing. Since the glass tube is fragile.
Store in a cool, dry, ventilated area.
Normal precautions should be taken for collection of broken glass.
Waste Disposal Method: At the end of rated life, when this lamp is removed from service, it will be subjected to the current Toxicity Characteristic Leaching Procedure (TCLP) prescribed by the Environmental Protection Agency. This test is used to determining whether an item is a hazardous waste or a non-hazardous waste undercurrent E. P. A. definition. These lamps would fail the TCLP test and would be considered hazardous under the Universal Waste Rules. Administration should evaluate all of the disposal options, which may be available in the particular state in which the administration's facility is located. The administration should check with federal, state and local officials for their guidance.

Section 8: Exposure Controls/Personal Protection

Not applicable for the intact lamp. Breakage of the lamp may result in some exposure to the phosphor powder dust/and to elemental mercury vapor. No adverse effects are expected from occasional exposure to broken lamps, but as a matter of good practice, prolonged or frequent exposure should be avoided through the use of adequate ventilation during disposal of large quantities of lamps.

Section 9: Physical and Chemical Properties

Not applicable.

Section 10: Stability and Reactivity

Stability: Lamp is stable
Incompatibility: Glass will react with Hydrofluoric Acid
Polymerization: Not applicable

Section 11: Toxicological Information

Not applicable.

Section 12: Disposal Considerations

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. Super Lighting arranged TCLP tests for our lamps, and test result of the content of mercury is below the limit of 0.200 milligrams per liter of leachate, so our lamps are TCLP compliant. 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. 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 under the Super trade name. For more information on Super fluorescent lamps visit www.super-lamps.com.

Section 13: Regulatory Information

As a product these mercury containing lamps being shipped in the manufacturer's original packaging are not regulated by air, truck or ocean shipment. As a waste, these spent fluorescent lamps would be regulated in various states and local communities. This safety data sheet does not constitute "knowledge of the waste", in certain jurisdictions.

Section 16: Other Information

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