Safety Data Sheets – Table of Contents

PRODUCT SAFETY DATA SHEET
PSDS No. 1.1
FLUORESCENT LAMPS

SYLVANIA brand Fluorescent Lamps, manufactured by OSRAM / OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name: **SYLVANIA Fluorescent Lamps**

This data sheet covers Sylvania linear "White" (Cool White, Warm White, Daylight, etc; 700, 800, 900 series triphosphor) standard, " Sylvania ECO" brand, and Safeline®① linear products in all lengths, T12 & T8 Octron Curvalume (6" and 1 5/8" leg spacing), and T9 Circline fluorescent lamps for general lighting.

This data sheet does **not** cover compact fluorescent②, Pentron③ (T5), plant, aquarium/vivarium, photocopy, germicidal, blacklight, or any colored or other special application fluorescent lamps.

①Safeline lamps are encased in a Polyethylene Terephthalate (PET) heat shrinkable tubing manufactured by EncapSulite International Inc., Stafford, TX.

Manufacturer: OSRAM SYLVANIA 100 Endicott Street
Danvers, MA 01923 Phone: (978) 777-1900

II. HAZARDOUS INGREDIENTS:

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.

If the lamp is broken, the following materials may be released:

Chemical Name	CAS Number	% by Wt.	Exposure Limits in Air (mg/M3) ACGIH (TLV)	OSHA (PEL)
Glass (soda-lime)	-----	75-95	10(2)	15(2)
Mercury(1,4)	7439-97-6	0.002-0.02	0.025	0.1 Ceiling
Aluminum Oxide	001-344-281	0-2.0	10(2)	15(2)
Fluorescent Phosphor and cathodes may contain:	-----	0.5-3.0	10(2)	15(2)
Fluoride (as F)	-----	0-0.1	2.5	2.5
Manganese(3) (as dust)	7439-96-5	0-0.1	0.2	5.0 Ceiling
Tin(3) (as dust)	7440-31-5	0-0.1	2.0	2.0
Yttrium(3) (as dust)	7440-65-5	0-0.5	1.0	1.0
Barium(3) (as dust)	7440-39-3	<0.1	0.5	0.5
Tungsten(3) (as dust)	7440-33-7	<0.1	1	15(2)
Strontium(3) (as dust)	7440-24-6	0-0.1	10(2)	15(2)
Magnesium(3) (as dust)	7439-95-4	0-0.1	10(2)	15(2)
Calcium(3) (as dust)	-----	0-0.1	10(2)	15(2)
Antimony(3) (as dust)	7440-36-0	0-0.1	0.5	0.5
Zinc(3) (as dust)	7440-66-6	0-0.1	10(2)	15(2)
Europium(3) (as dust)	7440-53-1	0-0.1	10(2)	15(2)
Cerium(3) (as dust)	7440-45-1	0-0.1	10(2)	15(2)

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

(2) Limits as nuisance particulate.

(3) These elements are contained in the material as part of its chemical structure; the material is not a mixture.

(4) The mercury in this product ia a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES : Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Mercury - Contact, inhalation, or ingestion may cause one or more of the following symptoms: eye irritation, skin irritation, cough, chest pain, dyspnea, bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, fatigue, weakness, stomatitis, salivation, GI tract disturbance, anorexia, weight loss, and proteinuria.

Glass - Glass dust is considered to physiologically inert and as such has an OSHA exposure limit of 15 mg/M^3 for total dust and 5 mg/M^3 for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/M^3 for total dust and 3 mg/M^3 for respirable dust.

Tin - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, and respiratory system irritation.

Manganese - Contact, ingestion, or inhalation may cause one or more of the following symptoms: Parkinson's, asthenia, insomnia, mental confusion, metal fume fever, dry throat, cough, chest tightness, dyspnea, rales, flu-like fever, low-back pain, vomiting, malaise, fatigue, and kidney damage.

Fluoride - Fluoride-containing dust may cause irritation of the eyes and respiratory tract. Swallowing fluoride may cause a salty or soapy taste, vomiting, abdominal pain, diarrhea, shortness of breath, difficulty in speaking, thirst, weakness of the pulse, disturbed color vision, muscular weakness, convulsions, loss of consciousness, and death. Kidney injury and bleeding from the stomach may occur. Repeated exposure to fluoride may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis, and spinal column. Stiffness and limitation of motion may result. Repeated or prolonged exposure of the skin to fluoride-containing dust may cause a skin rash.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material. Sharp-edged particles can irritate the eyes, skin, and respiratory system.

Phosphor - Phosphor dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Yttrium - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, pulmonary irritation, and possible liver damage.

Barium (soluble compounds) - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, upper respiratory system irritation, skin burns, gastroenteritis, muscle spasm, slow pulse, extrasystole, and hypokalemia.

Tungsten - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, respiratory system irritation, diffuse pulmonary fibrosis, loss of appetite, nausea, cough, and blood changes.

Antimony - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, nose irritation, throat irritation, mouth irritation, cough, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, insomnia, anorexia, and unable to smell properly.

V. HEALTH HAZARDS (Continued)

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.
Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous Decomposition Products (including combustion products): None for intact lamps.
Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.
If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.
It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.
Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 1 (*Procedures for Linear Fluorescent Lamp Sample Preparation and the TCLP*) testing protocol, ECOLOGIC® lamps, marked "ECO," pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Protective Clothing: OSHA specified cut and puncture resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash hands and face thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

In case of questions, please call:
OSRAM SYLVANIA Inc.

PRODUCT SAFETY DATA SHEET
PSDS No. 1.1.5
COMPACT FLUORESCENT LAMPS

SYLVANIA brand Compact Fluorescent Lamps, manufactured by OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Family Name: Sylvania Compact Fluorescent Lamps (For general lighting applications)

Trade Names (as labeled): Sylvania DULUX EL® (Consists of lamp and ballast/adapter as a unit)

Sylvania DULUX® (Pin-based lamp, no ballast/adapter)

DULUX EL & *DULUX* are registered trademarks of OSRAM GmbH.

Manufacturer:
OSRAM SYLVANIA
100 Endicott Street
Danvers, Massachusetts
1-800-544-4828

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. The following materials, unless specified otherwise, are part of the glass bulb portion of the DULUX EL unit and the entire DULUX unit. The % weight, unless specified otherwise, is relative to the glass bulb portion of the DULUX EL and the entire DULUX. If the glass bulb is broken, the following materials may be released:

	Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
	Glass (Soda-Lime)	---	75-90	10.0 (2)	15.0 (2)
(1, 4)	Mercury	7439-97-6	<0.02	0.025	0.1 Ceiling
(1, 3)	Lead Oxide	1317-36-8	0.2-2.0	0.05	0.05
	Aluminum Oxide	001-344-281	0-2.0	10.0 (2)	15.0 (2)
(1, 4, 6)	Lead Solder (as Pb)	7439-92-1	0-0.4	0.05	0.05
(5)	Krypton-85	7439-90-9	0-<0.01	---	---
	Fluorescent Phosphor may contain:	---	0.5-3.0	10.0 (2)	15.0 (2)
(3)	Barium Compounds (as Ba dust)	7440-39-3	0-0.1	0.5	0.5
(3)	Manganese (as dust)	7439-96-5	0-0.1	0.2	5.0 Ceiling
(3)	Yttrium Oxide (as Y dust)	7440-65-5	0-0.5	1.0	1.0

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

(2) Limits as nuisance particulate.

