

Proposal for Amendment to Regulation No. 27

(Advance-warning triangle)

The text reproduced below was prepared by the expert from CLEPA to clarify technical progresses; and, as the 66th GRE Session agreed resuming consideration of ECE/TRANS/WP.29/GRE/2011/46 from GTB (see ECE/TRANS/WP.29/GRE/66 para. 31; the modifications to the existing text are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Annexes of Contents amend to read:

Insert a new paragraph 2.10. In Chapter 2 Definition, to read:

- 2.10. Fluorescent retro-reflecting material**
Means a material with retro-reflecting properties which, when excited by daylight, exhibits the phenomenon of photo-luminescence ceasing rather shortly after excitation.

Paragraph 3.5.in Chapter 3 Application for approval, amend to read:

- 3.5. ...samples of the fluorescent **or fluorescent retro-reflecting material** in which...

Paragraph 6.1.in Chapter 6 General Specifications, amend to read:

- 6.1. The advance-warning triangle shall be open at the centre and shall comprise a red border composed of an outer retro-reflecting strip and an inner fluorescent strip, the whole supported at a certain height above the surface of the carriageway. The open centre and the fluorescent and retro-reflecting strips shall be bounded by concentric equilateral triangular contours. **Alternatively, one fluorescent retro-reflecting strip may be used.**

Paragraph 7.1.1.2.in Chapter 7 Particular Specifications, amend to read:

- 7.1.1.2 The retro reflecting units shall be arranged along the edge within a strip of an unvarying width which shall be between 25 mm and 50 mm. **In case of fluorescent retro-reflecting material, the unvarying width shall be > 50 mm. When in use, its surface area shall not be less than 534 cm².**

Insert new paragraphs 7.2.3. to 7.2.3.3., to read:

7.2.3 Fluorescent retro-reflecting material

- 7.2.3.1 The fluorescent retro-reflecting material shall be colored in the mass, either in the retro-reflective elements or as solid surface layer.**

7.2.3.2 Night-time colour

When the retro-reflecting device is illuminated by the CIE standard illuminant A, with an angle of divergence of $1/3^\circ$ and an illumination angle $V = H = 0^\circ$, or, if this produces a colourless surface reflection, an angle $V = \pm 5^\circ$, $H = 0^\circ$, the trichromatic co-ordinates of the red reflected luminous flux shall be within the following limits:

Point	1	2	3	4
x	0,669	0,636	0,589	0,625
y	0,331	0,330	0,376	0,375

7.2.3.3 Daytime Colour

The measurements shall be made using the CIE $45^\circ/0^\circ$ (or $0^\circ/45^\circ$) or CIE $45^\circ\text{a}/0^\circ$ (or $0^\circ/45^\circ\text{a}$), called the forty-five annular/normal geometry (or the normal/ forty-five annular geometry) defined in CIE 15. The measurement area shall be not less than $4,0\text{ cm}^2$. When the fluorescent retro-reflecting component of the device is illuminated by the CIE standard illuminant D65, the trichromatic co-ordinates of the light reflected and emitted by the component shall be within an area of which the corner points are determined by the following coordinates:

