



Compact Fluorescent Lamp Material Information Sheet

Material 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 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

Tospo Compact Fluorescent Lamp

Hengdian Group Tospo Lighting Co.,Ltd.

Hengdian Electronics Industrial Zone, Dongyang, Zhejiang 322118, P.R.China

Tel: +86-571-87950110

Fax: +86-571-87990555

www.tospolighting.com

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 consists of triple oxide (BaO, CaO, SrO) + ZrO₂ 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 (typically 5 mg or less)

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in any given compact fluorescent lamp will vary depending on the lamp type. The amount is lower than that from several years ago, and Tospo 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. Tospo recommends lamp recycling when large quantity lamp disposal is required. See: 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.

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.



Golden Power Corporation (HK) Ltd.

Material Safety Data Sheet

IDENTITY (As Read on Label and Line) LR1130G Alkaline button Cell	Notice: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
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Section I

Manufacturer's Name Golden Power Corporation (HK) Ltd.	Telephone Number (852) 3125 2288
Address (Number, Sheet, City, State, and ZIP Code) Flat C, 20/F., Block 1, Tai Ping Industrial Centre, 57 Ting Kok Road, Tai Po, N.T., Hong Kong	Fax Number (852) 3125 2000 / 3125 2001
	Date Prepared March 01, 2011
	Signature of Preparer (optional)

Section II – Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Names)	(contents, %/wt)	CAS No.
Manganese Dioxide (MnO ₂)	22.0 %	1313-13-9
Zinc (Zn)	10.0 %	7440-66-6
Potassium Hydroxide (KOH)	3.0 %	1310-58-3
Graphite (C)	2.0 %	7782-42-5
Cadmium (Cd)	≤ 0.0005 %	7440-43-9
Mercury (Hg)	≤ 0.0001 %	7439-97-6
Lead (Pb)	≤ 0.002 %	7439-92-1

Section III – Physical/Chemical Characteristics

Boiling Point KOH aqua solution = 140 °C	Specific Gravity (H ₂ O=1) MnO ₂ = 4.4, Zn = 7.1, KOH = 2.0
Vapor Pressure (mmHg) KOH aqua solution = 3mmHg at 20 °C	Melting Point MnO ₂ decompose at 535 °C Zn = 420 °C, KOH aqua = -35 °C
Vapor Density (Air = 1)	Evaporation Rate (Butyl Acetate = 1)

Solubility in Water KOH – complete

Appearance and Color

MnO₂ is a black powder, Graphite is also a black powder, Zinc is a silver metal.
KOH aqua is a colorless liquid with stimulative order.

Section IV – Fire and Explosion Hazard Data

Flash Point (Method Used) Incombustible	Flammable Limits Not Available	LEL	UEL
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Extinguishing Media: See Special Fire Fighting Procedure

Special Fire Fighting Procedure: In case of fire in an adjacent area, use water, CO₂ or dry chemical extinguishers if cells are packed in their original containers since the fuel of the fire is basically paper products. For bulk quantities of unpackaged cells use LITH-X (Graphite Base). In this case, do not use water.

As with any fire, wear self-contained breathing apparatus to avoid inhalation of hazardous decomposition products.

Unusual Fire and Explosion Hazards



Section V – Reactivity Data

Stability	Unstable		Conditions to Avoid Do not short circuit, charge or dispose of in fire.
	Stable	√	

Incompatibility (Materials to Avoid) Hazardous polymerization will not occur.

Hazardous Decomposition or Byproducts Not Available

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	√	

Section VI – Health Hazard Data

Route(s) of Entry.	Inhalation?	Yes	Skin?	Yes	Ingestion?	Yes
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Health Hazards (Acute and Chronic) These chemicals are contained in a sealed can. Risk of exposure occurs, only if battery is mechanically or electrically abused. The most likely risk is acute exposure when a cell vents KOH is caustic alkali and attack the skin and eyes. Contact of electrolyte with skin and eyes should be avoided.

Section VII – Ecological Information

Cardnogenicity	NTP?	Not Available	IARC Monographs?	Not Available	OSHA Regulated?	Not Available
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Signs and Symptoms of Exposure KOH can cause chemical burn upon contact with skin.

Medical Conditions
Generally Aggravated by Exposure An acute exposure will not generally aggravate any medical help.

Section VIII –Emergency and First Aid Procedures

In case of skin contact with content of battery, flush immediately with water.
For eye contact, flush with copious amount of water for 10 minutes. If imitation persists, get medical help.

Section IX - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Wipe out by wet duster.

Section X - Waste Disposal Method

General abandonment

Section XI - Precautions to Be Taken in Handling and Storing

Avoid mechanical or electrical abuse.

Section XII - Other Precautions

Do not short circuit, charge or dispose of in fire. Battery may explode or leak.

Section XIII - Control Measures

Respiratory Protection (Specify Type) Not Available

Ventilation	Local Exhaust	Special
	Not Available	Not Available
	Mechanical (General)	Other
	Not Available	Not Available

Protective Gloves Butyl Eye Protection Safety Glasses

Other Protective Clothing or Equipment Not Available

Work / Hygienic Practices Not Available

Section XIV – Regulatory Information

Not Available



Section XV – Other Information

Not Available

Section XVI – Transportation Information

Golden Power batteries are considered to be “dry cell” batteries and are not regulated for purposes of transportation with reference to requirements of

1. U.S. Department of Transportation (DOT), Special Provision 130, i.e. “Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals)”.
2. International Civil Aviation Administration (ICAO) and International Air Transport Association (IATA), Special Provision A123, i.e. “An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as to prevent a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transportation.”
3. International Maritime Dangerous Goods Regulations (IMDG), Special Provision 304, i.e. “Batteries, dry, containing corrosive electrolyte which will not flow out of the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits.

Examples of such batteries include alkali-manganese, silver oxide, zinc carbon, nickel metal hydride and nickel-cadmium batteries.