(3) These elements are contained in the material as part of its chemical structure; the material is not a mixture.

(4) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

(5) This radioactive isotope is only found in the glass-encapsulated starting switch mounted in the base of 2-pin DULUX lamps, and is *not* found in 4-pin DULUX or DULUX EL lamps.

(6) This material is found only on the base of the DULUX EL ballast/adapter unit and the % weight is relative to the entire lamp & ballast/adapter unit.

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Irritation of the eyes and respiratory tract may occur. Excessive lead absorption is toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease.

Phosphor - Phosphor dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Barium Compounds - Alkaline barium compounds, such as the hydroxide and carbonate, may cause local irritation to the eyes, nose, throat, and skin.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Manganese - Inhalation of manganese dust may cause local irritation to the eyes, nose, and throat.

Yttrium - Studies of workers exposed to this material showed no evidence of chronic or systemic effects.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free silica content. Sharp-edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

Krypton-85 Contained in Glow Switch - The radiation emitted by Kr-85 is 99.6% beta which is completely absorbed by the glass envelope of the glow switch and 0.4% gamma which is not. This radiation is, however, 100 to 200 times less than that allowable for clocks and watches. In the unlikely event of the glow switch breaking, the traces of krypton-85 gas immediately disperses in the air. Krypton gas and its radioactive isotope are inert (they do not react chemically with other substances) and are not absorbed by the body.

V. HEALTH HAZARDS (Continued)

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoid dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standards LL 2 (*Procedures for Pin-Based Compact Fluorescent Lamp Sample Preparation and the TCLP*) and LL 6 (*Procedures for Integral Electronic Compact Fluorescent Lamp Sample Preparation and the TCLP*) testing protocol, ECOLOGIC® lamps, marked "ECO," pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: August 15, 2012 Rev F Supersedes: May18, 2011 Rev E

In case of questions, please call: OSRAM SYLVANIA Safety / Environmental Engineer at: (914) 427-5599

PRODUCT SAFETY DATA SHEET
PSDS No. 1.1.8
T5 FLUORESCENT LAMPS

Sylvania brand Pentron® Fluorescent Lamps, manufactured by OSRAM GmbH, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name: **Sylvania Pentron® Fluorescent Lamps** (for general lighting applications)

Manufacturer:
OSRAM GmbH
Berliner Allee 65
D-86136 Augsburg
Germany

For Technical Inquiries in the U.S.A.:
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923
(978) 777-1900

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. If the lamp is broken, the following materials may be released:

Chemical Name	CAS Number	% by Wt.	Exposure Limits in Air (mg/M^3) ACGIH (TLV)	OSHA (PEL)
Glass (barium alkalai silicate glass)	-----	93 - 95	10(2)	15(2)
Glass (alkalai alkaline earth silicate glass)	-----	2 - 7	10(2)	15(2)
Mercury(1,4)	7439-97-6	0.005 - 0.02	0.025	0.1 Ceiling
Aluminum Oxide	001-344-281	0.06 - 0.3	10(2)	15(2)
Fluorescent Phosphor and cathodes may contain:	-----	1.85 - 1.95	10(2)	15(2)
Yttrium(3) (as dust)	7440-65-5	0.9 - 1.6	1.0	1.0
Barium(3) (as dust)	7440-39-3	0.09 - 0.4	0.5	0.5
Tungsten (as dust)	7440-33-7	<0.1	5	-----
Strontium(3) (as dust)	7440-24-6	<0.1	10(2)	15(2)
Magnesium(3) (as dust)	7439-95-4	0.3 - 0.6	10(2)	15(2)
Calcium(3) (as dust)	-----	<0.1	10(2)	15(2)
Europium(3) (as dust)	7440-53-1	0.9 - 1.6	10(2)	15(2)
Cerium(3) (as dust)	7440-45-1	0.3 - 0.6	10(2)	15(2)
Terbium(3) (as dust)	7440-27-9	0.3 - 0.6	10(2)	15(2)
Aluminum(3) (as dust)	7429-90-5	0.3 - 0.6	10(2)	15(2)

(1) This chemical is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) Limits as nuisance particulate.
(3) These elements are contained in the material as part of its chemical structure; the material is not a mixture.
(4) The mercury in this product is a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Mercury - Contact, inhalation, or ingestion may cause one or more of the following symptoms: eye irritation, skin irritation, cough, chest pain, dyspnea, bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, fatigue, weakness, stomatitis, salivation, GI tract disturbance, anorexia, weight loss, and proteinuria.

Glass - Glass dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material. Sharp-edged particles can irritate the eyes, skin, and respiratory system.

Phosphor - Phosphor dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Yttrium - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, pulmonary irritation, and possible liver damage.

Barium (soluble compounds) - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, upper respiratory system irritation, skin burns, gastroenteritis, muscle spasm, slow pulse, extrasystole, and hypokalemia.

Tungsten - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, respiratory system irritation, diffuse pulmonary fibrosis, loss of appetite, nausea, cough, and blood changes.

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.
Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous Decomposition Products (including combustion products): None for intact lamps.
Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Protective Clothing: OSHA specified cut and puncture resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash hands and face thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: 08/15/12 Rev E Supersedes: 07/19/11 rev D

In case of questions, please call:
OSRAM SYLVANIA
Product Safety Engineer
(978) 777-1900

PRODUCT SAFETY DATA SHEET
PSDS No. 1.5.3
DE TUBULAR HID LAMPS

Sylvania brand, unjacketed, Tubular HID Lamps, manufactured by OSRAM SYLVANIA Inc., are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): Sylvania Double-Ended Tubular HID Lamps

Manufacturer: OSRAM de Mexico S.A. de C.V
A.J. Bermudes, C.P. 32470
Cd. Juarez, Chihuahua, Mexico

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. If the lamp is broken, the following materials may be released:

	Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
(1, 2)	Mercury	7439-97-6	0.05-<0.6	0.025	0.1 Ceiling
(1)	Antimony Trioxide	1309-64-4	0-<0.1	0.5	0.5
	Boron Oxide	1303-86-2	0-<0.4	---	15
	Glass (Aluminosilicate)	142844-00-6	0 - <25	1.0 fiber/cc	1.0 fiber/cc
	Quartz, Fused	60676-86-0	85-95	0.1 Resp. Dust	0.1
	Platinum	7440-06-4	<0.05	1	---

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

(2) The mercury in this product is one of the substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES

Not Applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMPS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:

- **High intensity discharge (HID) arc-tubes operate at high pressure and high temperature and may unexpectedly rupture.**
- **Shortwave ultraviolet radiation which may cause skin and eye irritation with prolonged exposure is emitted during operation.**
- **These HID lamps must be operated only in suitably designed, enclosed fixtures.**

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Antimony - Exposure to antimony may cause electrocardiogram alterations, dermatitis, pneumoconiosis, and mucous membrane irritation.

