Metal halide lamps are generally used for high-resolution film exposures and in photo-polymerisation processes. Such processes are, for example, the exposure of diazo materials, microfilms, offset plates and screen coatings but also the exposure of coating films and photo-resistant materials in the production of circuit boards.

MH lamps are mercury lamps which have been adjusted to the spectral sensitivity of photo materials by adding metal halides. For the equipment available on the market the following three ranges are mainly used:

- Z1 for microfilm
- Z4 for coating film
- Z11 for other applications

The quality of MH lamps is seen in a long service life, short exposure times, small variations in exposure time during the life of the lamp, and reliable ignition. A quartz material is used for the lamps which absorbs UV radiation and prevents the formation of ozone.

During operation, the lamps are cooled by air. After switch-off, MH lamps should be allowed to cool down for a moment before they are switched on again. For a cold lamp the warm-up time to full performance is 2 to 3 minutes. A run-up from half-load mode, however, is possible in only a few seconds.

Heraeus supplies lamps for all reprographic equipment available on the market with a power range of 400 to 8000 W. Lamps will be developed to customer’s requirements on special request.

For your safety: UV-C and UV-B radiation harms skin and eyes, therefore avoid exposure to direct radiation.

Heraeus Noblelight GmbH
<table>
<thead>
<tr>
<th>Power W</th>
<th>Operating Voltage V</th>
<th>Current A</th>
<th>Total length mm</th>
<th>Arc length mm</th>
<th>Base</th>
<th>Spectrum</th>
<th>Type</th>
<th>Ident-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>120</td>
<td>10</td>
<td>131</td>
<td>29</td>
<td>1</td>
<td>Z1</td>
<td>RQ 1148 Z1 KC</td>
<td>56070407</td>
</tr>
<tr>
<td>1000</td>
<td>120</td>
<td>10</td>
<td>131</td>
<td>29</td>
<td>1</td>
<td>Z4</td>
<td>RQ 1148 Z4 KC</td>
<td>56089575</td>
</tr>
<tr>
<td>1000</td>
<td>120</td>
<td>11</td>
<td>130</td>
<td>29</td>
<td>2</td>
<td>Z1</td>
<td>RQ 1154 Z1 KC</td>
<td>45002205</td>
</tr>
<tr>
<td>1000</td>
<td>120</td>
<td>11</td>
<td>130</td>
<td>29</td>
<td>2</td>
<td>Z4</td>
<td>RQ 1154 Z4 KC</td>
<td>45002206</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>11</td>
<td>134</td>
<td>49</td>
<td>3</td>
<td>Z1</td>
<td>RQ 2128 Z1 KC</td>
<td>45002002</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>11</td>
<td>133</td>
<td>50</td>
<td>3</td>
<td>Z4</td>
<td>RQ 2128 Z4 KC</td>
<td>56068992</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>11</td>
<td>130</td>
<td>49</td>
<td>10</td>
<td>Z1</td>
<td>RQ 2120 Z1 KC</td>
<td>45002207</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>11</td>
<td>130</td>
<td>50</td>
<td>10</td>
<td>Z4</td>
<td>RQ 2120 Z4 KC</td>
<td>45002208</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>9</td>
<td>187</td>
<td>106</td>
<td>4</td>
<td>Z4</td>
<td>Q 2123 Z4</td>
<td>56001358</td>
</tr>
<tr>
<td>2000</td>
<td>220</td>
<td>9</td>
<td>187</td>
<td>106</td>
<td>5</td>
<td>Z1</td>
<td>Q 2123 Z1</td>
<td>56001321</td>
</tr>
<tr>
<td>2000</td>
<td>250</td>
<td>10</td>
<td>187</td>
<td>108</td>
<td>5</td>
<td>Z4</td>
<td>Q 2131 Z4</td>
<td>56066463</td>
</tr>
<tr>
<td>2000</td>
<td>240</td>
<td>9</td>
<td>215</td>
<td>128</td>
<td>4</td>
<td>Z1</td>
<td>Q 2137 Z1</td>
<td>56001319</td>
</tr>
<tr>
<td>2000</td>
<td>250</td>
<td>10</td>
<td>187</td>
<td>108</td>
<td>4</td>
<td>Z1</td>
<td>Q 2231 Z1</td>
<td>56069369</td>
</tr>
<tr>
<td>3000</td>
<td>400</td>
<td>9</td>
<td>190</td>
<td>102</td>
<td>6</td>
<td>Z1</td>
<td>RQ 3148 Z1 KC</td>
<td>45002280</td>
</tr>
<tr>
<td>3000</td>
<td>400</td>
<td>9</td>
<td>192</td>
<td>102</td>
<td>6</td>
<td>Z4</td>
<td>RQ 3148 Z4 KC</td>
<td>45002281</td>
</tr>
<tr>
<td>3000</td>
<td>400</td>
<td>9</td>
<td>190</td>
<td>102</td>
<td>7</td>
<td>Z1</td>
<td>RQ 3147 Z1 KC</td>
<td>45002209</td>
</tr>
<tr>
<td>3000</td>
<td>400</td>
<td>9</td>
<td>190</td>
<td>102</td>
<td>7</td>
<td>Z4</td>
<td>RQ 3147 Z4 KC</td>
<td>45002210</td>
</tr>
<tr>
<td>4000</td>
<td>410</td>
<td>11</td>
<td>190</td>
<td>104</td>
<td>6</td>
<td>Z1</td>
<td>RQ 4128 Z1 KC</td>
<td>45000799</td>
</tr>
<tr>
<td>4000</td>
<td>410</td>
<td>11</td>
<td>190</td>
<td>104</td>
<td>6</td>
<td>Z4</td>
<td>RQ 4128 Z4 KC</td>
<td>56070313</td>
</tr>
<tr>
<td>4000</td>
<td>410</td>
<td>11</td>
<td>190</td>
<td>104</td>
<td>10</td>
<td>Z1</td>
<td>RQ 4129 Z1 KC</td>
<td>45002211</td>
</tr>
<tr>
<td>4000</td>
<td>410</td>
<td>11</td>
<td>185</td>
<td>104</td>
<td>10</td>
<td>Z4</td>
<td>RQ 4129 Z4 KC</td>
<td>45002212</td>
</tr>
<tr>
<td>4000</td>
<td>300</td>
<td>15</td>
<td>200</td>
<td>112</td>
<td>6</td>
<td>Z1</td>
<td>Q 4137 Z1</td>
<td>56001247</td>
</tr>
<tr>
<td>4000</td>
<td>280</td>
<td>16</td>
<td>190</td>
<td>104</td>
<td>6</td>
<td>Z1</td>
<td>Q 5127 Z1</td>
<td>55006626</td>
</tr>
<tr>
<td>3500</td>
<td>260</td>
<td>14</td>
<td>230</td>
<td>104</td>
<td>8</td>
<td>Z1</td>
<td>Q 5527 Z1</td>
<td>56001209</td>
</tr>
<tr>
<td>3400</td>
<td>260</td>
<td>14</td>
<td>230</td>
<td>104</td>
<td>8</td>
<td>Z4</td>
<td>Q 5528 Z4</td>
<td>56069684</td>
</tr>
<tr>
<td>4000</td>
<td>220</td>
<td>20</td>
<td>281</td>
<td>173</td>
<td>9</td>
<td>Z1</td>
<td>Q 5846 Z1</td>
<td>56001246</td>
</tr>
<tr>
<td>4000</td>
<td>240</td>
<td>18</td>
<td>281</td>
<td>184</td>
<td>9</td>
<td>Z1</td>
<td>Q 5846 Z1</td>
<td>56001348</td>
</tr>
<tr>
<td>5000</td>
<td>400</td>
<td>14</td>
<td>248</td>
<td>160</td>
<td>6</td>
<td>Z1</td>
<td>RQ 6138 Z1 KC</td>
<td>45000802</td>
</tr>
<tr>
<td>5000</td>
<td>400</td>
<td>14</td>
<td>248</td>
<td>160</td>
<td>6</td>
<td>Z4</td>
<td>RQ 6138 Z4 KC</td>
<td>45007022</td>
</tr>
<tr>
<td>5000</td>
<td>400</td>
<td>14</td>
<td>244</td>
<td>160</td>
<td>10</td>
<td>Z1</td>
<td>RQ 6139 Z1 KC</td>
<td>45002213</td>
</tr>
<tr>
<td>5000</td>
<td>400</td>
<td>14</td>
<td>242</td>
<td>159</td>
<td>10</td>
<td>Z4</td>
<td>RQ 6139 Z4 KC</td>
<td>45002214</td>
</tr>
</tbody>
</table>

