

**SECTION 1. CHEMICAL PRODUCT AND COMPANY NAME**

**Fluorescent Flashlight  
BML184  
Replacement Bulb Part No. SM00000050**

**Safety Data Sheet**

Complies with the OSHA Hazard  
Communication Standard :  
29 CFR 1910 1200

Makita U.S.A., Inc. 14930-C Northam Street La Mirada, CA 90638	Prepared By :	Stan Rodrigues
	Date Revised:	12/13/2016

**EMERGENCY CONTACT INFORMATION**

**Telephone Number for Information:** MAKITA: 1-510-657-9881

**Emergency Response**

For Chemical Emergency  
Spills, Leak, Fire, Exposure, or Accident  
Call CHEMTREC Day or Night  
Within USA and Canada 1-800-424-9300

**SECTION 2. HAZARD IDENTIFICATION**

**Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads**

**Material or Component:** None

**Lamp Phosphor**

**Emergency Overview:** No hazardous product as specified

**Potential Health Effects:** No information available

**Inhalation:** No information available

**Eye Contact:** No Information available

**Skin Contact:** No Information available

**Ingestion:** No Information available

**Potential Environmental Effects:** No information available

**Emitter Slurry**

**Emergency Overview:** This product is classified as Highly flammable.

**Potential Health Effects:**

**Inhalation:** Causes irritation of the respiratory tract, experienced as nasal discomfort and discharge with chest pain and coughing. Headache nausea and vomiting may occur.

**Eye Contact:** No Excess redness and swelling of the conjunctiva may occur. Causes irritation, experienced as stinging and discomfort or pain.

**Skin Contact:** May causes slight irritation with discomfort and local redness. Prolonged contact causes mild to moderate local redness and swelling.

**Ingestion:** May cause headache, nausea, vomiting, dizziness, and weakness. Possible kidney damage may result from ingestion of large quantities of material.

## CONTINUED: SECTION 2. HAZARD IDENTIFICATION

**Potential Environmental Effects:** No information available.

### DR48 -1001-PGSH

The additives in this product are bound in a thermoplastic resin matrix. In accordance with GHS for the classification of the product, the hazard potential may be assessed with respect to the physico-chemical form and/or bioavailability of the individual components in the thermoplastic resin.

Where GHS classifications are shown below, these are based on the individual components in the thermoplastic resin matrix. Under the typical use conditions for the resin, these hazardous components are unlikely to contribute to workplace exposure. Please read the entire safety data sheet and/or consult an EHS professional for a complete understanding.

#### Globally Harmonized System, UN(GHS) • Classification

##### GHS Category

**Not Hazardous:** Not classified

Route of exposure, mechanistic information and metabolism studies are pertinent to determining the relevance of an effect in humans (GHS section 1.3.2.4.9.4). Where appropriate, GHS classification can be specified as route-dependent. The size distribution of the pellets containing the Antimony Trioxide eliminates the carcinogenicity hazard potential from Antimony Trioxide. This is the case because carcinogenicity of Antimony Trioxide has only been observed in animal studies under conditions that can lead to pulmonary overload.

**GHS – Labeling:** GHS Labeling not required

**Hazard Statements:** Suspected of causing cancer via inhalation

**Precautionary Statements:** No GHS specific Precautionary Statements required -observe all other warnings and handling instructions in this MSDS.

#### Other hazards which do not result in classification:

##### SABIC Emergency

##### Overview:

- Pellets with slight or no odor
- Spilled material may create slipping hazard
- Can burn in a fire creating dense, toxic smoke
- Molten plastic can cause severe thermal burns
- Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills, and fever. See below for additional effects.
- Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory hazard.

**Other Information:** OSHA, IARC and/or NTP have listed carbon, titanium dioxide, crystalline silica (quartz), respirable glass and certain heavy metals, present in some colorants and fillers, as carcinogens. If these materials are present in this product at significant quantities, they are shown in Section 2/3. These materials are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

**Processing Issues:** Processing vapors may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease like processing vapor condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

**Aggravated Medical Conditions:** MEDICAL RESTRICTIONS: There are no known health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

**SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS**

Product Name	Chemical Name	Chemical Formula	Product Description:	Wt%	CAS Registry #	EINECS No.
<b>Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads</b>	Lead Free Soda Lime Glass	SiO <sub>2</sub> - Na <sub>2</sub> O or SiO <sub>2</sub> - Na <sub>2</sub> O - ZrO <sub>2</sub> or ZrO <sub>2</sub>	-	-	-	-

