

SAFETY AND HAZARD INFORMATION

for UV medium pressure mercury vapor lamps

Due to their function, UV medium pressure lamps contain small amounts of mercury, which is classified as a hazardous substance (CAS number 7439-97-6). In the case of doped lamps, doping substances such as iron iodide, gallium iodide, indium iodide and lead iodide are also used in very small quantities. If the lamps are intact, these substances are trapped in the lamp and contact is therefore not possible.

UV medium pressure lamps do not pose any risk if they are used as intended in safety-related UV systems and if the applicable health and safety regulations are observed. No hazardous substances are emitted during operation either.

If the lamp body breaks, there is a risk of mercury being released.

The following explains what dangers can occur and how you can protect yourself from them.

Treatment of medium pressure lamps

Storage and transportation

UV medium pressure lamps are to be treated with care. Its lamp body is made of quartz glass and can break. In this case there is a risk that mercury will be released.

UV medium pressure lamps are delivered in packaging that can withstand the stresses to be expected during transport. Please check the packaging for visible damage upon delivery. In order to secure claims for compensation, damages must be reported to us immediately and noted on the delivery documents of the transport company.

We recommend storing the lamps in the delivery packaging and transporting them on. The packaging should be kept in order to receive the used lamp again.

Maintenance

Wear gloves when working with the lamps. Fingerprints (skin fat) burn in and impair the function of the lamps. UV medium pressure lamps can be cleaned with alcohol and soft cloths made of paper or fabric.

Installation

When installing, make sure to handle the lamp with care. There is a risk of the lamp breaking with the release of mercury.

The lamp's quartz glass has a very low coefficient of expansion. In contrast, metal parts of the fastening and housings have a high coefficient of expansion. The lamp must not be exposed to any mechanical stresses. As a rule, at least one fastening point of the lamp must therefore be designed as a floating bearing.

Operation of medium pressure lamps

Danger from electrical voltages



Danger to life

UV medium pressure lamps are mostly ignited with high voltage. High voltages and currents also occur during operation.

Applicable standards for the safety and electrical equipment of machines (e.g. EN 60204) as well as safety regulations must be observed. Due to the high voltage that occurs, when installing lamps, particular care must be taken to ensure that the required creepage and clearance distances to touchable metal parts are maintained on the lamp, its base area and its cabling. All accessible metal parts of the system must be safely grounded. The cables used must be adapted to the operating data of the lamp and the operating conditions.

Before working on the UV medium pressure lamps or their ballasts, e.g. when changing the lamp, the main switch and the main contactor must be switched off to avoid the risk of electric shock. UV medium pressure lamps may only be installed by qualified personnel.

Before commissioning, make sure that the operating instructions for the devices and systems have been read and understood. UV systems may only be operated by qualified personnel. Safety devices and cabling must be checked regularly.

Radiation hazard



Health hazard

UV medium pressure lamps emit strong optical radiation when in operation.

180 – 400 nm	not visible UV radiation
400 – 800 nm	visible light/radiation
> 800 nm	infrared radiation (heat)

UV lamps may only be used in the systems intended for this purpose. These ensure protection against dangerous radiation.

If there is a risk of exposure, skin and eyes must be protected from direct and indirect radiation.

Ozone hazard



Health hazard

Emitted UV radiation below 200 nm generates ozone from the atmospheric oxygen in the environment. Ozone is an invisible gas and is heavier than air. If there is poor ventilation, there is a risk that it will collect near the ground. The odor threshold is 0.02 ml/m³ (ppm). After a short time, however, the odor receptors are numbed so that it is no longer noticeable. Ozone irritates the mucous membranes and is carcinogenic (category 3B).

Suitable ventilation must be used to ensure that the MAK value in work rooms is not exceeded. If the ventilation fails, systems with UV medium pressure lamps may generally no longer be operated.

Heat hazard



Health hazard

UV medium pressure lamps reach surface temperatures of 700 up to 950°C when operated properly. If the cooling is insufficient or if it fails, the lamps can overheat. If the temperature reaches the softening point of the quartz jacket of the lamp, the lamp body is deformed until it breaks or explodes. If the lamp comes into contact with liquid media, that are irradiated or that are used to cool the lamps, due to leaks, the lamp can be shock-cooled, which can lead to the lamp breaking.