Bases for all reprographic equipment available on the market

Lamps with different power ranges

Heraeus Noblelight
P.O.Box 15 63
D-63405 Hanau
Germany
Phone +49 (6181) 350 0
Telefax +49 (6181) 350 29
E-Mail: hng_ultraviolett@heraeus.com

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Absorption measurements and fluorimetric measurements require single monochromatic lines with high radiation density. Mercury low pressure lamps emit a single monochromatic line at 253.7 nm which is well reproducible and stable.

**Heraeus NK Lamps are Stabilised**

Heraeus lamps of the NK-Series are low-pressure mercury lamps. They are stabilised by the geometric form of the discharge tube and by a cover bulb which reduces influences of ambient fluctuations.

**Applications**

NK lamps are used in photometers, polarimeters, fluorimeters, refractometers and densitometers as well as in mercury gas detection equipment. Additionally they are used for wavelength calibration of optical measuring instruments and for disinfection.

**No Ozone Production**

NK lamps are equipped with a quartz material that absorbs the 185 nm line produced in the low-pressure gas discharge. Therefore the NK lamps do not produce any ozone.

**The 185 nm Line**

On request, the lamp bulb can be manufactured of synthetic quartz glass (SUPRASIL) allowing the emission of the mercury line at 185 nm and production of ozone from the ambient oxygen. These NK lamps are applied for disinfection, ionisation and for the production of ultrapure water by decomposition of organic compounds.

**Lifetime**

The guaranteed operating life for all lamp types is 2000 hours with a reduction of the output of maximal 50%. A normal useful operating life can be between 4000 and 6000 hours. The lamp should be operated at ambient temperatures.
**Technical Data**

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>NK 2/1</th>
<th>NK 4/1</th>
<th>NK 4/4</th>
<th>NK 6/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>56001012</td>
<td>56001013</td>
<td>56001636</td>
<td>56001781</td>
</tr>
<tr>
<td>Total length [mm]</td>
<td>85</td>
<td>140</td>
<td>116</td>
<td>125</td>
</tr>
<tr>
<td>Outer bulb [mm]</td>
<td>21.3</td>
<td>21.3</td>
<td>without</td>
<td>without</td>
</tr>
<tr>
<td>Discharge tube outer [mm]</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>8.5</td>
</tr>
<tr>
<td>Arc length [mm]</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>Base</td>
<td>Noval EF 80</td>
<td>Noval EF 80</td>
<td>without</td>
<td>metal tube 12 x 60 mm</td>
</tr>
<tr>
<td>Lead length [mm]</td>
<td>without lead</td>
<td>without lead</td>
<td>200</td>
<td>800 with connecting plug</td>
</tr>
<tr>
<td>Supply voltage [V]</td>
<td>900= or 600~</td>
<td>900= or 1000~</td>
<td>900= or 1000~</td>
<td>1000~</td>
</tr>
<tr>
<td>Wattage [W]</td>
<td>2</td>
<td>3.5</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>Lamp voltage [V]</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>300</td>
</tr>
<tr>
<td>Lamp current [A]</td>
<td>0.015</td>
<td>0.02</td>
<td>0.02</td>
<td>0.025</td>
</tr>
<tr>
<td>Factor for calculating the radiation flux* [mW]</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Radiation flux at 253.7 nm [mW]</td>
<td>200</td>
<td>500</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Radiance at 253.7 nm [mW cm⁻² sr⁻¹]</td>
<td>6.5</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