Product Name	Chemical Name	Chemical Formula	Product Description:	Wt%	CAS Registry #	EINECS No.
<b>Lamp Phosphor</b>	Strontium calcium barium chloro phosphate, europium-doped	(Sr,Ca,Ba) <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> Cl:Eu	Odorless white powder. This product is solid solution.	<45	109037-74-3	-
	Lanthanum phosphate, cerium terbium-doped	LaPO <sub>4</sub> :Ce,Tb	-	<60	95823-34-0	-
	Yttrium oxide, europium-doped	Y <sub>2</sub> O <sub>3</sub> :Eu		<40	68585-82-0	271-591-2

Product Name	Chemical Name	Components	Product Description	Wt%	CAS Registry #	EINECS No.
<b>Emitter Slurry</b>	Barium carbonate	BaCO <sub>3</sub>	Fruity smell, white slurry	<32	513-77-9	208-167-3
	Strontium carbonate	SrCO <sub>3</sub>	-	<29	1633-05-2	216-643-7
	Calcium carbonate	CaCO <sub>3</sub>	-	<8	471-34-1	207-439-9
	Zirconium oxide	ZrO <sub>2</sub>	-	<4	1314-23-4	215-227-2
	n-Butyl acetate	CH <sub>3</sub> CO <sub>2</sub> C <sub>4</sub> H <sub>9</sub>	-	<34	123-86-4	204-658-1
	Nitrocellulose	[C <sub>6</sub> H <sub>7</sub> O <sub>2</sub> (OH) <sub>2</sub> (NO <sub>2</sub> ) <sub>2</sub> ] <sub>n</sub>	-	<2	9004-70-0	-

Note: Chemical Formula (Ba, Sr, Ca)CO<sub>3</sub> ZrO<sub>2</sub>, CH<sub>3</sub>CO<sub>2</sub>C<sub>4</sub>H<sub>9</sub> [C<sub>6</sub>H<sub>7</sub>O<sub>2</sub>(OH)<sub>2</sub>(NO<sub>2</sub>)<sub>2</sub>]<sub>n</sub>

Product Name	Chemical Name	Components	Product Description	Wt%	CAS Registry #	EINECS No.
<b>DR48 -1001- PGSH</b>	Fibrous Glass	-	Poly (butylene terephthalate) [CASRN 30965-26-5]	-10-30	65997-17-3	-
	Antimony trioxide	-	-	1-10	1309-64-4	051-005-00-X
	Tetrahydrofuran	-	-	0.1-1.0	109-99-9	-

**Product Type:** Mixture

If present, components listed above are physical or health hazards as defined in the Hazard Communication Standard. The quantities represent typical or average values for the materials shown. Additional compositional data are provided in Section 15, REGULATORY INFORMATION.

#### SECTION 4: FIRST AID MEASURE

##### **Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

**Emergency and First Aid Procedures:** As with any granular material

##### **Lamp Phosphor**

**Inhalation:** Induce vomiting, if significant quantity is swallowed.  
**Eye Contact:** Flush affected area with plenty of water.  
**Skin Contact:** Rinse out with water.  
**Ingestion:** Consult doctor if feeling unwell.  
**Protection to First Aiders:** Ensure adequate ventilation. Wear suitable protective clothing.

##### **Emitter Slurry**

**Inhalation:** Remove to fresh air. Obtain medical attention.  
**Eye Contact:** Flush affected area with plenty of water.  
**Skin Contact:** Rinse out with water.  
**Ingestion:** Consult doctor if feeling unwell.  
**Protection to First Aiders:** Ensure adequate ventilation. Wear suitable protective clothing.

##### **DR48 -1001-PGSH**

**If Inhalation:** Move to fresh air in case of accidental inhalation of fumes from overheating or combustion. If symptoms persist, call a physician.  
**On Skin Contact:** Immediately cool the skin by rinsing with cold water after contact with hot material. Wash off immediately with soap and plenty of water. Consult a physician.  
**On Contact with Eyes:** Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If eye irritation persists, consult a specialist.  
**On Ingestion:** No hazards which require special first aid measures.  
**Precautions:** Processing vapors inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

#### SECTION 5. FIRE-FIGHTING MEASURES

##### **Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

**Fire and Explosion Data:** Non-Flammable

##### **Lamp Phosphor**

**Flammable Properties:** This product is nonflammable.  
**Extinguishing Media:** Dry chemical, CO<sub>2</sub>, water spray or regular foam  
**Fire Fighting Instructions:** Wear full fire-fighting turn-out gear (full bunker gear) and respiratory protection (self-contained breathing apparatus).

## CONTINUED SECTION 5. FIRE FIGHTING MEASURES

### Emitter Slurry

#### Flammable Properties

**Flash Point:** Tag Closed Cup 16.0°C

**Flammable Limits:** 425°C

#### Auto Ignition

**Temperature:** 1.7~ 7.6 vol.%

**Extinguishing Media:** Dry chemical, CO<sub>2</sub>, water spray or regular foam.

**Fire Fighting Instructions:** Wear full fire-fighting turn-out gear (full bunker gear) and respiratory protection (self-contained breathing apparatus).

