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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Sixty-eighth session**

Geneva, 16–18 October 2012

Item 10 of the provisional agenda

Regulation No. 27 (Advance-warning triangle)**Proposal for Supplement 3 to the 03 series of amendments to
Regulation No. 27 (Advance-warning triangle)****Submitted by the expert of the European Association of Automobile
Suppliers***

The text reproduced below was prepared by the expert from the European Association of Automobile Suppliers (CLEPA) to clarify technical progresses. It is based on a document without symbol (GRE-67-12) distributed during the sixty-seventh session of the Working Party on Lighting and Light-Signalling (GRE). The modifications to the existing text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

I. Proposal

Insert a new paragraph 2.10., 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., amend to read:

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

Paragraph 6.1., amend to read:

"6.1. The advance-warning triangle ... equilateral triangular contours. **Alternatively, one fluorescent retro-reflecting strip may be used.**"

Paragraph 7.1.1.2., 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 $45^\circ a/0^\circ$ (or $0^\circ/45^\circ a$), 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 cm². When the fluorescent retro-reflecting component of the device is illuminated by the CIE standard illuminant D65, the trichromatic coordinates 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."

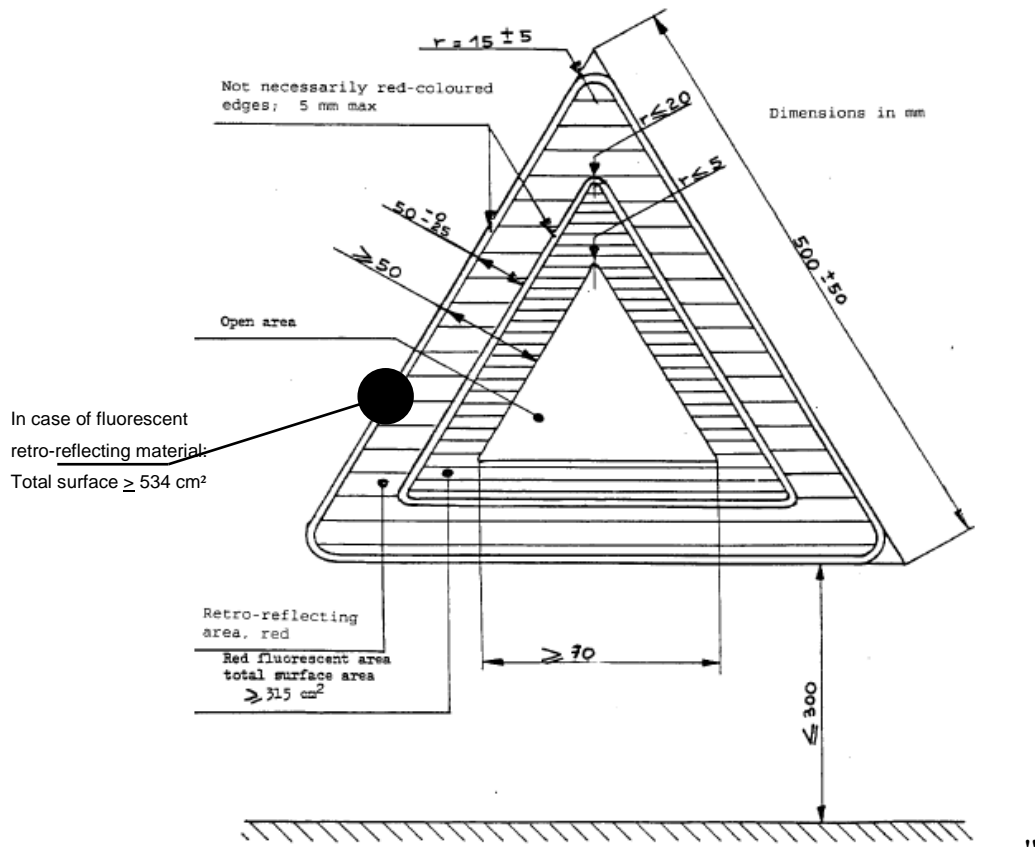
Paragraph 7.3.1., amend to read:

"7.3.1 Retro-reflecting devices **and fluorescent retro-reflecting material.**"

Annex 3, figure 1, amend to read:

"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. Test of resistance of the accessible reverse side of the mirror-backed retro-reflecting device
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, the title, amend to read:

"Annex 6

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

II. Justification

- 1 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 night-time visibility is provided by the retro-reflecting stripe.
 2. 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.
 3. Durable fluorescent retro-reflecting materials are state-of the art and are proven to be successful in applications such as traffic signs.
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