*example: factor x intensity (table below) 2 x 100 = 200 mW

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>248</td>
<td>0.1</td>
</tr>
<tr>
<td>253.7</td>
<td>100.0</td>
</tr>
<tr>
<td>265</td>
<td>0.1</td>
</tr>
<tr>
<td>276</td>
<td>0.1</td>
</tr>
<tr>
<td>280</td>
<td>0.1</td>
</tr>
<tr>
<td>289</td>
<td>0.9</td>
</tr>
<tr>
<td>297</td>
<td>0.6</td>
</tr>
<tr>
<td>302</td>
<td>0.4</td>
</tr>
<tr>
<td>313</td>
<td>2.8</td>
</tr>
<tr>
<td>334</td>
<td>0.1</td>
</tr>
<tr>
<td>366</td>
<td>2.2</td>
</tr>
<tr>
<td>405/408</td>
<td>1.6</td>
</tr>
<tr>
<td>436</td>
<td>1.1</td>
</tr>
<tr>
<td>546</td>
<td>1.6</td>
</tr>
<tr>
<td>577/579</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Electronic circuit for the NK lamp**

1. Mains = 220 Vac – 2 Transformer – 3 Diode 1N 4007 – 4 Choke ND 30, 15 Hy 30 mA/1000 Ω – 5 R = 25 kΩ/26 W for NK 4/1 – 6 U = 900 Vac – 7 C = 1µF/3kV – 8 U = 650 Vac – 9 Mains = 220 Vac – 10 Scatterfield transformer – 11 U ac – according to the lamp

**Safety Warning:**

UV radiation causes damage to skin and eyes. Wear protective glasses, gloves and clothing.

---

**Click below to order**

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Light is Life
LAMPS FOR ANALYTICAL

Heraeus Noblelight GmbH

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Heraeus has contributed significant chapters to the history of gas discharge lamps.

In 1906 physicist Richard Küch succeeded in smelting a highly pure quartz glass from selected mountain crystal. From this material, he developed a quartz lamp with a high UV output, thus creating the basis for the use of UV radiation in industry and research, life science and environmental applications.
Today, Heraeus Noblelight is the specialist for UV technology within the Heraeus Group.

The wide variety of potential applications sets the standards for the development of new UV lamps. Close cooperation both with researchers in university laboratories and industrial development engineers is the basis of our working.

These cooperative efforts, combined with the know-how and the many years experience of our employees, result in continuous product improvement and completely new lamp technologies.

Heraeus was among the pioneers of deuterium lamp development. The importance of this light source for applications in absorption spectroscopy is based on three of its characteristics:

- Continuous spectrum from far ultraviolet to beyond visible light
- The spherical gas discharge area forms a nearly point-shaped light source
- High output stability.

Demands for constant improvements in the resolution and reproducibility of the measurements obtained with spectrophotometers and HPLC equipment were the pacemakers that stimulated the development of deuterium lamps into high-precision UV light-sources.

High radiance, low noise levels, stable light output, shine through design for visible light sources, highly reproducible alignment and long useful life are the features of the latest types of this unique lamp.

A new technology – excimer UV lamp
Deuterium lamps are custom developed for use in specific instruments.

The objective is to develop an optimally adapted UV-radiation source for high-resolution devices providing for high reproducibility levels in the measurement data obtained.

Important deuterium lamp characteristics are:

- The spectral range between 200 and 400 nm. The spectrum is influenced by the bulb material. Basically, quartz has better transmission characteristics than glass.

High-quality quartz such as Suprasil, facilitates transmission of shorter wavelengths and maximum possible light output levels. For longer wavelengths light from a halogen lamp is added to the UV-radiation. A shine-through lamp offers the best optical properties for UV-vis detectors.

- Radiance is determined by the form of the gas discharge and the size of the aperture. High radiance combined with a small aperture (0.5 mm) is advantageous for measurements in small cells.

- The light intensity noise (in the order of 10^{-5}) in relation to the measuring signal determines the detection limit of an instrument.

High light intensity at low noise level is required. Heraeus achieves this combination using quartz material with a high transmission level and a thin built-in filter disc that cuts off wavelengths below 200 nm. This system reaches a high light intensity level, ozone noise is cut out almost entirely and lamp life is increased considerably.

Heraeus has patented this special lamp concept. *

- The useful life of a lamp ends when intensity falls to 50 % of the initial level - which takes 1,500 to 2,000 hours. The lamp should be replaced after this operating time to ensure correct instrument function.

- Factory lamp prealignments are determined in cooperation with the instrument manufacturers. Precise lamp adjustments ensure that the point light source will be in exactly the same position when a lamp is replaced.

- Newly developed lamps are tested exhaustively for function, stability, noise behaviour, drift and useful life.

The final product of this process is an exclusive Heraeus Noblelight deuterium lamp, individually designed for a specific instrument and sold by the instrument manufacturer.

Close cooperation between instrument manufacturers and Heraeus also means advantages for dealers: Deuterium lamps to which the manufacturer does not claim exclusive rights of sale are sold via trade outlets.

Quality is integrated in all Heraeus processes. The basis for such a claim includes qualified employees, high-grade manufacturing equipment and, not least, a measurement laboratory that is one of the best-equipped UV laboratories in Europe.

In this laboratory the spectra, radiant flux, radiance and useful life characteristics of every production batch are measured, evaluated and stored systematically.

The entire quality control process is secured and double-checked by the DIN/ISO 9001 quality management system.
*Patent no. EP 290 669, and US 4.910.431*
At the end of 1994 I was given the Chair in Applied Zoology and Ecology of animals at the Zoological Institute of the Free University of Berlin. Our work concentrates on the chemical ecology of herbivorous insects. One of the methods we use is HPLC for the isolation of highly pure natural substances from plants and insects. For these reasons, both the quality and optimized application of our equipment is important. The output and functionality of the deuterium lamps in the HPLC detector is a decisive factor in this context.

Prof. Dr. rer. nat. Monika Hilker, FU Berlin

The heart of the UV detector - the deuterium lamp.