Platinum - Exposure to complex platinum salts has been shown to cause symptoms of intoxication such as wheezing, coughing, running of the nose, tightness in the chest, shortness of breath and cyanosis, whereas exposure to dust of pure metallic platinum causes no intoxication.

Quartz, Fused - Fibrosis of the lungs causing shortness of breath and coughing has been associated with silica exposure.

EMERGENCY AND FIRST AID PROCEDURES:

Glass Cuts: Normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.
Ingestion: Seek medical attention.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous Decomposition Products (including combustion products): None for intact lamps.
Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust and mercury vapor. Some states have specific disposal requirements for lamps containing mercury.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken. To avoid exposure to ultraviolet radiation, use only in enclosed equipment designed for this lamp type.
Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

IV. ENVIRONMENTAL

RoHS:
All SYLVANIA and OSRAM lamps listed above meet the EC directive Restriction of Hazardous Substances (RoHS II) Directive 2011/65/EU for mercury and lead.

REACH:
Safety Datasheets are required by article 33 of REACH (Registration, Evaluation, Authorization and Restriction of Chemicals). Safety Datasheets are similar to OSHA Material/Product Safety Data Sheets and are meant to instruct the end-user (customer) on safe handling of the product, if there are any SVHC's (Substances of Very High Concern). For lamps, if any SVHC exists, the amount will be small and encapsulated in the component. Exposure to the SVHC would require grinding the component up.

OSRAM SYLVANIA Inc. HID lamps listed above contain no SVHC as of 11/22/13. See http://echa.europa.eu/web/guest/candidate-list-table

Although OSRAM SYLVANIA Products Inc. attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

Issue Date: November 22, 2013 (E) Supersedes: July 9, 2011 (D)

In case of questions please call:

OSRAM SYLVANIA Inc.
Product Safety Manager
(978) 750 2581

XIV. TRANSPORT INFORMATION

Domestic (Land, D.O.T.):

CLASS: Radioactive Material (7)*
PRODUCT LABEL: OSRAM/OSRAM SYLVANIA Metal Halide Lamp
UN NUMBER: 2911
PACKING GROUP: n/a
PROPER SHIPPING NAME: Radioactive material, excepted package - Articles
SUPPLEMENTAL HAZARD: NA

International (Water, IMO)

CLASS: Radioactive Material (7)*
PRODUCT LABEL: OSRAM/OSRAM SYLVANIA Metal Halide Lamp
UN NUMBER: 2911
PACKING GROUP: n/a
PROPER SHIPPING NAME: Radioactive material, excepted package - Articles.

International (Air, IATA & ICAO)

CLASS: Corrosive (8)**
PRODUCT LABEL: OSRAM/OSRAM SYLVANIA Metal Halide Lamp
UN NUMBER: 3506
PACKING GROUP: III
PROPER SHIPPING NAME: Mercury Contained in manufactured articles, radioactive material, excepted package – Articles

* For consignments containing over 10,000 Bq
* * For Mercury over 1G per article or 30 G per package, and consignments containing over 10,000 Bq

Emergency Telephone number: INTERNATIONAL: + 49 1784337434 FROM USA: + 011 49 1784337434
CONSULTANK LUTZ HARDER GMBH/ Contract number OSRAM 002

SAFETY DATA SHEET
High Pressure Mercury Lamps

SYLVANIA brand High Pressure Mercury Lamps, manufactured by LEDVANCE, LLC, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by LEDVANCE, LLC as a courtesy to its customers.

I. IDENTIFICATION

Trade Name (as labeled):	**SYLVANIA Mercury lamps for general lighting purposes (Mercury Vapor Lamps, High Pressure Mercury Lamps)**
Manufacturer:	OSRAM China Lighting LTD. No. 1 North Industrial Road Foshan, Guangdong, 52800
Emergency Contact:	EH&S Specialist 978-570-3000

II. HAZARD IDENTIFCATION

Warning!

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.

Warning! RUPTURE RISKS: Mercury lamps are constructed of an outer glass bulb with an internal arc-tube made of quartz. Mercury arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot quartz particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

TO REDUCE THESE RISKS: Only operate lamp with compatible ballast and fixture. (See LEDVANCE catalog for specific information.)

- Fixture lens/diffuser material must be able to contain hot lamp fragments (as high as 1832°F, 1000°C).
- Never expose an operating lamp to moisture (such as rain, sleet, or snow).
- Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
- Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.

- Replace lamp at or before the end of rated life. (See catalog for rated life.)

WARNING: ELECTRICAL SHOCK AND BURN HAZARD Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

If burn or irritation persists: get medical attention

WARNING! ULTRAVIOLET RADIATION EXPOSURE: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381.

Do not handle until all safety precautions have been read and understood. Care must be taken to read and follow the directions and warnings accompanying the specific product to avoid personal injury and/or property damage.

Storage: Store in well-ventilated place.

Consult the SYLVANIA product catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

III. COMPOSITION – INFORMATION ON INGREDIENTS

There are no known health hazards from exposure to lamps that are intact.

Materials listed on this data sheet are contained in varying percentages in this product. Exact percentages are proprietary and will not be disclosed other than as required in accordance with the regulations. If a lamp is broken, some of the following materials may be released:

Chemical Name	CAS Number	% by wt.
Quartz, fused	60676-86-0	5-15
(1, 2) Lead Solder (as Pb)	7439-92-1	0-<1.0
(1, 2) Mercury	7439-97-6	<0.1
Aluminum Oxide	1344-28-1	0-<10
Glass (Borosilicate)	---	0-75
Yttrium Vanadate	13566-12-6	0-<0.5

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards **and/or** ***NIOSH Pocket Guide to Chemical Hazards*** **lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Glass - Glass dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/M3 for total dust and 5 mg/M3 for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/M3 for total dust and 3 mg/M3 for respirable dust.

Quartz, Fused - Fibrosis of the lungs causing shortness of breath and coughing has been associated with silica exposure.

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Irritation of the eyes and respiratory tract may occur. Excessive lead absorption is toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease.

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

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Yttrium Vanadate – Inhalation of vanadium compounds can cause irritation of the nose, throat and respiratory tract. Eye contact and prolonged, repeated skin contact may also cause irritation. Studies of workers exposed to this material showed no evidence of chronic or systemic effects.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free silica content. Sharp edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

All other components of this product do not pose a significant risk of respiratory and/or physical effects.