Point	1	2	3	4
x	0,583	0,535	0,605	0,655
y	0,416	0,400	0,343	0,345

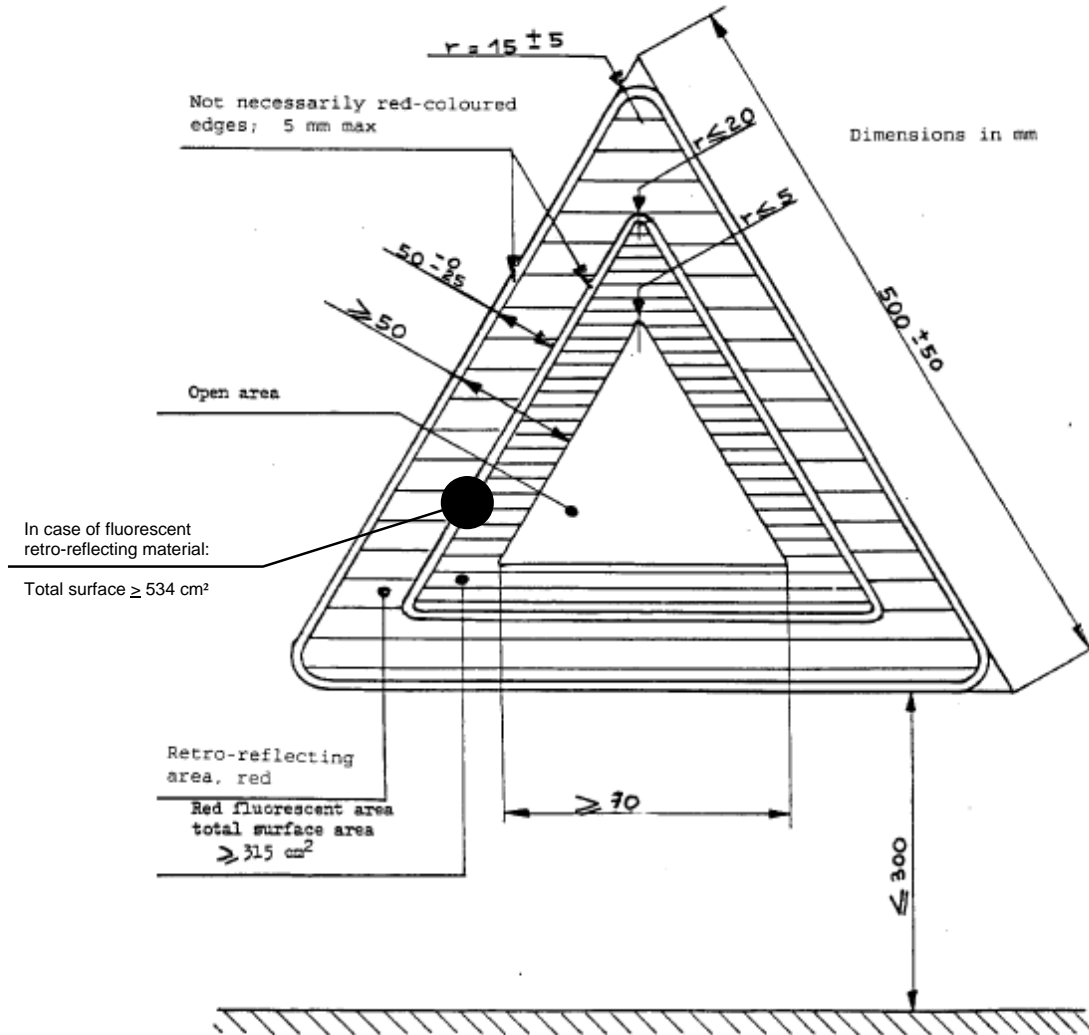
The luminance factor including the luminance by reflection and fluorescence shall be not less than 20 per cent.

Paragraph 7.3.1., amend to read:

7.3.1 Retro-reflecting devices and fluorescent retro-reflecting material

Annex 3

Figure 1: SHAPE AND DIMENSIONS OF THE ADVANCE-WARNING TRIANGLE
AND OF THE SUPPORT



Annex 5

Paragraph 11., amend to read:

11. Test of resistance of the retro-reflecting device **or fluorescent retro-reflecting material**

Paragraph 11.1.2., amend to read:

11.1.2. After this ... the test. **Water or water vapour penetration into the edges of fluorescent retro-reflecting materials shall not be deemed to indicate failure.**

Paragraph 11.2., amend to read:

11.2. The reverse side of the ... more than 40 per cent of the values recorded before the test. **This test is not applicable for fluorescent retro-reflecting material.**

Paragraph 12., amend to read:

12 Test of the weather-resistance of the luminance factor and of the colour of the fluorescent **and fluorescent retro-reflecting materials**

Annex 6 title, amend to read:

Annex 6

Method for Measurement of the CIL of retro-reflecting devices **and fluorescent retro-reflecting materials**

II. Justification

This amendment would enable to combine the two separate optically active stripes of the advance warning triangle into one. Today the daytime visibility is provided by the fluorescent stripe, while the nighttime visibility is provided by the retro-reflecting stripe.

Combining both into one stripe will result in advance warning triangles with improved visibility and less material use. Warning triangles could be built more economically, lightweight and with better performance.

Durable fluorescent retroreflecting materials are state-of the art and are proven to be successful in applications such as traffic signs.