Material Safety Data Sheet

Low Pressure Mercury Vapour Lamps

Section 1. Identification of Product and Company

1.1 Identification of substance or preparation: Low pressure Mercury vapour Lamp (Ultraviolet Lamp)
Synonyms: Ultraviolet Lamp, UV Lamp

1.2 Product Application: This MSDS provides Health and Safety information from any UV Lamp Part Number:

Altus Science Part Number	Product Name/Description/Range
A-3450-UVL	Sievers Replacement UV lamp - Model 400ES, 420 & 2244OL
A-3550-UVL	Sievers Replacement UV Lamp - Model 500
A-2100-UVL	Sievers Replacement UV Lamp - Model 900
A-2101-UVL	Sievers Replacement UV Lamp - Model 800
A-4090-UVL	Anatel Replacement UV Lamp - A643a
A-4790-UVL	Anatel Replacement UV Lamp - PAT700
A-4895-UVL	Anatel Replacement UV Lamp – Anatel A-1000

1.3 Company/Undertaking Identification:
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Section 2. Hazards Identification

2.1 Hazard Summary:

Physical hazards: Can cause serious skin burns and injury to the eye from direct/reflected radiation
Health hazards: Low pressure mercury vapour lamps emit Ultraviolet Radiation (UV). UV radiation is harmful to the skin and eyes
Avoid breathing dust
Can dry skin
Environmental hazards: Not classified for hazards to the environment

2.2 Label elements:

Contains: Quartz, Mercury
Supplemental label information: Not applicable

2.3 Other hazards: Not assigned

There are no known health hazards from exposure to lamp materials that are intact, if the lamp is broken, the following materials found in Section 3 may be released. Please find in Section 4 and 8 First aid measures and Personal protection if the lamp is broken

Section 3. Composition/Information on Ingredients

3.1 Materials:

Product description: Low Pressure Mercury Vapour Lamp

Compound Name	CAS-No.	EC No.	% by weight	CLP Classification - Reg No.
Quartz (Silica)	60676-86-0	262-373-8	-80	Not applicable
Mercury	7439-97-6	231-106-7	<0.05>	Not applicable

Section 4. First Aid Measures

4.1 Description of first aid measures:

Skin Contact to UV: Perform normal First Aid Procedure for skin burn

Eye Contact to UV: Apply cool pack over closed eye. Seek medical attention as required

Glass Cuts: Perform normal First Aid procedures. Seek medical attention as required

Inhalation of Mercury: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure, give oxygen if difficulty breathing and seek medical attention

Ingestion of Mercury: Gastric lavage with 5% solution of sodium formaldehyde sulfoxylate, followed by 2% NaHO3 and finally leave 250cc of the Sodium formaldehyde sulfoxylate in the stomach

Skin Contact to Mercury: Remove contaminated clothing and thoroughly wash affected area with mild soap and prevent further contact. Seek medical attention

Eye Contact to Mercury: Immediately flush eyes with plenty of water for a duration of at least 15 minutes and seek medical attention

Inhalation of Quartz: If inhaled, remove from area to fresh air. Seek medical attention if respiratory irritation develops or if difficulty breathing

Ingestion of Quartz: No adverse effects anticipated since material is insoluble and non-toxic. No emergency care required

Skin contact to Quartz: Wash with soap and water

Eye Contact to Quartz: Immediately flush eyes with plenty of water for a duration of at least 15 minutes and seek medical attention if irritation persists

4.2Most important symptoms and effects, both acute and delayed: Acute symptoms and effects only occur if lamp breaks and prolonged contact occurs-

Inhalation: Inhalation of a high concentration of mercury vapour can cause almost immediate Dyspnea, cough, fever, nausea and vomiting, diarrhoea, Stomatitis, salivation and metallic taste. Symptoms may resolve or progress to Necrotizing Bronchiolitis, Pneumonitis, Pulmonary Oedema, and Pneumothorax

Ingestion: When ingested, necrosis begins immediately in the mouth, throat, oesophagus, and stomach. Violent pain, profuse vomiting and severe purging may occur. Patient may die within minutes from fluid/ electrolyte losses and peripheral vascular collapse

Skin: May cause redness and irritation, Substance may be absorbed through skin, causing Anuria

Eye: Contact may cause irritation. Solutions are corrosive and may cause corneal injury or burns

4.3 Indication of any immediate medical attention and special treatment needed: Seek medical attention

Section 5. Fire Fighting Measures

5.1 Extinguishing media:

Suitable Extinguishing Media: Use suitable extinguishing media for surrounding material and type of fire

Unsuitable Extinguishing Media: None

5.2Special hazards arising from the substance or mixture: When exposed to high temperature, toxic fumes may be released from broken lamp. Avoid breathing corrosive and poisonous vapours.