IV. EMERGENCY AND FIRST AID PROCEDURES:

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort or irritation to the nose and throat develop, remove from exposure and seek medical attention as needed. If breathing has stopped, perform artificial respiration; keep affected person warm and at rest; get medical attention as soon as possible.
Ingestion: In the unlikely event of ingesting a large quantity of material, seek medical attention immediately.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention as needed.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

V. FIRE-FIGHTING MEASURES:

Flammability: Non-combustible
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

VI. ACCIDENTAL RELEASE MEASURES:

ONLY APPLICABLE FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic practices: After handling broken lamps, wash hands and face thoroughly before eating, drinking, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

VII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

ONLY APPLICABLE FOR BROKEN LAMPS

BROKEN ARC-TUBE: Take care in handling and disposing of this lamp. **If arc-tube is broken, avoid skin contact with any of the contents and fragments.**

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken. To avoid exposure to ultraviolet radiation, use only in enclosed equipment designed for this lamp type.
Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.
Storage Instructions: Store in well-ventilated place.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Threshold Value Limits:

Chemical Name	CAS Number	Exposure Limits in Air (mg/cubic m)	
		ACGIH (TLV)	OSHA (PEL)
Quartz, fused	60676-86-0	0.1 Resp Dust	0.1
(1, 2) Lead Solder (as Pb)	7439-92-1	0.05	0.05
(1, 2) Mercury	7439-97-6	0.025	0.1 Ceiling
Aluminum Oxide	1344-28-1	10.0 (3)	15.0 (3)
Glass (Borosilicate)	---	10.0 (3)	15.0 (3)
Yttrium Vanadate	13566-12-6	1.0	1.0

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
(3) Limits as nuisance particulate.

Personal Protective Equiment: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Skin Protection: After handling broken lamps, wash hands and face thoroughly before eating, drinking, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.
Respitory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

VIV. PHYSICAL AND CHEMICAL PROPERTIES

NOT APPLICABLE FOR LAMPS

X. STABILITY AND REACTIVITY

NOT APPLICABLE FOR LAMPS

XI. TOXICOLOGICAL INFORMATION

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

XII. ECOLOGICAL INFORMATION

XIII. DISPOSAL CONSIDERATIONS

LEDVANCE, LLC recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, call 1-866-666-6850 or log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with mercury vacuum cleaner or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust and mercury vapor.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

Lamps that pass the US EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary.

XVI. TRANSPORTATION INFORMATION

XVII. REGULATORY INFORMATION

Although LEDVANCE, LLC attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

Issue Date: October 1, 2016

PRODUCT SAFETY DATA SHEET
PSDS No. 1.3
HIGH PRESSURE SODIUM LAMPS

Sylvania brand High Pressure Sodium Lamps, manufactured by OSRAM SYLVANIA Inc., are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): Sylvania Lumalux®,Lumalux® ECO®, Lumalux Plus®, Lumalux Plus® ECO®, Lumalux® Standby
(High Pressure Sodium Lamps for General Lighting)

Manufacturer:

OSRAM SYLVANIA Inc.
655 South Willow Street
Manchester, NH 03103-5705

OSRAM de Mexico S.A. de C.V.
950 Joule Street, Industrial Park
A.J. Bermudes, C.P. 32470
Cd. Juarez, Chihuahua, Mexico

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.
If the lamp is broken, the following materials may be released:

	Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
	Barium Compounds (as Ba)	7440-39-3	0.02-<0.1	0.5	0.5
	Sodium	7440-23-5	0.003-<0.01	---	---
(1, 2)	Mercury	7439-97-6	0.01-<0.05	0.025	0.1 Ceiling
	Glass (Tungsten-Sealing Borosilicate)	---	50-75	10 (3)	15 (3)
	Aluminum Oxide	1344-28-1	<15	10 (3)	15 (3)

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
(3) Limits as nuisance particulate.

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMPS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:
- **To avoid risk of lamp rupture, lamps must be operated with compatible ballast and fixture only.**

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Barium Compounds - Alkaline barium compounds, such as the hydroxide and carbonate, may cause local irritation to the eyes, nose, throat, and skin.

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Irritation of the eyes and respiratory tract may occur. Excessive lead absorption is toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease.

Sodium - Skin contact can cause thermal and/or alkali burns. Fumes from burning sodium are highly irritating to skin, eyes and mucous membranes.

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free-silica content. Sharp-edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.
Ingestion: Seek medical attention.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

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VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous Decomposition Products (including combustion products): None for intact lamps.
Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust and mercury vapor.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 3 (*Procedures for High Intensity Discharge Lamp Sample Preparation and the TCLP*) testing protocol, Lumalux® ECO®, Lumalux Plus® ECO® lamps pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: 04/29/2011(E) Supersedes: October 01, 2009 (D)

In case of questions, please call:
OSRAM SYLVANIA Inc.
Product Safety and Compliance Manager
(978) 750 2581

PRODUCT SAFETY DATA SHEET
PSDS No. 1.9
HIGH PRESSURE XENON LAMPS

OSRAM Xenon Short Arc Display/Optic Lamp XBO®, manufactured by OSRAM GmbH., are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): OSRAM Xenon Short Arc Display/Optic Lamp XBO®

This data sheet covers the following model(s):
XBO > 450 W

Manufacturer:

OSRAM GmbH
Hellabrunner Strasse 1
81536 Munich
Germany

For General Information:

OSRAM SYLVANIA
National Customer Sales and Service Center
Westfield IN
1-888-OSRAM CS
1-888-677-2627

For Technical Inquiries:

SYLVANIA Componentes Electrónicos
950 Joule Street, Industrial Park
A.J. Bermudes, C.P. 32470
Cd. Juarez, Chihuahua, Mexico
915-775-2939

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.
If the lamp is broken, the following materials may be released:

	Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
	Quartz, Fused	60676-86-0	25 - 35	0.1 Resp. Dust	0.1 Ceiling
	Tungsten	7440-33-7	15 - 30	---	---
	(Insoluble compounds)			5	10
	Molybdenum	7439-98-7	0,0015 – 0,0035	---	---
	(Insoluble compounds)			10	15
(2)	Thorium Dioxide	1314-20-1	0,0025 – 0,0030	---	---
	NRC maximum permissible dose for occupational exposure:			0-100 5000 mrem/yr	
	NRC maximum permissible dose for non-occupational exposure:			0-100 100 mrem/yr	
(1)	Nickel	7440-02-0	0,025 – 0,045	0.05	1

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) Limits for Thorium Dioxide have not been established by the ACGIH. All applicable requirements for radioactive materials, including exposure limits contained in 29 CFR 1910.96 (OSHA) AND 10 CFR Parts 20 & 40 (NRC) should be met.
(3) Limits as nuisance particulate.