### DR48 -1001-PGSH

**Suitable Extinguishing Media:** Use dry chemical, CO<sub>2</sub>, water spray or "alcohol" foam. Water is the best extinguishing medium. Carbon dioxide and dry chemical are not generally recommended because their lack of cooling capacity may permit re-ignition on larger resin fires (blobs, drools, etc.).

**Unsuitable Extinguishing Media for Safety Reasons:** Do not use a solid water stream as it may scatter and spread fire.

**Hazards from Combustion Products:** Fire will produce dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbon fragments.

**Specific Hazards:** Take precautionary measures against static discharges. During processing, dust may form explosive mixture in air. Thermal decomposition can lead to release of irritating gases and vapors

**Special Protective Equipment for Firefighters:** Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products

**Exposure Hazards:** Do not release chemically contaminated water into drains, soil or surface water. Sufficient measures must be taken to retain the water used for extinguishing. Dispose of contaminated water and soil according to local regulations.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads

**Steps to be taken if material spilled or released:** As with any granular material. (See Section 13 for Waste Disposal)

### Lamp Phosphor

**Land Spill:** Eliminate all ignition sources, use explosion-proof equipment. The very fine particles can cause fire or explosion. Vacuum or sweep material and place in a disposal container. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

**Water Spill:** The material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.

### Emitter Slurry

**Land Spill:** Take up dry. Forward for disposal. Clean up affected area.

**Water Spill:** This product should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.

## CONTINUED: SECTION 6. ACCIDENTAL RELEASE MEASURES

### DR48 -1001-PGSH

<b>Personal Precautions:</b>	See section 8.
<b>Environmental Precautions:</b>	Do not flush into surface water or sanitary sewer system. Should not be released into the environment
<b>Clean up:</b>	Sweep up and shovel into suitable containers for disposal. Do not create a powder cloud by using a brush or compressed air.

## SECTION 7. HANDLING AND STORAGE

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads

<b>Handling:</b>	None
<b>Storage:</b>	None

### Lamp Phosphor

<b>Handling:</b>	Avoid contact with eyes, skin or clothing. Use with adequate ventilation. Wear safety glasses or goggles and rubber gloves. Wash thoroughly after handling.
<b>Storage:</b>	Store in a cool and dry place away from possible contact with acid.

### Emitter Slurry

<b>Handling:</b>	Avoid contact with eyes, skin or clothing. Use with adequate ventilation. Wear safety glasses or goggles and rubber gloves. Wash thoroughly after handling.
<b>Storage:</b>	Store in a cool and dry place. Keep away from heat and flame.

### DR48 -1001-PGSH

<b>Handling:</b>	Handle in accordance with good industrial hygiene and safety practice. Provide for appropriate exhaust ventilation and dust collection at machinery. Avoid dust formation. All metal parts of the mixing and processing equipment must be earthed.
<b>Storage:</b>	Store in closed container in a dry and cool area. Keep away from heat sources and sources of ignition. Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a dry and well-ventilated place.
<b>Incompatible Products:</b>	Strong acids, strong oxidizing agents.

## SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:

<b>Effects of Overexposure:</b>	None
<b>Personal Protective Equipment:</b>	None
<b>Ventilation:</b>	As with any granular material

### Lamp Phosphor

<b>Exposure Limit Values ACGIH (2010):</b>	TLV-TWA 1 mg/m <sup>3</sup> as Y
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**CONTINUED: SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

<b>Exposure Controls:</b>	Occupational Exposure Controls
<b>Engineering Controls:</b>	Use local exhaust ventilation to keep airborne concentrations below exposure limits.
<b>Eye/Face Protection:</b>	Safety glasses are required
<b>Skin Protection:</b>	Protective gloves are recommended
<b>Respiratory Protection:</b>	Air-purifying respirator
<b>Environmental Exposure Controls:</b>	No information available

<b>Emitter Slurry</b>	
<b>Exposure Limit Values</b>	
<b>ACGIH (2012):</b>	TLV-TWA 150 ppm, STEL 200ppm as CH <sub>3</sub> CO <sub>2</sub> C <sub>4</sub> H <sub>9</sub> (n-Buthyl acetate) TLV-TWA 5 mg/m <sup>3</sup> , STEL 10 mg/m <sup>3</sup> as Zr
<b>Engineering Controls:</b>	Use local exhaust ventilation to keep airborne concentrations below exposure limits.
<b>Personal Protective:</b>	
<b>Eye/Face Protection:</b>	Safety glasses are required
<b>Skin Protection:</b>	Protective gloves are recommended
<b>Respiratory Protection:</b>	Air purifying respirator
<b>Environmental Exposure Controls :</b>	No information available

