

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION OF SUBSTANCE AND COMPANY

Product Name: UV Discharge Lamp
Chemical Name: Intact Sealed Article

Manufacturer For: Image Group Phone: 905 825-5600
 2284 Speers Road Fax: 905 825-8833
 Oakville, ON L6L 2X8

Emergency Phone Numbers: Nordson Corporation 800-321-2881
 Canutec 613-992-4624

SECTION 2 - INFORMATION ON COMPONENTS

Hazardous and regulated components

CAS	Wt	Component	USA OSHA PEL	UK WEL
1480860-7		Quartz glass	N/A	N/A
7439-976	Up to 4g (0.5g ave.)	Mercury (Vapour)	TLV 0.05 mg/m ₃ IDLH 10	US Typical TLV / TWA 0.05 mg/m ₃ Typical PEL 0.1 mg/m ₃
1314-201	~70mg	Thorium Oxide	5 E-13 microcurie Th per ml air	NO UK WEL
1555214-4	~70mg	Barium Calcium Tungstate	No Information Available	NO UK WEL

Additional components in specifically doped lamps:

Gallium/Indium Doped Lamps:

CAS	Wt	Component	USA OSHA PEL	UK WEL
7440-553	Up to 10mg	Gallium	TLV-TWA Not Established	NO UK WEL
7440-746	Up to 3mg	Indium	TLV 0.1 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.1mg/m ₃ Short term exposure limit (15 minute) is 0.3mg/ m ₃
7774-290	Up to 20mg	Mercury Iodide (HgI ₂)	0.05 mg/m ₃	NO UK WEL
	Up to 15mg	Gallium (II) Iodide (GaI ₂)	No Information Available	NO UK WEL
1345091-4	Up to 10mg	Gallium (III) Iodide (GaI ₃)	No Information Available	NO UK WEL
1351035-5	Up to 5mg	Indium (III) Iodide (InI ₃)	TLV 0.1 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.1mg/m ₃ Short term exposure limit (15 minute) is 0.3mg/ m ₃

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Iron Doped Lamps:

CAS	Wt	Component	USA OSHA PEL	UK WEL
7440-315	Up to 5mg	Tin (Sn)	2 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 2mg/m ₃ Short term exposure limit (15 minute) is 4mg/m ₃
7439-896	Up to 35mg	Iron (Fe)	No Information Available	NO UK WEL
7774-290	Up to 50mg	Mercury Iodide (HgI ₂)	0.05 mg/m ₃	NO UK WEL
7783-860	Up to 50mg	Iron Iodide (FeI ₂)	1 mg/m ₃	NO UK WEL
7789-404	Up to 1mg	Thallium Bromide (TlBr)	0.1 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.1mg/m ₃

Lead Doped Lamps:

CAS	Wt	Component	USA OSHA PEL	UK WEL
7439-921	Up to 15mg	Lead (Pb)	ACGIH – TLV 0.15 mg/m ₃ OSHA-PEL 0.05 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.15mg/m ₃
7774-290	Up to 20mg	Mercury Iodide (HgI ₂)	0.05 mg/m ₃	NO UK WEL
1010163-0	Up to 40mg	Lead Iodide (PbI ₂)	ACGIH – TLV 0.15 mg/m ₃ OSHA-PEL 0.05 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.10mg/m ₃ in relation to lead alkyls
1003122-8	Up to 1mg	Lead Bromide (PbBr ₂)	0.05 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.10mg/m ₃ in relation to lead alkyls
7789-471	Up to 1mg	Mercury Bromide (HgBr ₂)	0.05 mg/m ₃	NO UK WEL

Thallium Doped Lamps:

CAS	Wt	Component	USA OSHA PEL	UK WEL
7790-309	Up to 5mg	Thallium Iodide (TlI)	0.1 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.1mg/m ₃
7789-404	Up to 1mg	Thallium Bromide (TlBr)	0.1 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 0.1mg/m ₃

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Tin Doped Lamps:

CAS	Wt	Component	USA OSHA PEL	UK WEL
7440-315	Up to 5mg	Tin (Sn)	2 mg/m ₃	WEL Long term exposure limit (8hr TWA) is 2mg/m ₃ Short term exposure limit (15 minute) is 4mg/m ₃
7789-471	Up to 5mg	Mercury Bromide (HgBr ₂)	0.05 mg/m ₃	NO UK WEL

Ultraviolet radiation -8 hour TWA is 0.1 microwatt / cm².

UV discharge lamps are sealed articles and are exempt from the HazCom requirement of OSHA.

SECTION 3 -HAZARDS IDENTIFICATION

Effects of Overexposure:

EYES: Conjunctivitis from overexposure to the light source; eye irritation from inhalation of ozone. Refer to the coating MSDS for additional hazards.

SKIN: Erythema (sunburn) which may be exaggerated with the use of sensitizing pharmaceutical and herbal products. Refer to the coating MSDS for additional hazards.

INHALATION: None from UV discharge lamp, inhalation of ozone may irritate the nose or cause headache and nausea. Refer to the coating MSDS for additional hazards.

ORAL: None from UV discharge lamp; inhalation of ozone may irritate the throat. Refer to the coating MSDS for additional hazards.