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMPS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:

- **This XBO lamp contains high pressure at room temperature and may unexpectedly shatter. Never handle lamp with out safety shield installed and appropriate PPE.**
- **This XBO lamp operates at super high pressure and at high temperature and may unexpectedly shatter.**
- **This XBO lamp generates ultraviolet radition which may cause skin and eye irritation with exposure.**
- **This XBO lamp must be operated only in suitably designed enclosed fixtures which prevent direct observation of the arc and will prevent lamp fragments from exiting, in the unlikely event of a lamp rupture.**
- **To avoid risk of lamp rupture, lamps must be operated with compatible ballast and fixture only.**

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Quartz, fused – Fibrosis of the lungs causing shortness of breath and coughinh has been associated with silica exposure.

Tungsten – Inhalation of dust may cause mild irritation of nose and throat. Contact may cause mechanical irritation of skin and eyes.

Molybedenum – Oxides have caused irritatin to the eyes, nose, and throat; weight loss and digestive disturbances in experimental animals.

Thorium Dioxide(as Tungsten Thoria) – Tungsten thoria alloy solids do not consititute and important health hazard. Exposure is related mainly to any irritatin fromt dust created. Thoriated solids do not constitute an important radiological health hazard. However, radiological health hazards may exist if the material is present in a form that may be inhaled or injested..

Nickel – Skin contact may cause an allergic rash. Inhaled dust of nickel and its compounds have been reported to cause cancer of the lungs and sinuses. Nickel itself is not very toxic if ingested, but its soluble salts are quite toxic and , if ingested, may cause giddiness and nausea.

EMERGENCY AND FIRST AID PROCEDURES

Quartz Cuts: Perform normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: Seek medical attention.

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER):
Nickel was identified as a known or suspected carcinogen by NTP and/or IARC.

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends recycling of spent lamps. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a vacuum cleaner or other suitable means that avoids dust generation. Take usual precautions for collection of broken quartz. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: May 25, 2011 rev D Supersedes: April 08, 2011

SAFETY DATA SHEET
Metal Halide Lamps

SYLVANIA brand Metal Halide Lamps, manufactured by LEDVANCE, LLC, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by LEDVANCE, LLC as a courtesy to its customers.

I. IDENTIFICATION

Trade Name (as labeled): **SYLVANIA Metalarc® and Metalarc Pro-Tech® Lamps, SYLVANIA Metalarc® POWERBALL®, and SYLVANIA ceramic metal halide lamps for general lighting purposes**

This data sheet covers the following general lighting metal halide lamp types: Ceramic metal halide lamps and quartz medium-based and mogul-based lamps.

Manufacturer:
OSRAM de Mexico S.A. de C.V.
950 Joule Street, Industrial Park
A.J. Bermudes, C.P. 32470
Cd. Juarez, Chihuahua, Mexico

LEDVANCE, LLC
435 E. Washington Street
Winchester, KY 40391-2298

Emergency Contact: EH&S Specialist 978-570-3000

II. HAZARD IDENTIFCATION

Warning!

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.

Warning! Rupture risks: Metal Halide lamps can be constructed of an outer glass bulb with an internal arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **there is a risk of personal injury, property damage, burns and fire.**

To reduce these risks:

- Only operate with compatible ballast and fixture. (See catalog for specific information.)
- Only operate lamp in designated operating positions. (See catalog for illustration.)
- Never expose operating lamp to moisture (such as rain, sleet or snow).
- Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
- Electrically insulate any metal support in contact with the outer glass bulb to avoid glass decomposition.
- Replace lamp at or before the end of rated life. (See catalog for rated life.)

For applications where an additional measure of safety is desired, lamps using an internal shield designed to contain an arc-tube rupture are available.

Warning! Electrical shock and burn hazard: Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

Warning! Ultraviolet radiation exposure: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations**:** U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381.

Immediately shut power off and replace lamp. If the outer jacket is broken and the lamp continues to operate, ultraviolet radiation may be emitted which may cause skin and eye irritation with prolonged exposure.

If irritation persists: get medical attention.

Do not handle until all safety precautions have been read and understood. Care must be taken to read and follow the directions and warnings accompanying the specific product to avoid personal injury and/or property damage.

Storage: Store in well-ventilated place.

Consult the SYLVANIA product catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

III. COMPOSITION – INFORMATION ON INGREDIENTS

There are no known health hazards from exposure to lamps that are intact.

Materials listed on this data sheet are contained in varying percentages in this product. Exact percentages are proprietary and will not be disclosed other than as required in accordance with the regulations. If a lamp is broken, some of the following materials may be released:

Chemical Name	CAS Number	% by wt.
Quartz, fused	60676-86-0	0-30
(1, 2) Mercury	7439-97-6	<0.1
Aluminum Oxide	1344-28-1	0-<0.03
Thallium Iodide	7790-30-9	<0.002
Glass (Borosilicate)	---	50-86
Barium Peroxide	1304-29-6	0-<0.6
Yttrium Vanadate	13566-12-6	0-<0.5

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury in this product is a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Glass - Glass dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/M3 for total dust and 5 mg/M3 for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/M3 for total dust and 3 mg/M3 for respirable dust.

Quartz, Fused - Fibrosis of the lungs causing shortness of breath and coughing has been associated with silica exposure.

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Barium Peroide – May be fatal if swallowed. Harmful dust. Avoid skin and eye contact.

Yttrium Vanadate – Inhalation of vanadium compounds can cause irritation of the nose, throat and respiratory tract. Eye contact and prolonged, repeated skin contact may also cause irritation. Studies of workers exposed to this material showed no evidence of chronic or systemic effects.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free silica content. Sharp edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

All other components of this product do not pose a significant risk of respiratory and/or physical effects.

IV. EMERGENCY AND FIRST AID PROCEDURES:

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort or irritation to the nose and throat develop, remove from exposure and seek medical attention as needed. If breathing has stopped, perform artificial respiration; keep affected person warm and at rest; get medical attention as soon as possible.
Ingestion: In the unlikely event of ingesting a large quantity of material, seek medical attention immediately.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention as needed.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

V. FIRE-FIGHTING MEASURES:

Flammability: Non-combustible
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

VI. ACCIDENTAL RELEASE MEASURES:

ONLY APPLICABLE FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Protective clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic practices: After handling broken lamps, wash hands and face thoroughly before eating, drinking, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

VII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

ONLY APPLICABLE FOR BROKEN LAMPS

BROKEN ARC-TUBE: Take care in handling and disposing of this lamp. **If arc-tube is broken, avoid skin contact with any of the contents and fragments.**

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.
Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken. To avoid exposure to ultraviolet radiation, use only in enclosed equipment designed for this lamp type.
Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.
Storage Instructions: Store in well-ventilated place.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Threshold Value Limits:

Chemical Name	CAS Number	Exposure Limits in Air (mg/cubic m)	
		ACGIH (TLV)	OSHA (PEL)

Quartz, fused	60676-86-0	0.1 Resp Dust	0.1
(1, 2) Mercury	7439-97-6	0.025	0.1 Ceiling
Aluminum Oxide	1344-28-1	10.0 (3)	15.0 (3)
Thallium Iodide	7790-30-9	0.1 Skin	<10.1
Glass (Borosilicate)	---	10.0 (3)	15.0 (3)
Barium Peroxide	1304-29-6	0.5	---
Yttrium Vanadate	13566-12-6	1.0	1.0

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury in this product is a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
(3) Limits as nuisance particulate.