<table>
<thead>
<tr>
<th>Lamp quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp intensity</td>
</tr>
<tr>
<td>(radiant flux, radiance)</td>
</tr>
<tr>
<td>Stability of lamp intensity,</td>
</tr>
<tr>
<td>baseline drift</td>
</tr>
<tr>
<td>Noise, lamp-caused noise,</td>
</tr>
<tr>
<td>ozone noise</td>
</tr>
<tr>
<td>Useful life - drop in lamp</td>
</tr>
<tr>
<td>intensity to 50%</td>
</tr>
<tr>
<td>Precision of prealignments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spectrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtering out of wavelengths</td>
</tr>
<tr>
<td>below 200 nm (series DO 200)</td>
</tr>
<tr>
<td>Radiation characteristics,</td>
</tr>
<tr>
<td>aperture angle of radiation</td>
</tr>
<tr>
<td>and intensity distribution</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical data</th>
</tr>
</thead>
<tbody>
<tr>
<td>even small deviations</td>
</tr>
<tr>
<td>of voltage and current</td>
</tr>
<tr>
<td>influence the stability,</td>
</tr>
<tr>
<td>noise production and useful</td>
</tr>
<tr>
<td>life of the lamp</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aperture diameter</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bulb material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heraeus uses only high-grade</td>
</tr>
<tr>
<td>quartz glass</td>
</tr>
</tbody>
</table>
precisely to instrument optics, measuring cell, monochromator and detector. The prealignment provides for precision positioning of the point light source. The electronic evaluation allows for the lamp's drift and signal-to-noise ratio.

The quality of replacement lamps determines, over the longer term, the quality and reproducibility of the measurement data and the reliability of the instrument. The following table lists the influences of lamp characteristics and quality on instrument function:

<table>
<thead>
<tr>
<th>Instrument function</th>
<th>Determines peak resolution and detection limits (signal-to-noise ratio)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influences quantitative evaluation of measurement data</td>
<td>Influeces the lower detection limit, low substances concentration are not detected</td>
</tr>
<tr>
<td>Influences operating costs and, if used beyond 50% drop, measurement results</td>
<td>The position of the point light source on the optical axis influences light intensity within the system and thus the detection limits. Errors result in increased drift. Straylight effects, especially with shine-through lamps, not properly aligned may cause additional errors. An important point for customer lamp replacement.</td>
</tr>
<tr>
<td>Influences instrument measurement range and signal resolution</td>
<td>Prevents ozone noise and improves detection limits</td>
</tr>
</tbody>
</table>

The optical design of an equipment is adapted to the radiation characteristics of a certain lamp. Any deviation has a negative effect on instrument specifications.

Considerable negative effects on instrument specifications

Deviations in radiance and radiation characteristics influence peak resolution and detection limit

Influences spectral range and intensity and therefore detection limit and resolution

Merck-Hitachi HPLC equipment has been in production for over 10 years now. Our systems are in use all over the world and our customers know they can trust our quality and reliability. The different UV detectors we make are fitted with high-grade longlife deuterium lamps and meet the highest quality standards. The deuterium lamp, the heart of the detector, supports our guarantee to customers of reliable analytical results.

Dr. Hans-Peter Kabus, Merck KGaA, Darmstadt
LAMPS THAT FIT WHERE YOU NEED THEM

Prealigned deuterium lamps and power supplies – replacement lamps for spectrophotometers and HPLC equipment

Beckman Spectrophotometer
DU 650/7000
DS 246/05 J

Gilson HPLC
DS 222 J

Shimadzu HPLC Detector
SPD-10A
DS 250/05 J

BIO-TEC Kontron HPLC
440 DAD
Waters HPLC
990, 991, 994 DAD
DO 652/05 TJ

Merck Hitachi HPLC and Spectrophotometer
DO 651 MJ

Shimadzu Spectrophotometer
DO 405 J

Spectra Physics HPLC
Linear Detector
DS 248 TJ

Waters HPLC
486
DS 210/05 RTJ

Waters HPLC
996
DS 247/05 TJ

Fluorescence spectroscopy and laboratory applications
Deuterium Lamp D 200 F (200 Watt)

Power supply for all 30 W Deuterium lamps
PSD 181

OEM Power supply for all 30 W Deuterium lamps
PSD 182

OEM Power supply for all 30 W Deuterium lamps
PSD 183

Products as supplied may differ from the illustrations and descriptions in this brochure. Printed in Germany · HNG - B 143 E · D 2C 02.99/M+T

Heraeus Noblelight GmbH
P.O.Box 15 63
D-63405 Hanau
Germany
Phone +49 (6181) 35-50 86
Telefax +49 (6181) 35-797
E-Mail: hng-analyticalamps@heraeus.com
Internet: www.heraeus-noblelight.com

Heraeus Noblelight Ltd.
P.O.Box 15 63
D-63405 Hanau
Germany
Phone +49 (6181) 35-50 86
Telefax +49 (6181) 35-797
E-Mail: hng-analyticalamps@heraeus.com
Internet: www.heraeus-noblelight.com

Heraeus Noblelight Inc.
2150 Northmont Parkway
Duluth, GA 30096
REG. NO. 39254
USA
Phone (770) 418 0707
Telefax (770) 418 0688
E-Mail: info@noblelight.net
Internet: www.noblelight.net

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Absorption and reflection measurements in photometers are mostly performed at fixed wavelengths. For this purpose Mercury medium pressure lamps offer several advantages. The spectrum shows narrow lines in the UV as well as in the visible range. For quasi-monochromatic measurements the spectrum can be limited to one line with just a simple filter technique. Furthermore the single lines have a high irradiance and high-resolution measurements can be performed with conventional techniques.

**Stabilised Lamps for Analytical Equipment**

Heraeus Mercury lamps of the St-Series are stabilised medium pressure lamps especially developed for analytical applications. They are used in photometers, polarimeters, fluorimeters and other equipment. The emission lines have narrow bands, virtually monochromatic spectrum at constant, well reproducible wavelengths. Consequently, they are particularly suitable for absorption measurements.