<b>DR48 -1001-PGSH</b>						
<b>Exposure Limits:</b>		No components with information, unless noted below				
<b>Chemical Name</b>	<b>US OSHA PEL (8 Hr)</b>	<b>Japan OEL (TWA)</b>	<b>China OEL (TWA)</b>	<b>Korea OEL (TWA)</b>	<b>Singapore OEL (TWA)</b>	<b>Thailand OEL (TWA)</b>
Fibrous Glass 65997-17-3	No Information	1 FIBERS/ML	3 mg/m <sup>3</sup> fibers, total dust 3 mg/m <sup>3</sup> total dust.	TWA: 1 mg/m <sup>3</sup> as W	PEL_LT: 1 mg/m <sup>3</sup> as W; PEL_ST: 3 mg/m <sup>3</sup>	No Information
Antimony Trioxide 1309-64-4	0.5 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup> Sb	TWA: 0.5 mg/m <sup>3</sup> as Sb	PEL_LT: 0.5 mg/m <sup>3</sup> as Sb	No Information
Tetrahydrofuran 109-99-9	FRL_STEL: 735 mg/m <sup>3</sup> , 250 ppm; FRL_TWA: 590 mg/m <sup>3</sup> , 200 ppm; TL_PEL: 590 mg/m <sup>3</sup> 200 ppm	OEL_M: 590 mg/m <sup>3</sup> , 200 ppm AM: urine.; OEL_B: 2 mg/l End of shift; Parameter: Tetrahdrofuran	300 mg/m <sup>3</sup>	TWA: 20 ppm , 500 mg/m <sup>3</sup>	PEL_LT: 200 ppm, 590 Mg/m <sup>3</sup> ; PEL_ST: 250 ppm, 737 mg/m <sup>3</sup>	No Information

**CONTINUED: SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

Chemical Name	India TWA	Malaysia OEL (TWA)	Taiwan OEL (TWA)	Australian OEL (TWA)	Philippines OEL (TWA)	SABIC Recom..(8 Hr)•
Fibrous Glass 65997-17•3	No Information	PEL_TWA8: 1 mg/m <sup>3</sup> as W	No Information	No Information	No Information	No Information
Antimony trioxide 1309-64-4	No Information	PEL_TWA8: 0.5 mg/m <sup>3</sup> as Sb	PC: 0.5 mg/m <sup>3</sup> as Sb	No Information	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup> TWA as antimony compounds
Tetrahydrofuran 109-99-9	No Information	PEL_TWA8: 200 ppm, 590 mg/m <sup>3</sup>	PC: 200 ppm, 590 mg/m <sup>3</sup> ; Remark: the second organic solvent	No Information	590 mg/m <sup>3</sup> 200 ppm	50 ppm TWA

**SABIC limit**

*\*SABIC Innovative Plastics Recommended Exposure Limits have been established for certain chemicals.*

**Engineering Measures to Reduce Exposure**

Handle in accordance with good industrial hygiene and safety practice. Provide for appropriate exhaust ventilation at machinery. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, ductwork, and other surfaces using appropriate personal protection.

**Hand Protection:**

Protective gloves should be worn

**Eye Protection:**

Safety glasses with side, shields or chemical goggles. In addition, use full-face shield when cleaning processing vapor condensates from hood, ducts, and other surfaces.

**Respiratory Protection:**

When using this product at elevated temperatures, implement engineering systems, administrative controls or a respiratory protection program (including a respirator approved for protection from organic vapors, acid, gases, and particulate matter) if processing vapors are not adequately controlled or operators experience symptoms of overexposure. If dust or powder is produced from secondary operations such as sawing or grinding, use a respirator approved for protection from dust.

**Body Protection:**

Long sleeved clothing

**Hygiene Measures:**

When using, do not eat, drink or smoke.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

**Boiling Point:**

None

**Specific Gravity(H<sub>2</sub>O=1):**

2.5 (Glass) or 3.7 (Zirconia-Silica) or 5.5 (Zirconia)

**Vapor Pressure:**

None

**Solubility in Water:**

None

**% Volatiles by Volume:**

None

**Appearance and Order:**

Clear-opaque, colorless-yellow, odorless

**Lamp Phosphor**

**Appearance**

**Physical State:**

Powder

**Color:**

White

**CONTINUED: SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Odor:</b>	Odorless
<b>pH:</b>	No information available
<b>Melting Point:</b>	No information available
<b>Flash Point:</b>	Not applicable
<b>Flammability:</b>	Not applicable
<b>Solubility in Water:</b>	Insoluble
<b>Specific Gravity:</b>	4.5 ~ 5.0