To avoid burns when replacing the lamp, medium-pressure UV lamps and their housings must cool down for a long enough time after they have been switched off. Gloves as protection are recommended.

Deformed lamps must no longer be operated.

If there are errors in the cooling of the lamp, the system must no longer be operated.

Disposal of medium pressure lamps

UV medium pressure lamps should be repackaged in their original packaging at the end of their service life. It must be ensured that these lamps are disposed of properly. Disposal may only be carried out by an approved disposal company.

Behavior if the lamps break

UV medium pressure lamps usually only contain a few hundred milligrams of mercury. In single cases, special lamps can contain a little more than 1g. In the event of a lamp breaking, appropriate measures should be taken to contain the release of mercury into the environment and to avoid inhalation of mercury vapors.

Follow these rules:

- Make sure that the contaminated rooms are well ventilated!
- Keep uninvolved persons away from cleaning!
- Avoid direct contact with eyes, skin and clothing during disposal!
- If accidental contact occurs, wash your hands and change clothes!
- Residual amounts of mercury can, if necessary, be absorbed with special absorbent material or mercury suction devices. Do not use normal vacuum cleaners!
- Seal residues contaminated with mercury in airtight containers (shrink-wrap if necessary)!
- Take all leftovers to a professional disposal!
- Disposal may only be carried out by an approved waste disposal company!

Shipping of medium pressure lamps

UV medium pressure lamps are not subject to any transport regulations for dangerous goods when shipping by land and sea. When shipping by air freight, the rules of IATA / ICAO must be observed.

IATA / ICAO:

Medium-pressure UV lamps are not subject to any transport regulations for dangerous goods by air if they do not contain more than 1 g of mercury per lamp and 30 g of mercury per package is not exceeded.

Medium-pressure UV lamps that contain more than 1 g of mercury per lamp are subject to transport regulations for dangerous goods in air freight. The IATA special regulations A48, A69 and A191 apply here. Such lamps are marked in our delivery papers and in the data sheet as dangerous goods according to IATA / ICAO.

UN number:

3506

UN proper shipping name:

Contains mercury in manufactured items

Transport hazard class:

8 (6.1)

Packing group:

III (substances with low risk)

The following leaflet summarizes the hazards and can be used as a notice.

Hazards when working with UV medium pressure lamps



DANGER! - DANGEROUS ELECTRICAL VOLTAGE!

Warning: Danger to life

Before working on the UV medium pressure lamps or their ballasts, e.g. when changing the lamp, the main switch and the main contactor must be switched off to avoid the risk of electric shock.



WARNING! – STRONG OPTICAL RADIATION!

Warning: health hazard

UV radiation, direct or indirect, is harmful to health! When working on the UV medium pressure lamps, these must be switched off. If this is not possible, the eyes and skin must be protected from impermissibly high doses of radiation using suitable means.



WARNING! - OZONE!

Warning: health hazard

UV medium pressure lamps can form ozone during operation. Ozone is a poisonous gas that is heavier than air. Ozone is harmful to health! Inadmissible ozone concentrations are to be avoided. If necessary, sufficient ventilation is required.



ATTENTION! - DANGER OF CUTS!

Warning: health hazard

UV medium pressure lamps can break. Suitable cut protection gloves must be worn during assembly and when removing broken glass.



ATTENTION! - HOT SURFACE!

Warning: health hazard

UV medium pressure lamps get very hot during operation (700-900°C). To avoid burns, UV medium pressure lamps and their housing, e.g. When replacing the lamp, cool down for a long enough time after switching off.



ATTENTION! - MERCURY!

Warning: health hazard

The mercury contained in UV medium pressure lamps can be released if the lamp breaks. Mercury is harmful to health! Impurities must be removed immediately and there is sufficient ventilation.



NOTE

Please wear gloves when working on UV medium pressure lamps. Fingerprints (skin fat) can burn in and impair the function of the lamps.

Please dispose of lamps and packaging material in an environmentally friendly manner.