**Stable Output**

St-Series lamps are stabilised by the geometry of the gas discharge resulting in an accurate position of the arc. As a result the noise is very low — in the order of 0.1%. The most favourable values of drift and noise are achieved when only the middle part of the light arc is used as the light source.

The guaranteed operating life for all St-Lamp types is 1000 hours with a reduction of the output of maximal 50%. A normal useful operating life can be between 2000 to 4000 hours.

**Lamps of Small Design**

Q-Series lamps are mercury medium pressure lamps designed for small size and are used for reading devices and monitoring equipment. All lamps are used as light sources for UV and visible light.
### Technical Data

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>St 30</th>
<th>St 40/1</th>
<th>St 41</th>
<th>St 43/1-A</th>
<th>St 46</th>
<th>St 49/1</th>
<th>St 60</th>
<th>St 75</th>
<th>Q 25 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>56001161</td>
<td>56001135</td>
<td>56001167</td>
<td>56001128</td>
<td>56001333</td>
<td>45000124</td>
<td>56001330</td>
<td>56001171</td>
<td>56001148</td>
</tr>
<tr>
<td>Total length</td>
<td>90</td>
<td>120</td>
<td>120</td>
<td>90</td>
<td>90</td>
<td>136</td>
<td>90</td>
<td>120</td>
<td>45</td>
</tr>
<tr>
<td>Light centre</td>
<td>43.5 ± 0.5</td>
<td>51.0 ± 0.5</td>
<td>51 ± 0.5</td>
<td>43.5 ± 0.5</td>
<td>43.5 ± 0.5</td>
<td>85 ± 3</td>
<td>43.5 ± 0.5</td>
<td>51 ± 0.5 (22.5) in the middle</td>
<td></td>
</tr>
<tr>
<td>Arc length</td>
<td>18</td>
<td>25</td>
<td>11.5</td>
<td>25</td>
<td>11.5</td>
<td>25</td>
<td>25</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Outer bulb ⌀</td>
<td>19</td>
<td>without</td>
<td>without</td>
<td>19</td>
<td>19</td>
<td>22</td>
<td>19</td>
<td>without</td>
<td>without</td>
</tr>
<tr>
<td>Base</td>
<td>Noval EF 80 Cone 1:12</td>
<td>Bayonet catch Ba 20 d</td>
<td>Bayonet catch Ba 20 d</td>
<td>Noval EF 80 Cone 1:12</td>
<td>Noval EF 80 Cone 1:12</td>
<td>E 27</td>
<td>Noval EF 80 Cone 1:12</td>
<td>Bayonet catch Brass hood</td>
<td></td>
</tr>
<tr>
<td>Type of current</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ignition voltage</td>
<td>260</td>
<td>200</td>
<td>300</td>
<td>200</td>
<td>330</td>
<td>230</td>
<td>230</td>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>Wattage</td>
<td>30</td>
<td>40</td>
<td>45</td>
<td>35</td>
<td>33</td>
<td>35</td>
<td>45</td>
<td>80</td>
<td>25</td>
</tr>
<tr>
<td>Lamp voltage</td>
<td>35 ± 3</td>
<td>55 ± 5</td>
<td>75 ± 10</td>
<td>40 ± 5</td>
<td>55 ± 5</td>
<td>40 ± 5</td>
<td>55 ± 5</td>
<td>88 ± 7</td>
<td>60 ± 10</td>
</tr>
<tr>
<td>Lamp current</td>
<td>1.0</td>
<td>0.9</td>
<td>0.6</td>
<td>1.0</td>
<td>0.6</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Luminous intensity</td>
<td>20</td>
<td>50</td>
<td>125</td>
<td>2</td>
<td>95</td>
<td>24</td>
<td>65</td>
<td>220</td>
<td>89</td>
</tr>
<tr>
<td>Luminance [cd cm⁻²]</td>
<td>51</td>
<td>260</td>
<td>500</td>
<td>56</td>
<td>380</td>
<td>56</td>
<td>340</td>
<td>530</td>
<td>1020</td>
</tr>
<tr>
<td>Radiance [mW sr/cm⁻²]</td>
<td>UV-A</td>
<td>44</td>
<td>350</td>
<td>570</td>
<td>68</td>
<td>510</td>
<td>68</td>
<td>350</td>
<td>680</td>
</tr>
<tr>
<td></td>
<td>UV-B</td>
<td>52</td>
<td>380</td>
<td>570</td>
<td>72</td>
<td>480</td>
<td>72</td>
<td>380</td>
<td>840</td>
</tr>
</tbody>
</table>

The St-Lamps should be mounted with the base down and an inclination from the vertical of less than ± 20°. In DC operation, the lamp must be connected so that the anode is at the bottom. The Q-Lamp can be operated in any orientation.

### Safety warning

UV radiation damages the skin and eyes. Wear protective glasses, gloves and clothing.

---

**Spectrum of Lamp Type St 46**

![Spectral Irradiance](image_url)

**Click below to order**

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
UV Radiation for Industrial Processes

Ultraviolet Radiation
Basics and Technology

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz

Industrial Process Technology
Heraeus Noblelight GmbH
Kleinostheim / Hanau
Heraeus, Inventor of the UV Quartz Lamp

- First melted quartz in 1890, Founder of the “Heraeus Quarzschmelze”

- Developed the first UV quartz lamp in 1904 and laid the foundation for a lamp technology that is still used today in tanning, curing of printing inks, lacquer and adhesives, photochemistry, sewer rehabilitation, analytics and UV disinfection.
UV Basics and Technology

Heraeus Noblelight

• specialist for tailor-made artificial light sources
• for the entire scientific and industrially usable spectrum from UV to IR
• for use in research, engineering, medicine, chemical analysis, production and environmental protection.
The Electromagnetic Spectrum (part 1)
UV Basics and Technology

The Electromagnetic Spectrum (part 2)

Visible Light

100 280 315 400

780 1400 3000 10 000 nm

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
UV Basics and Technology

Penetration of the Material by UV Radiation

UV C  UV B  UV A

Material

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
### Discharge Media and Pressure Ranges