**Emitter Slurry****Appearance**

<b>Physical State:</b>	Slurry
<b>Color:</b>	White
<b>Odor:</b>	Fruity
<b>pH:</b>	No information available
<b>Melting Point:</b>	No information available
<b>Flash Point:</b>	Tag Closed Cup 16.0°C
<b>Flammable Limits:</b>	425°C
<b>Auto Ignition Temperature:</b>	1.7 ~ 7.6 vol. %
<b>Solubility in Water:</b>	Insoluble
<b>Specific Gravity:</b>	1.85±0.03
<b>Vapor Pressure:</b>	2kPa
<b>Vapor Density (air= 1):</b>	4.0

**DR48 -1001-PGSH**

<b>Physical State:</b>	Solid
<b>Appearance:</b>	Pellets
<b>Color:</b>	Same as color code
<b>Odor:</b>	None or slight
<b>Odor Threshold:</b>	No information available
<b>pH:</b>	Not applicable
<b>Melting Point/Range:</b>	This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures
<b>Boiling Point/Range:</b>	Not applicable
<b>Flash Point:</b>	Not applicable
<b>Evaporation Rate:</b>	Negligible
<b>Flammability (solid, gas):</b>	Blend; neither component is flammable
<b>Explosive Limits</b>	

## CONTINUED: SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Upper:</b>	Not determined
<b>Lower:</b>	Not determined
<b>Vapor Pressure:</b>	Negligible
<b>Vapor Density:</b>	No information available
<b>Specific Gravity:</b>	>1;(water= 1)
<b>Water Solubility:</b>	Insoluble
<b>Autoignition Temperature:</b>	630°C (1166°F) estimated
<b>Explosive Properties:</b>	Dust may form explosive mixture in air
<b>Oxidizing Properties:</b>	Not oxidizing
<b>Molecular Weight:</b>	Polymer
<b>VOC Content (%):</b>	Negligible
<b>Surface Tension:</b>	No data available

## SECTION 10. STABILITY AND REACTIVITY

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:

<b>Condition Contributing to Instability:</b>	Stable (Hydrofluoric Acid attacks glass)
<b>Incompatibility:</b>	None
<b>Hazardous Decomposition Products:</b>	None

### Lamp Phosphor

<b>Conditions to Avoid:</b>	Contact with strong acid.
<b>Stability:</b>	Stable
<b>Materials to Avoid:</b>	No information available.
<b>Hazardous Reactions / Decomposition Products:</b>	No information available.

### Emitter Slurry

<b>Conditions to Avoid:</b>	Avoid heat, flames, sparks and other sources of ignition.
<b>Incompatibility With Other Materials:</b>	Acids, bases, oxidizing materials, combustible materials
<b>Hazardous Reactions:</b>	Thermal decomposition products or combustion: oxides of carbon
<b>Decomposition Products:</b>	
<b>Acid: (Strong)</b>	Fire or explosion hazard
<b>Alkalies (Strong)</b>	Fire or explosion hazard
<b>Alkalies Metal Hydroxides:</b>	Incompatible.
<b>Bases (Strong)</b>	May cause decomposition

## CONTINUED: SECTION 10. STABILITY AND REACTIVITY

<b>Nitrates:</b>	Fire or explosion hazard
<b>Nitric Acid:</b>	Incompatible.
<b>Oxidizers (Strong)</b>	Fire or explosion hazard
<b>Plastics and Resins:</b>	May dissolve
<b>Potassium Tert-Butoxide:</b>	Ignition
<b>Sodium Hydroxide:</b>	Incompatible

### DR48 -1001-PGSH

<b>Stability:</b>	Stable under ambient conditions. Hazardous polymerization does not occur.
<b>Polymerization:</b>	Hazardous polymerization does not occur
<b>Conditions to Avoid:</b>	Avoid temperatures above 320°C. To avoid thermal decomposition, avoid elevated temperatures. Heating can result in the formation of gaseous decomposition products, some of which may be hazardous. Do not exceed melt temperature recommendations in product literature. Purging's of hot material should be collected in small, flat, thin shapes and quenched with water to allow for rapid cooling. Do not allow product to remain in barrel at elevated temperatures for extended periods of time.
<b>Materials to Avoid:</b>	May react with strong oxidizing agents, strong acids or other highly reactive chemicals.
<b>Hazardous Decomposition Products:</b>	Process vapors under recommended processing conditions may include trace levels of hydrocarbons, phenols, alkylphenols, diarylcarbonates.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:

**Toxicological Information:** None

### Lamp Phosphor

<b>Acute Toxicity: (Oral, Dermal, Inhalation)</b>	No information available.
<b>Eye Irritation:</b>	No information available.
<b>Skin Irritation:</b>	Repeated exposure may cause skin dryness or cracking.
<b>Sensitization:</b>	No information available.
<b>Mutagenicity:</b>	No information available.

### Emitter Slurry

<b>Acute Toxicity: (Oral, Dermal, Inhalation)</b>	No information available.
<b>Eye Irritation:</b>	No information available.
<b>Skin Irritation:</b>	Repeated exposure may cause skin dryness or cracking.
<b>Sensitization:</b>	No information available.
<b>Mutagenicity:</b>	No information available.