SECTION 4 –FIRST AID MEASURES

Skin: Conjunctivitis

Eyes: Welders flash treatment

Inhalation: No first aid should be needed due to ultraviolet exposure

Ingestion: No first aid should be needed due to ultraviolet exposure

Comments: Additional hazards may be created from exposure to the coating

Effects of overexposure to skin and eyes usually disappear in 48 hours. Some individuals may have an abnormally increased sensitivity to the effects of UV light. This may be the result of a sensitizing chemical or prescribed drug. Sensitization will result in an exaggerated sunburn response. Further occupational exposure to UV should be limited and the individual should be referred to a physician.

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SECTION 5 -EXPLOSION AND FIRE FIGHTING MEASURES

Flash Point:	N/A
Extinguishing Media:	N/A
Special Fire Fighting Procedures:	N/A
Unusual and Explosion Hazards:	None known
Hazardous Decomposition Products:	None Known

SECTION 6 -ACCIDENTAL RELEASE / SPILL PROCEDURES

Steps to be taken in case material is released or spilled:

Broken UV discharge lamps should be placed in a sealed container and handled/disposed as hazardous waste.

SECTION 7 -HANDLING AND STORAGE

Handling: A small amount of mercury is contained in the quartz tube of UV discharge lamps. Due to the toxicity of mercury, UV discharge lamps should be handled so that breakage is minimized.

Storage: Scrap UV discharge lamps may be stored for one year before being shipped for recycling.

SECTION 8 -EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Install UV discharge lamps following manufacturer's guidance. Operators should be trained to fully understand the recommended operating and safety procedures. Ozone generated by the process requires negative pressure exhaust.

Personal Protective Equipment for Routine Handling:

Safety glasses with side shield and with protection against ultraviolet light are recommended. Contact lenses should not be worn. Barrier creams or polyethylene skin protection are recommended. Industrial processes must be evaluated for additional safeguards.

SECTION 9 -PHYSICAL AND CHEMICAL PROPERTIES

Physical form:	Solid
Colour:	Clear
Odour:	None
Specific Gravity @25°C:	N/A
Viscosity:	N/A
Freezing/Melting Point:	N/A
Boiling Point:	N/A
Vapour Pressure @25°C:	N/A
Solubility in Water:	Insoluble
pH:	N/A
Volatile content:	N/A

Note: Energized UV discharge lamp surfaces are hot.

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SECTION 10 -STABILITY AND REACTIVITY

Stability: UV discharge lamps are stable

Conditions to avoid: Photosensitizing agents when UV discharge lamps are energized.

Hazardous Polymerization: Will not occur.

Incompatible materials: None

SECTION 11 -TOXICOLOGICAL INFORMATION

Acute Toxicology Data for Product:

No data available.

SECTION 12 -ECOLOGICAL INFORMATION

Environmental Fate and Distribution:

No data available.

SECTION 13 -DISPOSAL CONSIDERATIONS

Waste Disposal Methods:

Used UV discharge lamps should be handled / disposed in accordance with federal, state and local Regulations. UV discharge lamps may be returned for recycling with prior authorization.

Resource Conservation and Recovery Act (RCRA) / Universal Waste:

UV discharge lamps that are not recycled must be handled / disposed in accordance with Resource Conservation and Recovery Act (RCRA). Each state has specific regulations that apply to the management of spent UV discharge lamps. Recycling in the US must be in accordance with the Universal Waste rule.

SECTION 14 -TRANSPORTATION INFORMATION

DOT Shipping Name: Not Regulated **IATA Shipping Name:** Mercury contained in manufactured articles
-Hazard class 8.0 (Corrosive Substances), UN 2809, Packaging Group III. Applies to articles with greater than 100 mg of mercury.

SECTION 15 -REGULATORY INFORMATION

Risk phrases for Mercury

R21 -Harmful in contact with skin R22 – Harmful if swallowed R23 – Toxic by inhalation R33 -Danger of cumulative effects

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Risk Phrases for Mercury Iodide (HgI₂)

R26 -Very toxic by inhalation
R27 -Very toxic in contact with skin
R28 -Very toxic if swallowed
R33 -Danger of cumulative effects

Risk Phrases for Thorium Oxide

R22 -Harmful if swallowed

Safety Phrases for Mercury

S61 -Avoid release to the environment

Safety Phrases for Mercury Iodide

S13 -Keep away from food, drink and animal foodstuffs
S28 -After contact with skin, wash immediately with plenty of soap
S45 -In case of accident or if you feel unwell, seek medical advice immediately

Safety Phrases for Thorium Oxide

S37 -Wear suitable gloves
S46 -If swallowed seek medical advice immediately

EPA: RCRA / Universal Waste – UV discharge lamps that are to be recycled should be placed in the original container or packaged to prevent breakage. The outer container should be dated and marked "Universal Waste".

OSHA: Ultraviolet exposure is limited to 1 milliwatt per centimetre squared. Ozone exposure is regulated at 0.1 parts per million (ppm).

SECTION 16 –OTHER INFORMATION

Energized UV discharge lamps are photosensitizing.

NOTICE

Information contained herein has been obtained from recognized technical sources. Compliance with all federal, state, and local laws and Regulations remains the responsibility of the user.