**Low pressure lamps**
- 10^{-6} bar
- Mercury
- Hg fluorescent additive
- Xenon
- vaporized Metal

**High pressure lamps**
- 1-10 bar
- Mercury
- Metall halide
- Xe
- vaporized Metal

**Highest pressure lamps**
- >10 bar
- Hg-short arc
- Hg-capillary
- Xe-short arc

---

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
UV Basics and Technology

**Typical Output**

- **Plasma radiation**: 80%
- **Heat loss**: 10%
- **Heat loss of the electrodes**: 10%
- **UV**: 30%
- **IR**: 40%

Click below to order

**Interlight Specialty Bulbs**
1-800-743-0005
www.interlight.biz

---

Heraeus Noblelight
Typical Designs of UV Lamps
UV Basics and Technology

Standardized Spectrum: Mercury Lamp

![Standardized Spectrum Graph]

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
**Standardized Spectrum:**
**MH-Lamp with Z1 Doping - Gallium**

![Graph showing standardized spectrum with wavelength in nm on the x-axis and spectral irradiance on the y-axis, with a peak labeled Z1.]
Standardized Spectrum: MH-Lamp with Z4 Doping - Iron
Standardized spectrum: MH-lamp with Z11 doping - Gallium and Lead

![Standardized spectrum diagram]

UV Basics and Technology

Michael Honig / Dr. Marie-Luise Bopp, 08.07.03, Seite/Page 13

Heraeus Noblelight
UV Basics and Technology

Standardized Spectrum: MH-Lamp with Z14 Doping - Gallium and Iron

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Standardized Spectrum: MH-Lamp with Z7 Doping - Indium
Standardized Spectrum: MH-Lamp with Z3 Doping - Cadmium
Drying without heating
BlueLight UV Curing Systems

Comparison Excimer Lamp and Hg Lamp Spectra

Emission Spectrum Excimer Lamp 222nm

Emission Spectrum Hg Lamp

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Process of Excimer Formation
**Process of Excimer Formation**

$Xe_2^*$ Excimer as an example

Schematic presentation of the excitation process leading to excimer formation and UV light generation

- $Xe$ ... Xenon Ground State
- $Xe^*$ ... Excited Xenon Atom
- $Xe_2^*$ ... Xenon Excimer
- $e$ ... Electron
- $h\nu$ ... UV Photon
Spectra of Excimer Lamps
## UV Basics and Technology

### Drying without heating

**BlueLight UV Curing Systems**

<table>
<thead>
<tr>
<th>BlueLight UV Curing System consisting of:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BlueLight UV Cassette</strong></td>
</tr>
<tr>
<td>(with optional inertisation)</td>
</tr>
<tr>
<td>with Excimer UV Lamp</td>
</tr>
<tr>
<td>installed</td>
</tr>
<tr>
<td>(variable radiation length)</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
</tr>
<tr>
<td>(variable power class)</td>
</tr>
<tr>
<td><strong>Cooling unit</strong></td>
</tr>
</tbody>
</table>
Drying without heating
BlueLight UV Curing Systems

Benefits

- Compact Design
- Cool Printing
- Instant ignition
- Odorless
- Ozone-free

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
UV Basics and Technology

Drying without heating

BlueLight UV Curing Systems

Benefits

- Compact Design
- Easy Installation
- Easy to retrofit in existing printing presses
- Flexible use either between print stations or as an end dryer
- Simple installation

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Drying without heating
BlueLight UV Curing Systems

Benefits

- Instantly switchable
  no warm-up or cool-down time
  less misprinted sheets
  increased machine output

- No shutters or movable parts
  less technical risk

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Drying without heating
BlueLight UV Curing Systems

Benefits

- Odorless

- Truly cold and monochromatic UV System
  reduced smell from the substrate
  reduced smell of the prints

- Curing with Inertisation
  smell reduction of the cured ink
  smell and cost reduction through less
  photoinitiator content

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Drying without heating

BlueLight UV Curing Systems

Benefits

- Ozone-free
- Monochromatic UV System with inertisation
  - no ozone production
  - no corrosion of press parts
- No exhaust required
  - saves cost and space

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Applications in industry (examples):

172nm Excimer Lamp:
- Photo-Chemical Vapour Deposition CVD
- Decomposition and Oxidation of Organic Matter
- Modifications, such as improvement of SiO$_2$ layers
- Surface Activation
- UV-Matting

222nm Excimer Lamp:
- Photolysis of hydrogen peroxide
- Inactivation of microorganisms
- UV-Curing for printing processes

308nm Excimer Lamp:
- UV-Curing for printing processes
### Heraeus Noblelight Divisions

<table>
<thead>
<tr>
<th>Heraeus Amba Ltd.</th>
<th>Heraeus Noblelight GmbH</th>
<th>Heraeus Noblelight Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV Curing</td>
<td>Industrial Process Technology</td>
<td>UV Lamps and Modules</td>
</tr>
<tr>
<td>UV Emitters</td>
<td>Optics and Analytic</td>
<td>UV Technology and UV Lamps</td>
</tr>
<tr>
<td>Power Supplies</td>
<td>Original Hanau SunCare</td>
<td>Continuous and Pulsed Laser Pump Lamps + Flash Lamps</td>
</tr>
<tr>
<td></td>
<td>Surface and Environmental Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laser Lamps</td>
<td></td>
</tr>
</tbody>
</table>
Heraeus Products for Printing

UV-Curing Lamps
- Medium pressure mercury lamps, different spectra, up to 2.5 m long

MH- Lamps
- Doped mercury medium pressure lamps 400 to 8000 W

BlueLight Excimer Lamps
- Cold UV irradiation for curing applications

IR- Emitters
- Near Infrared
  - Short wave
  - Medium wave
  - Carbon IR

Tailor made Solutions
- Emitters
  - Modules
- Support

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
## Applications served through the Heraeus Printing Group