### DR48 -1001-PGSH

**Acute Toxicity**

**CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION**

<b>Product Information:</b>	
<b>LD50/oral/rat:</b>	>5000 mg/kg
<b>LD50/dermal/rabbit:</b>	>2000 mg/kg
<b>Component Information</b>	
<b>Component Information Text:</b>	No data available
<b>Sensitization</b>	
<b>Respiratory Sensitization:</b>	Not classified
<b>Irritation:</b>	
<b>Eye Irritation:</b>	No data available
<b>Subchronic Toxicity (28 days)</b>	
<b>Repeated Oral Toxicity (28d):</b>	No information available
<b>Repeated Dermal Toxicity(28d):</b>	No information available
<b>Subchronic Toxicity:</b>	No information available
<b>Chronic Toxicity</b>	
<b>Carcinogenicity:</b>	There are no known carcinogenic chemicals in this product except specifically mentioned below

<b>Chemical Name</b>	<b>IARC:</b>
Fibrous Glass 65997-17-3	3
Antimony trioxide 1309-64-4	2B

<b>Mutagenic Effects:</b>	No data is available on the product itself
<b>Reproductive Toxicity:</b>	No information available
<b>Developmental Toxicity:</b>	No information available
<b>Neurological Effects:</b>	No information available
<b>Specific Target Organ Toxicity (STOT)</b>	
<b>Target Organ Effects:</b>	No information available
<b>Aspiration Hazard</b>	
<b>Aspiration Hazard Statement:</b>	No data available
<b>Other Relevant Toxicity Information</b>	
<b>IARC:</b>	Not listed
<b>OSHA:</b>	Not regulated
<b>NTP:</b>	Tetrahydrofuran: In 2-year carcinogenicity bioassays conducted by the National Toxicology Program (NTP), mice and rats (50/sex/group) were exposed to concentrations of 0, 200, 600, or 1,800 ppm via inhalation 6 hours/day, 5 days/week for 104 weeks. Under the conditions of these 2-year inhalation studies, there was some evidence of carcinogenic activity of tetrahydrofuran in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined) at 600 and 1,800 ppm. There was no evidence of carcinogenic activity of tetrahydrofuran in female F344/N rats exposed to 200, 600, or 1,800 ppm or male B6C3F1 mice exposed to 200, 600, or 1,800 ppm. There was clear evidence of carcinogenic activity of tetrahydrofuran in female B6C3F1 mice based on increased incidences of hepatocellular neoplasms observed at 1,800 ppm.

**CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION**

<b>Remarks:</b>	The toxicological data has been taken from products of similar composition.
<b>Special Studies:</b>	PROCESSING FUMES: Processing fumes evolved at recommended processing conditions may contain trace amounts of tetrahydrofuran (typically less than 1 ppm). Extreme processing conditions or temperatures may result in higher levels. See section 8 for appropriate exposure controls and personal protection. In 2-year carcinogenicity bioassays conducted by the National Toxicology Program (NTP), mice and rats (50/sex/group) were exposed to tetrahydrofuran at concentrations of 0, 200, 600, or 1,800 ppm via inhalation 6 hours/day, 5 days/week for 104 weeks. Under the conditions of these 2-year inhalation studies, there was some evidence of carcinogenic activity of tetrahydrofuran in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined) at 600 and 1,800 ppm. There was no evidence of carcinogenic activity of tetrahydrofuran in female F344/N rats exposed to 200, 600, or 1,800 ppm or male B6C3F1 mice exposed to 200, 600, or 1,800 ppm. There was clear evidence of carcinogenic activity of tetrahydrofuran in female B6C3F1 mice based on increased incidences of hepatocellular neoplasms observed at 1,800 ppm. Antimony trioxide: Tested in a chronic inhalation of 45 mg/m <sup>3</sup> by guinea pigs resulted in extensive pneumonitis and fatty degeneration of the liver. Other long-term inhalation studies in rats and rabbits found lipid pneumonitis. One epidemiology study of process workers exposed to antimony metal suggests an increase in lung cancer. Animal studies and epidemiological studies suggests developmental toxicity.

**SECTION 12. ECOLOGICAL INFORMATION**

<b>Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:</b>	
<b>Ecological Information:</b>	None

<b>Lamp Phosphor</b>	
<b>Ecotoxicity:</b>	No information available.
<b>Persistence and Degradability:</b>	No information available.
<b>Biocumulative Potential:</b>	No information available.

<b>Emitter Slurry</b>	
<b>Ecotoxicity: Fish Toxicity:</b>	62000 ug/L 96 hour(s) LC50 (Mortality) Zebra danio, zebra fish (Brachydanio rerio)
<b>Persistence and Degradability:</b>	No information available.
<b>Biocumulative Potential:</b>	No information available.

