**SLR-73-09**

*(Rev. of SLR-72-10/Rev.1)*

*This document reflects the comments and modifications agreed at SLR-70
plus some further improvements and cross-checking.
It is the cleaned version of the submitted SLR-71-06/Rev.1 to SLR for consideration at its 71st session in February 2025*

Proposal for clarification of R150-01 series

**5. Specific technical requirements**

5.1. Technical requirements concerning retro-reflectors of the Classes IA**,** ~~and~~ IB**, IIIA, IIIB and IVA** (Symbols "IA"**,** ~~and~~ "IB"**, IIIA, “IIIB” and “IVA”**)

5.1.1. Every retro-reflector of the Classes IA and IB, when tested according to paragraph 5.1.7., shall meet:

5.1.3. Test procedure.

5.1.3.1. After verification of the general specifications (paragraph 4.) and the specifications of shape and dimensions (Annex 5), the ten samples shall be subjected to the heat resistance test described in Part 1 of Annex 6 and at least one hour after this test examined as to their colorimetric characteristics in paragraph 5.1.5.and RI in paragraph 5.1.4., for an angle of divergence of 20' and an illumination angle 1 = 2 = 0° or if necessary, in the position defined in Part 1 of Annex 4, paragraphs 1.1. and 1.2.

The two retro-reflectors giving the minimum and maximum values shall then be fully tested as shown in paragraph 5.1.4.

These two samples shall be kept by the laboratories for any further checks which may be found necessary.

~~Four samples out of the remaining eight samples shall be selected at random and divided into two groups of two in each group.~~

**5.1.3.1.1. Class IA, Class IB, Class IIIA and Class IIIB**

The other eight samples shall be divided into four groups of two:

First group: The two samples shall be subjected successively to the water penetration test (Part 2 of Annex 6) and then, if this test is satisfactory, to the tests for resistance to fuels and lubricants (Parts 1 and 2 of Annex 7).

Second group: The two samples shall, if necessary, be subjected to the corrosion test in Part 4 of Annex 6, and then to the abrasive-strength test of the rear face of the retro-reflective device in Part 5 of Annex 6.

Third group: The two samples shall be subjected to the test for stability in time of the optical properties of retro-reflective device in Part 3 of Annex 4.

Fourth group: The two samples shall be subjected to the ~~resistance to weathering~~ **colour-fastness test** (Part ~~6~~**7** of Annex 6).

**5.1.3.1.2. Class IVA**

**Four samples out of the remaining eight samples shall be selected at random and divided into two groups of two in each group.**

**First group: The two samples shall be subjected successively to the water penetration test (Part 2 of Annex 6) and then, if this test is satisfactory, to the tests for resistance to fuels and lubricants (Parts 1 and 2 of Annex 7).**

**Second group: The two samples shall, if necessary, be subjected to the corrosion test in Part 4 of Annex 6, and then to the abrasive-strength test of the rear face of the retro-reflective device in Part 5 of Annex 6, these two samples shall also be subjected to the impact test in Part 4 of Annex 8.**

5.2.6.3. The testing of the day-time colour for retro-reflective device shall be carried out according to the method described in paragraph 4.2.2.

*Amend to read: …*

“5.2.6.4. Luminance factor determined in accordance to Part 2 of Annex 4:

for red colour shall be $β\_{v,R}$≥ 0.03,

for yellow colour shall be $β\_{v,R}$≥ 0.16,

for white colour, it shall be $β\_{v,R}$≥ 0.25.

**except classes C, D, E and D/E** ”

**When measured with a spectrophotometer in accordance with the provisions of CIE document No. 15 (1971) and illuminated with the CIE Standard Illuminant D65 at an angle of 45º to the normal and viewed along the normal (45/0 geometry), the colour of the material in new condition shall be located within the area defined by the chromaticity co‑ordinates in Table 8 and comply with the luminance factor.**

**Table 8**

**Chromaticity co-ordinates x and y**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Colour** |  | **1** | **2** | **3** | **4** | **Luminance factor β** |
| **Yellow** | **x** | **0.545** | **0.487** | **0.427** | **0.465** | **≥ 0.16** |
| **y** | **0.454** | **0.423** | **0.483** | **0.534** |
| **Red** | **x** | **0.690** | **0.595** | **0.569** | **0.655** | **≥ 0.03** |
| **y** | **0.310** | **0.315** | **0.341** | **0.345** |

*Amend to read: …*

5.3.4.2 Retro-reflective devices and fluorescent retro-reflecting material.

Table **~~8~~9**

….

5.3.5.1.2. The testing of the colour for retro-reflective device (night-time colour) shall be carried out according to the method described in paragraph 4.2.1. and the trichromatic co-ordinates of the red reflected luminous flux shall be within the following limits:

Table **~~9~~10**

5.3.5.2.2. The testing of the colour of the fluorescent materials (daytime colour) of advance warning triangle of type 1 or type 2 shall be carried out according to the method described in paragraph 4.2.2. and the colour of the material in new condition shall be within an area of which the corner points are determined by the following coordinates as specified in Table **~~10~~**11:

Table **~~10~~11**

Annex 1

 Communication

5.  **Submitted for approval on** ~~Date on which the marking material was submitted for approval tests~~:

**Annex 6**

 **Environmental Testing**

Part 4 - Resistance to corrosion

4.2. The coefficient of retro-reflection RA of the retro-reflective areas, when measured after a recovery period of 48 hours as specified in Part 2 of Annex 6, at an entrance angle of β2 = 5° and an observation angle of α = 20', shall be not less than the value in **Table ~~9~~10** or more than the value in **Table ~~10~~11** respectively. Before measuring, the surface shall be cleaned to remove salt deposits from the saline mist.

*Insert new Part 7 to read:*

Part 7 - Colour-fastness[[1]](#footnote-2)1 of retro-reflective devices of the Classes IA, IB, IIIA, IIIB and IVA

**1.** **The Type Approval Authority which granted approval shall have the right to check the colour-fastness of a type of retro-reflective device in service.**

**2. The Type Approval Authorities of countries other than the country in which approval was granted may carry out similar checks in their territory. If a type of retro-reflector in use exhibits a systematic defect, the said authorities shall transmit any components removed for examination to the Type Approval Authority which granted approval, with a request for its opinion.**

**3. In the absence of other criteria, the concept "systematic defect" of a type of retro-reflector in use shall be interpreted in conformity with the intention of paragraph 3.6.1. of this Regulation.**

1. 1 Despite the importance of tests to check the colour-fastness of retro-reflective devices, it is in the present state of the art not yet possible to assess colour-fastness by laboratory tests of limited duration. [↑](#footnote-ref-2)