Personal Protective Equiment: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.
Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.
Skin Protection: After handling broken lamps, wash hands and face thoroughly before eating, drinking, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.
Respitory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

VIV. PHYSICAL AND CHEMICAL PROPERTIES

NOT APPLICABLE FOR LAMPS

X. STABILITY AND REACTIVITY

NOT APPLICABLE FOR LAMPS

XI. TOXICOLOGICAL INFORMATION

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

XII. ECOLOGICAL INFORMATION

XIII. DISPOSAL CONSIDERATIONS

LEDVANCE, LLC recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, call 1-866-666-6850 or log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with mercury vacuum cleaner or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust and mercury vapor.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

Lamps that pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 3 (Procedures for High Intensity Discharge Lamp Sample Preparation and the TCLP) testing protocol, ECOLOGIC® lamps, marked "ECO," pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 900, Arlington, VA 22209.

XVI. TRANSPORTATION INFORMATION

Shipments of these lamps, if levels of contained hazmat materials reach defined thresholds, will be subject to Dangerous Goods regulations for ground, air or sea shipments. Shippers are required to have DOT 49CFR training for ground shipments, IATA for air and IMDG training for sea shipments.

XVII. REGULATORY INFORMATION

Although LEDVANCE, LLC attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

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Issue Date: October 1, 2016

In case of questions please call: EH&S Specialist 978-570-3000

PRODUCT SAFETY DATA SHEET
PSDS No. 2.1
CERAMIC METAL HALIDE ARC TUBES

Ceramic Metal Halide Arc Tubes, manufactured by OSRAM SYLVANIA Inc., are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): **Sylvania Metalarc® POWERBALL®, Ceramic Arc Tubes**
(Ceramic Metal Halide Arc Tubes for General Lighting)

Manufacturer: OSRAM de Mexico S.A. de C.V.
950 Joule Street, Industrial Park
A.J. Bermudes, C.P. 32470
Cd. Juarez, Chihuahua, Mexico

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO ARC TUBES THAT ARE INTACT.
If a arc tube is broken, the following materials may be released:

	Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
(1, 2)	Mercury	7439-97-6	<0.05	0.025	0.1 Ceiling
	Aluminum Oxide	1344-28-1	0.0005-<0.005	10 (3)	15 (3)
	Thallium Iodide	7790-30-9	<0.002	0.1 Skin	<10.1

(1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
(3) Limits as nuisance particulate.

III. PHYSICAL PROPERTIES

Not applicable to intact arc tube.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken arc tubes during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken arc tubes.

V. HEALTH HAZARDS

ARC TUBE MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO ARC TUBES THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken arc tubes. As a matter of good practice, avoid prolonged or frequent exposure to broken arc tubes unless there is adequate ventilation. The major hazard from broken arc tubes is the possibility of cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free-silica content. Sharp-edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.
Ingestion: Seek medical attention.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact arc tubes.
Incompatibility (materials to avoid): None for intact arc tubes.
Hazardous Decomposition Products (including combustion products): None for intact arc tubes.
Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF ARC TUBES

OSRAM SYLVANIA recommends that all mercury-containing arc tubes be recycled. For a list of arc tube recyclers and to obtain state regulatory disposal information, call 1-866-666-6850 or log onto www.arc tuberecycle.org.

If arc tubes are broken, ventilate area where breakage occurred. Clean-up with mercury vacuum cleaner or other suitable means that avoids dust and mercury vapor generation. Place materials in closed containers to avoid generating dust and mercury vapor.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN ARC TUBES

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if arc tubes are being broken. In the event an outer jacket is broken, the arc tube should be shut off immediately and replaced to avoid exposure to ultraviolet radiation.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken arc tubes.

Hygienic Practices: After handling broken arc tubes, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: 09/21/11 Revision A

Supersedes: NEW

In case of questions, please call:

OSRAM SYLVANIA Inc.
Product Safety and Compliance Manager
(978) 750-2581

PRODUCT SAFETY DATA SHEET
LIGHT EMITTING DIODE (LED) LAMPS

Sylvania brand Light Emitting Diode Lamps (LED), manufactured by SYLVANIA/OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles."[i] The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

SYLVANIA LED Lamps:
This MSDS applies only to the following LEDr lamps: A-shape LEDr

Osram Sylvania Inc.
100 Endicott Street
Danvers, MA 01923
PH: (978) 777-1900
www.Sylvania.com

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. The major hazard from broken lamps is the possibility of sustaining glass cuts.

Lamp Assembly
A-line SYLVANIA LEDr lamps do not contain glass. The lamp bases are generally nickel-plated brass. None of these materials would present a hazard even in the event of breakage of the lamp.

LED
The LED's composition consists of metals, phosphor, plastics and InGaN (Indium Gallium Nitride) semiconductor chip. Due to their insolubility and inertness, these materials do not present a significant hazard. Replacement Lamps use LEDs that emit white light. The LED's composition consists of metals, phosphor, plastics and InGaN (Indium Gallium Nitride) semiconductor chip. Due to their insolubility and inertness, these materials do not present a significant hazard.

Electronic LED Driver
The electronic LED driver is built into the lamp housing. The driver consists of parts that are essentially similar, but not identical, to those used throughout the electronics industry for other common consumer electronic equipment.

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.

III. HEALTH CONCERNS

There are no known health hazards from exposure to lamps that are intact. No adverse effects are expected from occasional exposure to broken lamps. If the lamp is broken and the LEDs are exposed, do not look directly into the LEDs. As a matter of good practice, avoid prolong or frequent exposure to broken lamps. The major hazard from broken lamps is the possibility of sustaining cuts from the pieces and eye injury if you look directly into exposed LEDs when emitting light.

EMERGENCY AND FIRST AID PROCEDURES:
Cuts: Perform normal first aid procedures. Seek medical attention as required.

UV
The Ultraviolet energy emitted by LED lamps complies with the Photobiological Safety of Lamps IEC 62471.

IV. DISPOSAL CONCERNS

LED Lamp Disposal:
Dispose in accordance with local regulations; recycling is recommended for large quantity disposal.

RoHS:

All Sylvania LEDr lamps listed above meet the EC directive Restriction of Hazardous Substances (RoHS II) Directive 2011/65/EU. They do not contain any mercury or lead.

REACH:

Safety Datasheets are required by article 33 of REACH (Registration, Evaluation, Authorization and Restriction of Chemicals). Safety Datasheets are similar to OSHA Material/Product Safety Data Sheets and are meant to instruct the end-user (customer) on safe handling of the product, if there are any SVHC's (Substances of Very High Concern). For lamps, if any SVHC exists, the amount will be small and encapsulated in the component. Exposure to the SVHC would require grinding the component up.