<b>DR48 -1001-PGSH</b>				
Ecotoxicity				
<b>Component Information:</b> 100% of the mixture consists of components(s) of unknown hazards to the aquatic environment				
Chemical Name	Toxicity to Fish	Toxicity to Algae	Daphnia Magna (Water Flea)	Toxicity to Microorganisms
Fibrous Glass 65997-17-3	No data available	No data available	No data available	No data available
Antimony Trioxide 1309-64-4	No data available	No data available	No data available	No data available
Tetrahydrofuran 109-99-9	No data available	No data available	No data available	No data available

## CONTINUED: SECTION 12. ECOLOGICAL INFORMATION

### Product Information:

#### Persistence and Degradability

**Biodegradation:** Not inherently biodegradable

**Partition coefficient (n-octanol/water):** Not established

#### Bioaccumulative Potential

**Bioaccumulation:** Not established

#### Mobility

**Mobility:** May be separated mechanically in waste water plants.

#### Other Adverse Effects

**Ecotoxicity Effects:** Do not flush into surface water or sanitary sewer system.

## SECTION 13. DISPOSAL CONSIDERATIONS:

### Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:

**Waste Disposal Method:** Material can be placed in any container and placed in any land fill area.

### Lamp Phosphor

Comply with all national and local regulations. Do not dump this material into sewers, on the ground or into any body of water.

**Product:** Chemical residues generally count as special waste. We recommend that you contact either the authorities in charge or approved waste disposal companies who will advise you on how to dispose of special waste.

**Packaging:** Disposal in compliance with official regulations. Handle contaminated packing in the same way as the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

### Emitter Slurry

**Disposal Considerations** Do not dump this material into sewers, on the ground or into any body of water.

**Product:** We recommend that you contact either the authorities in charge or approved waste disposal companies who will advise you on how to dispose of special waste.

**Packaging:** Disposal in compliance with official regulations. Handle contaminated packing in the same way as the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

### DR48 -1001-PGSH

**Waste From Residues / Unused Products:** Where possible recycling is preferred to disposal or incineration. Dispose of in accordance with local regulations.

**Contaminated Packaging:** Empty containers should be transported/delivered using a registered waste carrier for local recycling or waste disposal.

**Waste Disposal:** Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.

**SECTION 14. TRANSPORT INFORMATION**

**Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

**Transport Information:** None

**Lamp Phosphor**

This product is not classified as dangerous goods on the definition of the U.N. advice.

**Land Transport**

**ADR, RID**

**Class:** Not Applicable

**Packing Group (PG):** Not Applicable

**UN Number:** Not Applicable

**Proper Shipping Name:** Not Applicable

**Sea Transport**

**IMDG**

**Class:** Not Applicable

**Packing Group (PO):** Not Applicable

**UN Number:** Not Applicable

**Proper Shipping Name:** Not Applicable

**Marine Pollutant:** No

**Air Transport**

**ICAO/IATA**

**Class:** Not Applicable

**Packing Group (PO):** Not Applicable

**UN Number:** Not Applicable

**Proper Shipping Name:** Not Applicable

**Emitter Slurry**

**Land Transport**

**ADR, RID**

**Class:** 3

**Packing Group (PG):** 2

**UN Number:** 1993

**Proper Shipping Name:** Flammable liquid, n.o.s

**Sea Transport**

**IMDG**

**Class:** 3

**Packing Group (PG):** 2

**UN Number:** 1993

**Proper Shipping Name:** Flammable liquid, n.o.s

**Marine Pollutant:** No

**Air Transport**

**ICAO/IATA**

**Class:** 3

**Packing Group (PG):** 2

**UN Number:** 1993

**Proper Shipping Name:** Flammable liquid, n.o.s

**CONTINUED: SECTION 14. TRANSPORT INFORMATION****DR48 -1001-PGSH**

<b>IMO IMDG:</b>	Not regulated
<b>ICAO:</b>	Not regulated
<b>IATA-DGR:</b>	Not regulated
<b>DOT:</b>	Not regulated
<b>ADR/RID:</b>	Not regulated
<b>ADR:</b>	Not regulated
<b>ADN</b>	Not regulated

**SECTION 15. REGULATORY INFORMATION****Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

**Regulatory Information:** None

**Lamp Phosphor**

Please refer to national and local measures.

**Emitter Slurry**

n-Butyl acetate, Nitro cellulose (refer to Directive 67/548/EEC Annex I.) This product is classified as follows and labeled accordingly.

**Symbol:** F (Highly flammable)

**Risk Phrases:**

- II - Highly flammable
- 66- Repeated exposure may cause skin dryness or cracking.
- 67- Vapors may cause drowsiness and dizziness.