<table>
<thead>
<tr>
<th>Curing and drying of inks on paper and plastic films</th>
<th>for example</th>
<th>label printing, offset printing, flexo printing, screen printing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing and drying of varnishes</td>
<td>for example</td>
<td>CD-production, protective coatings, packaging for foods and cosmetics</td>
</tr>
<tr>
<td>Curing of adhesives</td>
<td>for example</td>
<td>DVD-production</td>
</tr>
<tr>
<td>Exposure applications</td>
<td>for example</td>
<td>plate making, PCB, electronic components</td>
</tr>
</tbody>
</table>
A Leader in Technology

Expansive UV radiation measurement and R&D facilities to support

• Product Development
• Customer Projects
• Quality Assurance
• Measurement Service for Customers

Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Certification according to DIN EN ISO 9001

Heraeus Noblelight GmbH

Michael Honig / Dr. Marie-Luise Bopp, 08.07.03, Seite/Page 32
UV LAMPS

FOR THE DRYING AND CURING OF INKS,
VARNISHES, PLASTICS AND ADHESIVES

High intensity UV radiation is used for the curing and drying of inks, varnishes, plastics and adhesives due to the fast and complete polymerisation it causes in the material. An appropriate spectral output with high radiation flux ensures an efficient drying process is achieved.

For the curing of inks and varnishes, medium pressure Mercury lamps in the power range 0.1 kW to 25 kW and up to 2.5 m long are now used.

In addition, lamps doped with Gallium, Iron or a mixture of the two, whose spectral outputs match the absorption spectra of the photoinitiators, may be used. The better the match, the better will be the efficiency of the drying process.

The guaranteed life of most of these UV lamps is 1500 hours.

Heraeus supplies UV lamps for the use in
- The Printing Industry
- Web and sheet fed offset printing
- Screen printing
- Label printing
- Overprint varnishing
- The Wood Finishing Industry
  for use in equipment from Hackemack, IST, Barberan, Giardina
- CD Production
- Drying of lacquer

Heraeus will develop lamps to individual customer's specifications on request.
<table>
<thead>
<tr>
<th>Power output (W/cm)</th>
<th>Arc length (mm)</th>
<th>Power (kW)</th>
<th>Voltage (V)</th>
<th>Current (A)</th>
<th>Spectrum</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>120</td>
<td>1</td>
<td>130</td>
<td>8.30</td>
<td>Hg</td>
<td>CQ 279</td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>1.20</td>
<td>285</td>
<td>4.80</td>
<td>Hg</td>
<td>Q 1223</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>1.70</td>
<td>230</td>
<td>8.50</td>
<td>Hg</td>
<td>DQ 2023</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>2</td>
<td>135</td>
<td>16</td>
<td>Fe</td>
<td>CQ 353</td>
</tr>
<tr>
<td></td>
<td>336</td>
<td>2.90</td>
<td>490</td>
<td>6.50</td>
<td>Hg</td>
<td>DQ 3522</td>
</tr>
<tr>
<td></td>
<td>621</td>
<td>5</td>
<td>840</td>
<td>6.30</td>
<td>Hg</td>
<td>Q 5002</td>
</tr>
<tr>
<td></td>
<td>808</td>
<td>6.40</td>
<td>1088</td>
<td>6.60</td>
<td>Ga</td>
<td>CDO 293</td>
</tr>
<tr>
<td></td>
<td>1431</td>
<td>11</td>
<td>1900</td>
<td>6</td>
<td>Ga</td>
<td>C 228</td>
</tr>
<tr>
<td></td>
<td>1708</td>
<td>13.70</td>
<td>2312</td>
<td>6.60</td>
<td>Hg</td>
<td>CDO 345</td>
</tr>
<tr>
<td></td>
<td>2208</td>
<td>19</td>
<td>2400</td>
<td>8.80</td>
<td>Hg</td>
<td>DQ 22023</td>
</tr>
<tr>
<td>100</td>
<td>106</td>
<td>1</td>
<td>145</td>
<td>7.50</td>
<td>Hg</td>
<td>Q 1023</td>
</tr>
<tr>
<td></td>
<td>206</td>
<td>2</td>
<td>230</td>
<td>9.70</td>
<td>Hg</td>
<td>Q 2223</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>2.60</td>
<td>225</td>
<td>13</td>
<td>Fe</td>
<td>CQ 352</td>
</tr>
<tr>
<td></td>
<td>588</td>
<td>5.50</td>
<td>725</td>
<td>9.50</td>
<td>Hg</td>
<td>DQ 5823</td>
</tr>
<tr>
<td></td>
<td>958</td>
<td>9.50</td>
<td>1450</td>
<td>7.30</td>
<td>Hg</td>
<td>DQ 9523</td>
</tr>
<tr>
<td></td>
<td>1264</td>
<td>12.50</td>
<td>1600</td>
<td>9.20</td>
<td>Hg</td>
<td>Q 12523</td>
</tr>
<tr>
<td></td>
<td>1419</td>
<td>15.30</td>
<td>1870</td>
<td>9.10</td>
<td>Ga</td>
<td>CQ 325</td>
</tr>
<tr>
<td></td>
<td>1908</td>
<td>19</td>
<td>2400</td>
<td>8.80</td>
<td>Hg</td>
<td>DQ 19023</td>
</tr>
<tr>
<td>120</td>
<td>125</td>
<td>1.50</td>
<td>130</td>
<td>12.80</td>
<td>Fe</td>
<td>C 238</td>
</tr>
<tr>
<td></td>
<td>244</td>
<td>2.80</td>
<td>250</td>
<td>12.50</td>
<td>Hg</td>
<td>DQ 2426</td>
</tr>
<tr>
<td></td>
<td>275</td>
<td>3.50</td>
<td>300</td>
<td>13</td>
<td>Ga</td>
<td>C 087</td>
</tr>
<tr>
<td></td>
<td>608</td>
<td>7.60</td>
<td>800</td>
<td>11.20</td>
<td>Hg</td>
<td>DQ 6027</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>9</td>
<td>975</td>
<td>10.30</td>
<td>Fe</td>
<td>C 205</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>12</td>
<td>1300</td>
<td>10.30</td>
<td>Fe</td>
<td>C 257</td>
</tr>
<tr>
<td></td>
<td>1308</td>
<td>16</td>
<td>1770</td>
<td>10</td>
<td>Hg</td>
<td>DQ 13027</td>
</tr>
<tr>
<td></td>
<td>1410</td>
<td>16</td>
<td>1900</td>
<td>10</td>
<td>Hg</td>
<td>DQ 14027</td>
</tr>
<tr>
<td></td>
<td>1410</td>
<td>16</td>
<td>1900</td>
<td>10</td>
<td>Ga</td>
<td>CDO 373</td>
</tr>
<tr>
<td>160</td>
<td>106</td>
<td>1.60</td>
<td>230</td>
<td>7.50</td>
<td>Hg</td>
<td>C 194</td>
</tr>
<tr>
<td></td>
<td>125</td>
<td>2</td>
<td>200</td>
<td>11</td>
<td>Fe</td>
<td>CQ 313</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>3.10</td>
<td>330</td>
<td>10.50</td>
<td>Ga</td>
<td>C 027</td>
</tr>
<tr>
<td></td>
<td>256</td>
<td>4</td>
<td>360</td>
<td>12</td>
<td>Hg</td>
<td>Q 4026</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>9.50</td>
<td>650</td>
<td>16.30</td>
<td>Fe</td>
<td>CQ 375</td>
</tr>
<tr>
<td></td>
<td>831</td>
<td>13</td>
<td>1800</td>
<td>8</td>
<td>Hg</td>
<td>C 183</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>16</td>
<td>1500</td>
<td>11.80</td>
<td>Fe</td>
<td>CQ 385</td>
</tr>
<tr>
<td>200 – 250</td>
<td>250</td>
<td>5</td>
<td>430</td>
<td>13</td>
<td>Hg</td>
<td>DQ 12828 Z1</td>
</tr>
<tr>
<td></td>
<td>640</td>
<td>12.80</td>
<td>800</td>
<td>16</td>
<td>Ga</td>
<td>DQ 18028 Z1</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>18</td>
<td>950</td>
<td>17</td>
<td>Ga</td>
<td>DQ 18028 Z1</td>
</tr>
<tr>
<td></td>
<td>1120</td>
<td>22.40</td>
<td>1500</td>
<td>17</td>
<td>Ga</td>
<td>Q 22428 Z1</td>
</tr>
</tbody>
</table>

