Environmental information on short-arc mercury lamps (HBO®)

- **Product description and operating information**

OSRAM HBO® short-arc lamps are mercury-filled discharge lamps in wattages from 50W to 35000W for dc or ac operation, depending on the type. When the high-wattage lamps are in the cold state, in other words at room temperature (21 °C), the mercury is generally present in the form of small metallic droplets in the discharge vessel (bulb). When the lamp is started, the mercury vaporises as the temperature in the bulb rises and heats up in the arc between the electrodes to around 10,000 °C. The temperature on the inside wall of the bulb is around 800 °C. When thermal equilibrium is reached (which may take from 1 to 10 minutes after the lamp has been switched on, depending on the type of lamp) the mercury vapour exerts a pressure of about 30 to 70 bar on the bulb, depending on the type of lamp.

OSRAM HBO short-arc lamps

Wattage	Mercury (g)
50 W/100 W	max. 0.02
200/250 W	max. 0.46
350/450 W	max. 0.3
500 W	max. 0.45
1000 W	max. 0.95
1500 W	max. 0.41
2000/2500 W	max. 6.6
3500/4500 W	max. 14.8
5000/6500 W	max. 15
8000/16000 W	max. 36.4
≤35000 W	Max. 81.2

As with all short-arc lamps, material is lost from the tips of the electrodes in HBO® lamps during normal operation. This not only causes the bulb to blacken but also increases the gap between the electrodes and therefore increases the lamp voltage. To avoid overload operation, dc operated HBO® lamps may only be used with constant output control gear (mains rectifiers); ac operated HBO® lamps may only be used with suitable reactors.
In HBO 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 (Th-232 < 1000 Bq per lamp) are deliberately added as thoriated tungsten to these kinds of lamps for functional reasons. Contamination is not possible.

- **Environmental Impact**

When used and disposed of as intended, lamps do not present any risk to health or the environment. The only time you as a consumer may be exposed to mercury is if the glass of the lamp is cracked or broken. If this happens, the released quantity of mercury is very small and does not pose an acute risk to health, but the broken lamp should still be cleaned up as described below. For more information see: www.osram.com/mercury
These lamps are manufactured under regulatory control as a consumer product acc. to IAEA Basic Safety Standard BSS 115. Radiological consequences (radiation exposure) 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.

- **Legal requirements (EU)**

In the EU and several other countries, HBO® family have to fulfil the requirements of EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment – RoHS. See www.osram.com/ile
Information on Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (aka "REACH") see www.osram.com/reach.

- **Health risks**

Inhaling mercury or mercury compounds in vapour or powder form can lead to health problems. Mercury can also be absorbed through the skin.

- **Protection against lamp breakages**

In case of destruction of the outer bulb lamp must be switched off
To avoid health risks we recommend the following procedure in the event of break of the burner:

- If the lamp was broken in a luminaire, make sure to disconnect the power to avoid the risk of electric shock.
- In the immediate vicinity leave the room to avoid inhaling mercury vapour.
- The room should be carefully ventilated not less than 15 minutes.
- Remove all fragments carefully Once the luminaire has cooled down and certainly before it is used again, all residual mercury must be thoroughly removed from the inside of the luminaire. To avoid contact with the skin, we recommend the use of disposable gloves. Liquid mercury can be removing also with commercially available adsorbents (activated charcoal).
- The breakage must be forwarded to a specialist company for disposal.

- **Disposal of used metal halide lamps**

Since metal-halide lamps contain noxious substances (particularly mercury) they have to be disposed of in Europe as special waste under:

EWC Code 20 01 21* "Fluorescent tubes and other mercury-containing waste"

Metal-halide lamps are affected in EU by the scope of WEEE and can be disposed free of charge from private households and small consumers at all communal disposal facilities. More information under: www.osram.com/weee and your national OSRAM partner..

Disposal of Th-232-containing lamps according to national regulations e.g. in Europe is covered by WEEE regulations. In other countries the relevant national regulations must be followed

- **OSRAM contact address**

If you need further information please contact your OSRAM sales partner or Environmental Health and Safety in Munich:

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Subject to change without notice