**Safety Advices:**

- 16- Keep away from sources of ignition - No smoking
- 25- Avoid contact with eyes
- 33- Take precautionary measures against static discharges
- 37/39- Wear suitable gloves and eye/face protection

**DR48 -1001-PGSH****International Inventories:**

TSCA (USA):	Listed
DSL (Canada):	Listed
EINECS/ELINCS (Europe):	Listed
ENCS (Japan):	Listed
IECSC (China):	Listed
KECL (Korea):	Listed
PICCS (Philippines):	Listed
AICS (Australia):	Listed
NZioC (New Zealand):	Listed

## CONTINUED: SECTION 15. REGULATORY INFORMATION

### Other Inventory Information:

A "Listed" entry above means all chemical components are on the respective inventory list and/or a qualifying exemption exists for one or more components. A "Not listed" entry above indicates one or more components is restricted from import or manufacture into that country/region. Articles are exempt from registration and are therefore not listed on the national chemical inventories.

### SARA (313) Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals that are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.:

Chemical Name	CAS Number	Weight %	CERCLA/SARA 313 de minimus:
Antimony trioxide	1309-64-4	1-10	1.0

### SARA (311, 312) hazard class:

Acute Health Hazard	N
Chronic Health Hazard	N
Fire Hazard	N
Sudden Release of Pressure Hazard	N
Reactive Hazard	N

### Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS hazard class: Non-controlled

### California Proposition 65:

Components in this product known to the State of California to cause cancer and/or reproductive effects, are listed below:

Chemical Name	Weight%	California Proposition 65:
Antimony trioxide 1309-64-4	1-10	Type of Toxicity: cancer
Fibrous Glass 65997-17-3	10-30	Listed: July 1, 1990 Carcinogenic. (airborne, unbound particles of repairable size)

### RoHS EU Directive 2002/95/EC:

This product complies with RoHS – it does not intentionally contain banned chemicals.

### Remarks:

This product consists primarily of high molecular weight polymers which are not expected to be hazardous. The ingredients in this product are present within the polymer matrix and are not expected to be hazardous.

**HMIS Rating:** Health: 0 Flammability: 1 Reactivity: 0

## SECTION 16. OTHER INFORMATION

### **Glass Beads or Zirconia- Glass Ceramic Blend or Zirconia-Silica Beads or Zirconia or Zirconia Beads:**

(Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our return contract of sale acknowledgement.)

### **Lamp Phosphor**

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of NICHIA CORPORATION.

It relates only to the specific material designated herein, and does not relate to use in combination with any other material or process. NICHIA CORPORATION assumes no legal responsibility for use or reliance upon this information.

## CONTINUED: SECTION 16. OTHER INFORMATION

### Emitter Slurry

This information is furnished without warranty, express or implied except that it is accurate to the best knowledge of NICHIA CORPORATION.

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### DR48 -1001-PGSH

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#### MSDS Scope:

China:	Conforms to Chinese Regulation on the Control over Safety of Hazardous Chemicals (Decree No 591) and GHS standards GB15258,GB13698,GB/T16483 etc.
Japan:	Conforms to Industrial Safety and Health Law, Japan (2006) and Industrial GHS Standards JIS Z7250, JIS Z7251
Korea:	Conforms to Industrial Safety & Health Act, Ministry of Labor, Korea
Singapore:	Conforms to Singapore workplace Safety and Health (WSH) Act, WSH Regulations, and GHS Standard 586
Taiwan:	Conforms to Taiwan Rules on Hazard Communication and Labeling of Hazardous Substances, (Council of Labor Affairs, Taiwan) and GHS standards Z1051

This document is also applicable in other countries and regions.

Prepared by: Product Stewardship & Toxicology.

**DISCLAIMER:** This Safety Data Sheet [SDS] information is provided based on the Hazard Communication Regulations for your region or country and for the use of the persons required to receive this information under those regulations. The information is neither designed nor recommended for any other use or for use by any other person, including for compliance with other laws. SABIC Innovative Plastics does not warrant the suitability for use of this SDS for any other material or product not specifically identified herein. SABIC Innovative Plastics does not warrant the accuracy or authenticity of this SDS unless it has been obtained directly from SABIC Innovative Plastics, or posted or viewed on a SABIC Innovative Plastics website. Modification of this SDS, unless specifically authorized by SABIC Innovative Plastics, is strictly prohibited. This SDS is based on information that is believed to be reliable, but may be subject to change as new information becomes available. Because it is not possible to anticipate all conditions of use, additional safety precautions may be required. Since the use of this material is not under SABIC Innovative Plastics' control, each user is responsible for making its own determination as to the safe and proper handling of this material in its own particular use of this material. **SABIC INNOVATIVE PLASTICS MAKES NO REPRESENTATION OR WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** Each user should read and understand this information and incorporate it into individual site safety programs as required by applicable hazard communication standards and regulations.