Material Safety Data Sheet for Transportation of Dangerous Goods

Mercury and radio nuclides contained in manufactured articles OSRAM Headlight Lamps XENARC® (D1, D2, D3, D4, D8)

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This document gives information about risks during shipment, it is not a safety instruction for the operation!

The word “lamp” in this document means “OSRAM XENARC® electronic D - lamps.

Description

Mercury:
D1 and D2 Lamps contain a small amount of ca. 0,5 mg mercury. D3-8 lamps are mercury-free.

Radionuclides:
The lamp electrodes within glass bulb are made of thoriated tungsten. The specific activity exceeding 10 Bq/g. The total activity per lamp is referred in table below. Thorium is a naturally occurring radioactive element. Thoriated electrodes cause low dose rates by gamma-radiation. Alpha- and beta-radiation is shielded fully, gamma-radiation is shielded partly by the quartz glass bulb.
In D-lamps a thoriated tungsten electrode can be used to improve ignition and guarantee stability throughout the lifetime of the lamp. Small amounts of radioactive material (see table) are deliberately added as thoriated tungsten to these kinds of lamps for functional reasons. Contamination is not possible. These lamps are manufactured under regulatory control as a consumer product acc. IAEA Basic Safety Standard BSS 115. Radiological consequences for members of the public are insignificant during the entire life cycle of these lamps as demonstrated in several studies e.g. IAEA safety report and far below the natural background radiation: All affected lamps are within IAEA-10µSv-concept.

Dangerous goods classification

DG classification of these lamp types depends on mode of transport and contained material as mentioned above. Due to very small amounts of Mercury and Thorium these lamps normally are below limit values. For details see table.

Type	mercury per lamp in mg	total activity per lamp in Bq	specific activity Bq/g Th	lamps per consignment without declaration (<10.000 Bq)	AWB hint for air shipments (anytime applicable)
D1 & D2	0,5	0,98	71	10 204	use of A69
D3 & D4 standard	0	1,5	71	6666	
D3 & D4 rd	0	0,7	28	14285	
D3 & D4 HBI	0	0,7	28	14285	
D8	0	0,46	28	21739	

Immediate hazards to health

There are no immediate hazards to health by ionizing radiation or mercury as long as lamps are undamaged in original packaging, lamp is a manufactured article in safe package. Inhaling mercury or mercury compounds in vapour or powder form in case of lamp breakage can lead to health problems. Mercury can also be absorbed through the skin.

Risks of fire or explosion

Risk of explosion.
Lamps are made of non-combustible substances.

Immediate precautions to be taken in the event of an accident or incident (D1 and D2 lamps only)

Mercury may be released if the lamp breaks. Following procedure is recommended to avoid health risks:

- Ventilate the room with fresh air.
- Be careful not to cut yourself on shards of glass
- Carefully remove all the bits of the broken lamp by using disposable gloves to avoid contact with the skin.

- Use a mercury spill kit if available, in other cases disposable towel or sticky tape to remove small pieces or dust of mercury.
- Use a vacuum cleaner only if the surface leaves no alternative (carpet). Dispose of the vacuum bag containing the lamp fragments.
- Dispose of both cracked and non-functioning lamps correctly.
- Use gloves for handling unpacked thoriated electrodes, they have to be stored in a secure place
- Thoriated electrodes do not contaminate other material. Thorium causes alpha-, beta- and gamma-rays.
- no measures are needed according to the very low content of Thorium inside the electrodes (< 0,2 mg Th)

Immediate methods for handling fire
Use extinguishing agent suitable for type of surrounding fire.

Initial methods for handling spills or leaks in the absence of a fire
None.
Lamp is a manufactured article in safe package.
No spills or leaks possible without the event of an accident or incident (see above).

Preliminary first aid measures (D1 and D2 lamps only)
Mercury may be released if the lamp breaks and if package is destroyed. Following procedure is recommended to avoid health risks:

All persons should leave the surrounding area at once, in order that no mercury is inhaled.
The area should be ventilated thoroughly (at least 20 minutes).

- Persons in the area should be provided with fresh air.
- Give artificial respiration if person is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and packing materials.
- After skin contact: wash off with plenty of water.
- After eye contact: rinse out with plenty of water for at least 10 minutes with the eyelid held wide open. Immediately call in ophthalmologist.
- Ensure that medical personnel are aware of the mercury and take precautions to protect themselves.

Disposal

Since the lamps contain hazardous substances they have to be disposed of in Europe as hazardous waste under EWC-Code 20 01 21: “Fluorescent tubes and other mercury-containing waste”.
The low level radiation (<1 Bq/g) does not require hazardous waste procedures.

In the EU XENARC® lamps are within the scope of Directive 2000/53/EC - ELV (End of Life Vehicles).

In other countries the relevant national regulations must be obeyed.

Subject to change without notice!