5.3 Advice for fire-fighters:

Special protective equipment for fire-fighters: Use self contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamp during fire-fighting activities

Special fire-fighting procedures: Not applicable

5.4 Further information: No data available

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Ventilate area well where breakage has occurred, clean up requires special care due to mercury droplet proliferation. Do not touch spilled material. Isolate hazard area and do not allow access to unnecessary personnel

For emergency responders: Use personal protection recommended in Section 8 of the MSDS

6.2 Environmental precautions: No special environmental precautions required

6.3 Methods and materials for containment and clean up:

- Ventilate area where breakage has occurred
- Sweep up broken glass, place in proper container and dispose of in accordance with applicable regulations
- Stop leak if able to without risk
- For small spills, take up with sand or other absorbent material in the workplace and place into containers for later disposal following applicable regulations. If possible clean up with mercury suction pump or other suitable means to avoid dust and mercury vapour generation

6.4 Reference to other sections: Please refer to Section 8 for further information

Section 7. Handling and Storage

7.1 Precautions for safe handling: No special requirements

7.2 Conditions for safe storage, including any incompatibilities: Store in closed unbreakable containers, in a cool, dry, well ventilated area away from sources of heat. Protect containers from physical damage

7.3 Specific end use(s): For professional and industrial users only

7.4 Further Information: Mercury evaporates very slowly. Spilled mercury forms many tiny globules which evaporate fast and can develop a significant concentration of vapours in an unventilated area. Heated mercury evolves high levels of toxic vapours. Provide periodic medical exams for those regularly exposed to mercury.

Section 8. Exposure Controls/Personal Protection

8.1 Control parameters

Occupational exposure limits - UK EH40 Workplace Exposure Limits (WEL's):

Components	Type	Value
Quartz (Silica)	STEL	None established
	TWA	0.1 mg/m3
Mercury	STEL	0.03 mg/m3
	TWA	0.01 mg/m3

8.2 Exposure controls:

Biological Limit Values: No biological exposure limits noted for the ingredient(s)

Recommended monitoring procedures: Not available

Environmental exposure controls: Use adequate general and local exhaust ventilation to maintain exposure levels

Appropriate engineering controls: None recommended

Personal protective equipment:
Eye/face protection: Safety glasses are recommended for UV protection when lamp is lit. This is also recommended for handling broken lamps
Skin protection: Personnel protective clothing and gloves should be worn to protect skin from broken lamps.
Body protection: Wear appropriate protective clothing
Respiratory protection: Not required for intact lamp. If lamp is broken, wear self-contained breathing apparatus

Section 9. Physical and Chemical Properties

9.1 Physical and Chemical Properties:

Characteristic		Description	
		Quartz (Silica)	**Mercury**
Appearance	**Physical State**	Solid	Liquid metal
	Colour	Colourless	Silver-white
Odour		None	None
Odour Threshold		Not available	Not available
pH (Concentrated product)		Not available	Not available
Melting point/freezing point		1610°C	-38.87°C
Initial boiling point and boiling range		2230°C	356.9°C
Flash point		Not applicable	Not available
Evaporation rate		Not available	1.8 μm at room temperature
Flammability (solid, gas)		Not available	Not available
Flammable Limit - lower		Not applicable	Not available
Flammable Limit - upper		Not applicable	Not available
Vapour pressure		Not available	0.0012mm Hg at 20°C
Vapour density		Not applicable	7.0
Relative density		2.6g/mL at 25°C	Not available
Water solubility		Insoluble	Insoluble
Partition coefficient (n-Octanol/water)		Not available	Not available
Auto-ignition temperature		Not available	Not available
Decomposition temperature		Not available	Not available
Viscosity		Not available	1.526×10–3
Explosive properties		Not applicable	Not available
Oxidizing properties		Not applicable	Not available

9.2 **Other safety information:** No relevant additional information available

Section 10. Stability and Reactivity

10.1 Reactivity: Not available

10.2 Chemical Stability: Stable for intact lamps
Quartz: Stable
Mercury: Stable

10.3 Possibility of hazardous reactions: Not available for intact lamp
Quartz: Not available
Mercury: Hazardous polymerisation does not occur

10.4 Conditions to avoid: None for intact lamps
Quartz: Grinding, sawing, sanding, abrading or otherwise dispersing in air. Fused silica can convert to crystalline silica if held at high temperatures for extended periods of time
Mercury: Thermal decomposition