Osram Sylvania A-line LED lamps contain no SVHC as of 11/20/13 when the list was last updated. . See http://echa.europa.eu/web/guest/candidate-list-table

Issue Date: April 10, 2013 Rev. A Revised November 20, 2013 Rev. B

In case of questions, please call:
Katherine Hassan, Esq.
OSRAM SYLVANIA Inc.
Product Safety and Compliance Specialist
978-750-2581

[i] "*Article* means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, *e.g.*, minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees." 29 CFR 1910 accessed March, 2013: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099)

PRODUCT SAFETY DATA SHEET
PSDS No. 1.4.1
INCANDESCENT LAMPS
WITH LEAD-FREE SOLDER

Sylvania brand Incandescent Lamps, manufactured by OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): **Sylvania Incandescent "White", "Daylight", Frosted, or Clear Lamps with lead-free solder.**
This data sheet covers all of the following types unless otherwise indicated:
A19 (≤135 W), B10 (Made in U.S.A.), G25, BR, ER

Manufacturer:
OSRAM SYLVANIA
835 Washington Avenue
St. Marys, PA 15857
(814) 834-1800

II. HAZARDOUS INGREDIENTS

Materials listed on this data sheet are contained in varying percentages in this product. Exact percentages are proprietary and will not be disclosed other than as required in accordance with the regulations.

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.
If a lamp is broken, some of the following materials may be released:

Chemical Name	CAS Number	Hazard	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
Glass (Soda Lime)	---	Respiratory Irritant	10.0 (2)	15.0 (2)
Solder (Sb/Sn)				
Antimony (Sb)	7440-36-0	Toxic	0.5	0.5
Tin (Sn)	7440-31-5	Respiratory Iritant	2.0	2.0
(1, 3) Lead Glass (as Pb)	7439-92-1	Toxic	0.05	0.05
Aluminum (as dust)	7429-90-5	Respiratory Irritant	10.0	10.0
Copper (as dust)	7440-50-8	Respiratory Irritant	1.0	1.0
Phenolic Resin	---	Physical Irritant	---	---

(1) This chemical is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
(2) Limits as nuisance particulate.
(3) The lead in this product is one of the substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARD

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards **and/or** ***NIOSH Pocket Guide to Chemical Hazards*** **lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Lead dust or fumes may cause irritation of the eyes and respiratory tract. Excessive lead absorption can be toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease. However, the chemical inertness and insolubility of this material is expected to reduce the potential for systemic lead toxicity.

All other components of this product do not pose a significant risk of respiratory and/or physical effects.

EMERGENCY AND FIRST-AID PROCEDURES:

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention as needed.
Ingestion: In the unlikely event of ingesting a large quantity of material, seek medical attention immediately.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention as needed.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous decomposition products (including combustion products): None for intact lamps.
Hazardous polymerization products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

If lamps are broken, ventilate area where breakage occurred. Clean-up by vacuuming or other method that avoids dust generation. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 4 (*Procedures for Incandescent Lamp Sample Preparation and the TCLP*) testing protocol, these lamps pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic practices: After handling broken lamps, wash hands and face thoroughly before eating, drinking, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: August 16, 2012 Rev D

Supersedes: July 25, 2011 Rev C

In case of questions, please call:

OSRAM SYLVANIA
Environmental/Safety Engineer
(814) 834-1800

PRODUCT SAFETY DATA SHEET
PSDS No. 1.7
TUNGSTEN HALOGEN LAMPS

Sylvania brand Tungsten Halogen Lamps, manufactured by OSRAM/OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

------I. PRODUCT IDENTIFICATION

-------- Trade Name (as labeled): **Sylvania Halogen Lamps, Sylvania Capsylite© Halogen Lamps**

This data sheet covers the following general lighting halogen lamp types:
MB, MC, MR, G, PAR14, PAR16, PAR20, PAR30, and PAR38 lamps.

Manufacturer: OSRAM SYLVANIA
435 East Washington Street
Winchester, KY 40391
(606) 745-3257

Manufacturer: OSRAM SYLVANIA
E.E.S., S.A. de C.V. Mexico (8283)
Juarez, MX

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.
If a lamp is broken, some of the following materials may be released:

Chemical Name	CAS Number	% by wt.	Exposure Limits in Air (mg/cubic m) ACGIH (TLV)	OSHA (PEL)
Hydrogen Bromide	10035-10-6	0-< 1.0	10.0 Ceiling	10.0
Tungsten	7440-33-7	0.05-1.0	---	---
(Insoluble compounds)	------	---	5.0	---
Molybdenum	7439-98-7	0.02-1.0	---	---
(Insoluble compounds)	------	---	10	15
Glass (Alkaline Earth Aluminosilicate)	------	0-95	10 (1)	15 (1)
Quartz, Fused	60676-86-0	0-95	0.1 Resp. Dust	0.1
Aluminum	7429-90-5	0-70	10.0	10.0
Copper (as dust)	7440-50-8	0-<3.0	1.0	1.0
Glass (Alkaline Earth Borosilicate)	------	0-95	10.0 (1)	15.0 (1)
Ceramic (Steatite or Porcelain)	------	0-95	10.0 (1)	15.0 (1)

(1) Limits as nuisance particulate.

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible
Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.
Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.
Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMPS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:

Burns: All tungsten halogen lamps operate at higher temperatures than standard incandescent lamps; some as high as 1832°F, 1000°C. Therefore, caution must be used when replacing lamps. Allow enough time for lamp to cool before attempting replacement.

Shattering: Some tungsten halogen lamps are at high pressure at all times and may unexpectedly shatter. Care must be taken to read and follow the directions and warnings accompanying the specific product to avoid personal injury and/or property damage.

UV Radiation: Some tungsten halogen lamps produce UV (ultraviolet) radiation which can cause skin burns and/or eye injury if not properly shielded. Care must be taken to read and follow the directions and warnings accompanying the specific product to avoid personal injury.

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

***NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards* and/or *NIOSH Pocket Guide to Chemical Hazards* lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:**

Hydrogen Bromide - Short-term exposure to hydrogen bromide may cause irritation of the eyes, nose, and throat. It will cause a burn when a solution is splashed onto skin or into eyes. Repeated or prolonged exposure to hydrogen bromide may cause irritation of the nose and throat with mucous production and indigestion.

Copper - Inhalation of fumes can cause "Metal Fume Fever" with symptoms of chills, fever, nausea, cough, dry throat, weakness, muscle aches, and a sweet metallic taste in the mouth. Contact may cause machanical irritation of the skin and eyes. Ingestion may cause irritation to the stomach lining or intestines.

Aluminum – Aluminum is a non-toxic material which may cause irritation to the eyes skin and respiratory system.

Quartz, Fused - Fibrosis of the lungs causing shortness of breath and coughing has been associated with silica exposure.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Tungsten - Inhalation of dust may cause mild irritation of nose and throat. Contact may cause mechanical irritation of skin and eyes.

