Agreement

Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions*

(Revision 2, including the amendments which entered into force on 16 October 1995)

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Addendum 98: Regulation No. 99

Revision 2 – Amendment 2

Supplement 6 to the original version of the Regulation - Date of entry into force: 9 December 2010

Uniform provisions concerning the approval of gas-discharge light sources for use in approved gas-discharge lamp units of power-driven vehicles

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UNITED NATIONS

Paragraph 3.10., amend to read:

"3.10. **UV radiation**

The UV radiation of the gas-discharge light source shall be such that the gas discharge light source is of the low UV type complying with:

\[
\frac{\int_{\lambda=250 \text{ nm}}^{400 \text{ nm}} E_\varphi(\lambda) S(\lambda) \ d\lambda}{k_{uv}} \leq 10^{-5} \ W/\text{lm}
\]

\[
\int_{\lambda=380 \text{ nm}}^{780 \text{ nm}} E_\varphi(\lambda) V(\lambda) \ d\lambda
\]

Where ...

Annex 1.

**List of sheets for gas-discharge light sources and their sequence in this annex**, amend to read:

Sheet numbers

- DxR/1 to 7 (Sheet DxR/6: two pages)
- DxS/1 to 6

*Sheets DxR/1 to 3 and DxR/6, replace by new sheets, to read (see next pages):*

*Sheets DxS/1 to 3 and DxS/6, replace by new sheets, to read (see next pages):*
The drawings are intended only to illustrate the essential dimensions (in mm) of the gas-discharge light source.

Figure 1
Category D1R - Type with cables - Cap PK32d-3

Figure 2
Category D2R - Type with connector - Cap P32d-3

1 The reference plane is defined by the positions on the surface of the holder on which the three supporting bosses of the cap ring will rest.
2 See sheet DxR/3.
3 With respect to the reference axis, when measured at a distance of 27.1 mm from the reference plane the eccentricity of the outer bulb shall be less than ±0.5 mm in direction C and less than -1 mm /+0.5 mm in direction A.
The drawings are intended only to illustrate the essential dimensions (in mm) of the gas-discharge light source.

Figure 3
Category D3R - Type with starter – Cap PK32d-6

Figure 4
Category D4R - Type with connector – Cap P32d-6

1. The reference plane is defined by the positions on the surface of the holder on which the three supporting bosses of the cap ring will rest.
2. See sheet DxR/3.
3. With respect to the reference axis, when measured at a distance of 27.1 mm from the reference plane the eccentricity of the outer bulb shall be less than ±0.5 mm in direction C and less than -1 mm /+0.5 mm in direction A.
Definition of reference axis

The cap shall be pushed in this direction.

Figure 5

Maximum lamp outline

The reference axis is perpendicular to the reference plane and crosses the intersection of the two parallel lines as indicated in figure 5.

Glass bulb and supports shall not exceed the envelope, as indicated in figure 6. The envelope is concentric with the reference axis.

Figure 6
Position and form of the arc

This test is used to determine the form and sharpness of the arc and its position relative to the reference axis and plane by determining its bending and diffusion; by measuring the luminance in the central cross section D, where \( L_{\text{max}} \) is the maximum luminance of the arc measured from viewing direction C; see sheet DxR/2.

\[ L_{\text{max}} \]

Relative luminance distribution in the central cross section D. The form of the arc is for illustration purpose only. Measuring direction C as defined on sheet DxR/7.

When measuring the relative luminance distribution in the central cross section D as indicated in the drawing above, the maximum value \( L_{\text{max}} \) has the distance r from the reference axis. The points of 20% of \( L_{\text{max}} \) have the distance s, as shown in the drawing above.

<table>
<thead>
<tr>
<th>Dimension in mm</th>
<th>Production light sources</th>
<th>Standard light sources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D1R/D2R</td>
<td>D3R/D4R</td>
</tr>
<tr>
<td>r (arc bending)</td>
<td>0.50 ± 0.25</td>
<td>0.50 ± 0.25</td>
</tr>
<tr>
<td>s (arc diffusion)</td>
<td>1.10 ± 0.25</td>
<td>1.10 + 0.25/-0.40</td>
</tr>
</tbody>
</table>
Stray light

This test is used to determine unwanted reflected stray light by measuring the luminance in Zone A and at lines B and C, where $L_{\text{max}}$ is the maximum luminance of the arc measured from viewing direction B; see sheet DxR/2.

When measuring the luminances from measuring direction B as defined on sheet DxR/7 with a set-up as outlined in annex 5, however with a circular field of 0.2M mm diameter, the relative luminance expressed as a percentage of $L_{\text{max}}$ (at cross section D) shall be:

<table>
<thead>
<tr>
<th>Zone</th>
<th>Relative Luminance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≤ 4.5 %</td>
</tr>
<tr>
<td>B</td>
<td>≤ 15 %</td>
</tr>
<tr>
<td>C</td>
<td>≤ 5.0 %</td>
</tr>
</tbody>
</table>

The area of zone A is defined by the black coating, the outer bulb and a plane at 24.5 mm from the reference plane.
The drawings are intended only to illustrate the essential dimensions (in mm) of the gas-discharge light source.

**Figure 1**

*Category D1S - Type with cables - Cap PK32d-2*

1. The reference plane is defined by the positions on the surface of the holder on which the three supporting bosses of the cap ring will rest.

2. See sheet DxS/3.

3. When measured at a distance of 27.1 mm from the reference plane and with respect to the mid-point of the inner bulb, the outer bulb shall have an eccentricity of 1 mm max.
CATEGORIES D1S, D2S, D3S AND D4S

Sheet Dxs/2

The drawings are intended only to illustrate the essential dimensions (in mm) of the gas-discharge light source.

Figure 3
Category D3S - Type with starter - Cap PK32d-5

Reference plane

Reference axis

27.1

1 The reference plane is defined by the positions on the surface of the holder on which the three supporting bosses of the cap ring will rest.

2 See sheet Dxs/3.

3 When measured at a distance of 27.1 mm from the reference plane and with respect to the mid-point of the inner bulb, the outer bulb shall have an eccentricity of 1 mm max.

Figure 4
Category D4S - Type with connector - Cap P32d-5

Reference plane

Reference axis

27.1

A
Figure 5

**Definition of reference axis**

The cap shall be pushed in this direction.

Figure 6

**Maximum lamp outline**

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1 The reference axis is perpendicular to the reference plane and crosses the intersection of the two parallel lines as indicated in figure 5.

2 Glass bulb and supports shall not exceed the envelope, as indicated in figure 6. The envelope is concentric with the reference axis.
Position and form of the arc

This test is used to determine the form of the arc and its position relative to the reference axis and the reference plane by measuring its bending and diffusion in the cross section at a distance 27.1 mm from the reference plane.

Relative luminance distribution in the central cross section D.

The form of the arc is for illustration purpose only.

Measuring direction B: light source side view

When measuring the relative luminance distribution in the central cross section as indicated in the drawing above, the maximum value shall be located within the distance $r$ from the reference axis. The point of 20% of the maximum value shall be within $s$:

<table>
<thead>
<tr>
<th>Dimension in mm</th>
<th>Production light sources</th>
<th>Standard light sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r$ (arc bending)</td>
<td>$0.50 \pm 0.40$</td>
<td>$0.50 \pm 0.20$</td>
</tr>
<tr>
<td>$s$ (arc diffusion)</td>
<td>$1.10 \pm 0.40$</td>
<td>$1.10 \pm 0.25$</td>
</tr>
</tbody>
</table>