10.5 Incompatible materials: Intact lamp: Dissolves in hydroflouric acid
Quartz: Hydroflouric acid
Mercury: Violent reaction: acetylenic compounds, ammonia, boron, diiodophosphide, ethylene oxidants (bromine, peroxyformic acid, chlorine dioxide, nitric acid, tetracarbonylnickel, nitromethane, silver prechlorate)

10.6 Hazardous decomposition products: None for intact lamps
Quartz: None known
Mercury: Toxic mercury vapours and mercury oxides

Section 11. Toxicological Information

11.1 Information on toxicological effects:

Product/Component	LD50 Oral	LD50 Inhalation
Quartz (Silica)	Unknown	Unknown
Mercury	Unknown	Rat >2 Hours <27mg/m3

Acute toxicity: Refer to table

Skin corrosion/irritation: No data available

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified for intact lamp
Mercury: Presumed human reproductive toxicant

Information on likely routes of exposure:
Ingestion: None known
Inhalation: Chronic excessive exposure to fused silica dust may produce lung injury. Prolonged exposure
Skin contact: Excessive exposure to UV radiation may result in serious skin burn
Eye contact: Excessive exposure to UV radiation may result in serious eye injury

Signs and symptoms of Exposure: Not available

Mixture versus substance information: Not available

Additional information: Not available for intact lamp
Mercury: Mercury accumulates in almost all tissues, especially in the:, Kidney, Effects due to ingestion may include:, Nausea, Vomiting, Diarrhoea, intestinal bleeding

Section 12. Ecological Information

12.1 **Toxicity:** No toxicity data noted for the ingredient(s) for intact lamp.
Mercury: Toxicity to fish mortality LC50 - Cyprinus carpio (Carp) - 0.160 mg/l - 96h
Quartz: No toxicity data

12.2 **Persistence and degradability:** No data available

12.3 **Bio accumulative potential:** Not available on intact lamp
Mercury: Carassius auratus (goldfish) - 1,789 d - 0.25 µg/l **Quartz:** Not available

12.4 **Mobility in soil:** Not available

12.5 **Results of PBT and vPvB assessment:** Not available

12.6 **Other adverse effects:** Not available for intact lamp
Mercury: Very toxic to aquatic life with long lasting effects.
Quartz: Not available

12.7 **Summary:** The product is not classified as dangerous for the environment. The evaluation of the environmental hazards is based on the concentration limits set out in directive 1999/45/EC

Section 13. Disposal Considerations

13.1 **Waste treatment methods:**

Product - According to Controlled Waste Regulations: (intact low pressure mercury vapour lamp)

19 12 Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) Not otherwise specified

19 12 11 Other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances

Contaminated packaging - According to Controlled Waste Regulations:

15 Waste packaging , absorbents, wiping cloths, filter materials and protective clothing not otherwise specified

15 01 Packaging (Including separately collected municipal packaging waste)

15 01 01 Paper and cardboard packaging

Section 14. Transport Information

14.1 **ADR:** Not regulated as dangerous goods

14.2 **RID:** Not regulated as dangerous goods

14.3 **AND:** Not regulated as dangerous goods

14.4 **IATA:** Not regulated as dangerous goods

14.5 **IMDG:** Not regulated as dangerous goods

14.6 **Special precautions for user:** No data available

Section 15. Regulatory Information

15.1 Safety, health and environment regulations/legislation specific for the substance or mixture: No data available

15.2 Chemical safety assessment: No data available

15.3 Other regulations: This product does not need to be labelled in accordance with EC directives or respective national laws.

Section 16. Other Information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on present state of knowledge and is applicable to the product with regard to appropriate safety precautions. Altus Science Ltd shall not be held liable for any damage resulting from handling or from contact with the above product. Please refer to Terms and Conditions for further information of sale.

Abbreviations and Definitions

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

RID - International Rule for Transport of Dangerous Substances by Railway

ADN - International Carriage of Dangerous Goods by Inland Navigation

IATA - International Air transport Association

IMDG - International Maritime Dangerous Goods Code

WEL - Workplace Exposure Limit

TWA - Time weighted Average

STEL - Short-term Exposure Limit

vPvB - Very persistent, very Bio accumulative

Dyspnea - Shortness of breath

Stomatitis - Inflammation of the mouth and lips

Necrotizing Bronchiolitis - Inflammation of the Bronchioles

Pneumonitis - Inflammation of the lung tissue

Pulmonary Oedema - Fluid accumulation in the lungs

Pneumothorax - Collection of air in the pleural cavity resulting in the collapse of a lung

Anuria - The absence of urine formation