Molybdenum - Oxides have caused irritation to the eyes, nose, and throat; weight loss and digestive disturbances in experimental animals.

EMERGENCY AND FIRST AID PROCEDURES:

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.
Inhalation: If discomfort or irritation to the nose and throat develop, remove from exposure and seek medical attention as needed. If breathing has stopped, perform artificial respiration; keep affected person warm and at rest; get medical attention as soon as possible.
Ingestion: In the unlikely event of ingesting a large quantity of material, seek medical attention immediately.
Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention as needed.
Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI.REACTIVITY DATA

Stability: Stable
Conditions to avoid: None for intact lamps.
Incompatibility (materials to avoid): None for intact lamps.
Hazardous decomposition products (including combustion products): None for intact lamps.
Hazardous polymerization products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

If lamps are broken, ventilate area where breakage occurred. Clean-up by vacuuming or other method that avoids dust generation. Take usual precautions for collection of broken glass. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 4 (*Procedures for Incandescent Lamp Sample Preparation and the TCLP*) testing protocol, these lamps pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION – FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Issue Date: October 3, 2013; Rev. E Supersedes: May 18, 2011

In case of questions, please call:

Product Safety Manager
(978) 750 2581

Tap Magic EP-Xtra

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: **Tap Magic EP-Xtra**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **10004E, 10016E, 10128E, 10640E, 13840E, 17040E**

Recommended uses of the product and restrictions on use: Machining, Cutting, Tapping, and Metal Processing.

Special Notes on Product Uses: After use of this product, clean and lubricate metal surfaces to avoid staining and/or corrosion.

Manufacturer Details:

The StecoCorporation
2330 CantrellRoad
Little Rock, AR 72202 USA
501-375-5644
Website: www.tapmagic.com Email: steco@tapmagic.com

Emergency telephone number:

ChemTel Inc.: (800)255-3924, +1(813)248-0585

SECTION 2: Hazards identification

Classification of the substance or mixture:

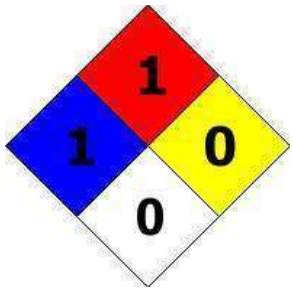
Signal word: None

Hazard statements: None

Precautionary statements: None

Other Non-GHS Classification:

WHMIS
None
NFPA/HMIS



NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3: Composition/information on ingredients

Ingredients:

Tap Magic EP-Xtra		
CAS 64742-53-6	Hydrotreated oil	1-60%
CAS 63449-39-8	Paraffin wax compound	1-25 %
		Percentages are byweight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position. Seek medical advice if discomfort or irritation persists. If breathing difficult, give oxygen.

After skin contact:

Wash affected area with soap and water. Rinse/flush exposed skin gently using water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact:

Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing:

IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed:

Irritation. Nausea.

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

Unsuitable extinguishing agents:

None identified.

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

Protective equipment:

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Additional information (precautions):

Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Keep in suitable closed containers for disposal. Refer to Section 13. Always obey local regulations.

Reference to other sections: None

SECTION 7: Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances. Use only with adequate ventilation.

Conditions for safe storage, including any incompatibilities:

Keep container tightly sealed. Store away from incompatible materials.

SECTION 8: Exposure controls/personal protection



Control Parameters: No applicable occupational exposure limits.

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN(EU).

Protection of skin: Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Contact glove manufacturer for specific information. Wear appropriate clothing to prevent any possibility of skin contact.

Eye protection: Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Avoid contact with skin, eyes, and clothing.

SECTION 9: Physical and chemical properties

Appearance (physical state,	Liquid, Amber	**Explosion limit lower: Explosion**	Not determined
Odor:	Mild	**Vapor pressure at 20°C:**	Not determined
Odor threshold:	Not determined	**Vapor density:**	Not determined
pH-value:	Neutral (non-aqueous)	**R.elative density:**	Not determined
Melting/Freezing point:	Not determined	**Solubilities:**	Insoluble in water
Boiling point/Boiling range:	Not determined	**Partition coefficient (n- octanol/water):**	Not determined
Flash point (closedcup):	>150 C	**Auto/Self - ignition**	Not determined

Tap Magic EP-Xtra			
Evaporation rate:	Not determined	**Decomposition temperature**:	Not determined
Flammability (solid, gaseous):	Not determined	**Viscosity**:	a. Kinematic: 24 Cst at 40 C b. Dynamic: Not determined
Density at 20°C:	0.93 g/ml		

SECTION 10: Stability and reactivity

Reactivity:

Nonreactive under normal conditions.

Chemical stability:

Stable under normal conditions.

Possible hazardous reactions:

None under normal processing.

Conditions to avoid:

Incompatible materials. Excess heat.

Incompatible materials:

Strong oxidizing agents. strong acids and alkali.

Hazardous decomposition products:

No data available.

SECTION 11: Toxicological information

Acute Toxicity: No additional information.
Chronic Toxicity: No additional information.
Corrosion Irritation: No additional information.

Sensitization: No additional information.
Numerical Measures: No additional information.
Carcinogenicity:

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Distillates (petroleum), hydrotrated light, kerosene -unspecified)

Mutagenicity: No additional information.
Reproductive Toxicity: No additional information.

SECTION 12: Ecological information

Ecotoxicity: No additional information.
Persistence and degradability:

No data available.

Bioaccumulative potential:

No data available.

Mobility in soil:

No data available.

Other adverse effects:

None identified.

SECTION 13: Disposal considerations

Waste disposalrecommendations:

Dispose of empty containers as unused product. Product or containers must not be disposed together with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11).

SECTION 14: Transport information

US DOT

UN Number:
ADR, ADN, DOT, IMDG, IATA None

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None

Hazard Class: None
Packing Group: N/A
Marine Pollutant (if applicable): No
additional information.

Hazard Class: None
Packing Group: N/A
Marine Pollutant (if applicable): No
additional information.

Comments: None

Comments: None

SECTION 15: Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

RCRA (hazardous waste code):

None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

None of the ingredients are listed.

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note.

GHS Full Text Phrases: None

Abbreviations and Acronyms:

IMDG International Maritime Code for Dangerous Goods.
PNEC Predicted No-Effect Concentration (REACH).
CFR Code of Federal Regulations (USA).
SARA Superfund Amendments and Reauthorization Act (USA).
RCRA Resource Conservation and Recovery Act (USA).
TSCA Toxic Substances Control Act (USA).
NPRI National Pollutant Release Inventory (Canada).
DOT US Department of Transportation.

IATA International Air Transport Association.
GHS Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH American Conference of Governmental Industrial Hygienists.
CAS Chemical Abstracts Service (division of the American Chemical Society).
NFPA National Fire Protection Association (USA).
HMIS Hazardous Materials Identification System (USA).
WHMIS Workplace Hazardous Materials Information System (Canada).
DNEL Derived No-Effect Level (REACH).

Effective date:03.18.2015
Last updated:07.16.2015