UV lamps in different power ranges

Various socket types

Click below to order

Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz
Amba UV Curing Lamps for Inks, Paints, Resins, Adhesives and Surface Coatings

High Intensity UV Radiation is required for the curing and drying of inks, varnishes, plastics and adhesives due to the fast and complete polymerisation it causes in the material. An appropriate output with high radiation flux throughout the lifetime ensures an efficient drying process is achieved.

Medium pressure Mercury lamps
For the curing of inks and varnishes medium pressure Mercury lamps in the power range 0.1 kW to 25 kW and up to 2.5 m long are delivered. They are available for all renowned Printing machines.

Metal Halide Lamps
In addition lamps doped with Gallium or Iron whose spectral outputs match the absorption spectra of the photoinitiators, are used in pre-press equipment, for exposure applications such as film, plates, screens, PCBs, cromalins and for other industrial applications. Amba Lamps have proven success in a very wide range of equipment.

3,000 specifications
More than 3,000 individual UV curing lamp specifications including doped lamps meet all needs.

Amba offers extensive research and development facilities to develop lamps for both OEM agreements and as replacements for individual users.

World-wide distribution network
With world-wide associates and partners, Amba Lamps respond very quickly to customers needs. All local Amba stockists offer technical back-up and have instant access to the Amba technical team in Banbury, UK.
It is easy to specify an Amba replacement lamp for your UV curing system. Simply tell Amba by fax phone or e-mail:

- THE MANUFACTURER OF THE UV CURING EQUIPMENT.
- THE LAMP REFERENCE NUMBER IF KNOWN
- THE OVERALL LENGTH
- THE ARC LENGTH
- POWER RATING – W/cm OR W/inch
- TYPE OF END FITTINGS
- THE LENGTH OF THE LEADS

Amba can produce any type of end fitting or termination required. Some lamp caps are illustrated.

Amba offers a choice of constant wattage power supplies or variably reactive types.

Mercury arc lamps are effective in the whole spectral UV range from 200 nm to 400 nm.

Gallium Iodide has intensive spectral lines at 403 nm and 417 nm. This is particularly useful with Diazo type exposure processes.

Iron iodide enhances the spectral output in the 380 nm region. This is used with good effect on photopolymer and daylight film exposure systems.

Heraeus Amba Ltd. 10 Canada Close
GB-Banbury OX16 7RT
Great Britain
Phone +44 1295 272666
Telefax +44 1295 272611
E-Mail: uvlamps@ambalamps.co.uk
www.heraeus-noblelight.com
REPLACEMENT LAMPS FOR SPECTROPHOTOMETERS AND HPLC DETECTORS

Waters HPLC
- DS 240/05 TJ

Bio-TEK Konton Spectrophotometer
- DS 320/05

Shimadzu HPLC Detector
- DS 320/05

Merck Hitachi HPLC and Spectrophotometer
- DS 651J

BIO-TEK Konton HPLC
- DS 350/05 TJ

Spectrophotometer
- DS 990/05

Beckman Spectrophotometer
- DS 246/05

GO 651 MJ

Shimadzu Spectrophotometer
- DS 250/05

Waters HPLC
- DS 247/05

DO 405 TJ

BIO-TEK Kontron Spectrophotometer
- UVIKON 9XX

DO 905 TJ

Shimadzu HPLC Detector
- SPD-10A

DS 350/05

Beckman Spectrophotometer
- DS 753J

Gilson HPLC
- DS 731J

DS 220/05 TJ

Heraeus Noblelight GmbH
Click below to order
Interlight Specialty Bulbs
1-800-743-0005
www.interlight.biz