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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****Seventy-eighth session**

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Item 4 of the provisional agenda

Simplification of lighting and light-signalling Regulations**Proposal to introduce requirements for the use of light emitting diode substitute light sources in the new Regulation on Light-Signalling Devices****Submitted by the expert from the International Automotive Lighting and Light-Signalling Expert Group (GTB)***

The text reproduced below was prepared by the expert from GTB to introduce requirements for light emitting diode (LED) substitute light sources into the draft new Regulation on Light-Signalling Devices (LSD). This text was already presented to the Working Party on Lighting and Light-Signalling (GRE) at its seventy-seventh session as informal document GRE-77-15 and adopted in principle, pending a formal examination at the seventy-eighth session of GRE in conjunction with the final text of the new draft Regulation. The modifications to the text of the new draft 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 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), 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

Paragraph 2.1.1., amend to read:

"2.1.1. "Lamps of different types" means lamps, which differ in such essential respects as:

- (a) The trade name or mark:
 - (i) Lamps bearing the same trade name or mark but produced by different manufacturers are considered as being of different types;
 - (ii) Lamps produced by the same manufacturer differing only by the trade name or mark are considered as being of the same type.
- (b) The characteristics of the optical system (levels of intensity, light distribution angles, inclusion or elimination of components capable of altering the optical effects by reflection, refraction, absorption and/or deformation during operation, etc.);
- (c) The category or categories of light source(s) used and/or the specific identification code (s) of the light source module(s);
- (d) The category of the lamp, if any;
- (e) The variable intensity control, if any;
- (f) The sequential activation of light sources, if any.

Nevertheless, direction indicators capable of being activated in different modes (sequential or not) without any modification of the optical characteristics of the lamp do not constitute "*Direction indicators of different types.*"

A change of the colour of the light source or the colour of any filter does not constitute a change of type.

The use of LED substitute light source(s) does not constitute a change of type. However paragraph 4.7.7. applies."

Paragraph 3.1.2.2., amend to read:

"3.1.2.2. A brief technical description stating in particular, with the exception of lamps with non-replaceable light sources:

- (a) The category or categories of filament light source(s) prescribed; this filament light source category shall be one of those contained in UN Regulation No. 37;
- (b) The category or categories of LED light source(s) prescribed; this LED light source category shall be one of those contained in UN Regulation No. 128;
- (c) The light source module specific identification code;
- (d) **In the case where, at the discretion of the applicant, the lamp also has to be approved with the LED substitute light source(s) according to Regulation No. 128, this shall be specified in the description;**

- (e) In the case of a category S3 or S4 stop lamp, which is intended to be mounted inside the vehicle, the technical description shall contain the specification of the optical properties (transmission, colour, inclination, etc.) of the rear window(s)."

Paragraph 3.3.4.1.1., amend to read:

- "3.3.4.1.1. In any case the approval mark and the additional symbols or the Unique Identifier, **as well as the category or categories of light source(s) prescribed**, shall be visible when the lamp is fitted on the vehicle or when a movable part such as the hood or boot lid or a door is opened."

Paragraph 3.3.4.3., amend to read:

- "3.3.4.3. With the exception of lamps with non-replaceable light sources, bear a clearly legible and indelible marking indicating:
- (a) The category or categories of light source(s) prescribed; **in the case where the lamp has been approved for LED substitute light source(s), also the category or categories of the LED substitute light source(s);** and/or
- (b) The light source module specific identification code."

Insert a new paragraph 3.5.4., to read:

- "**3.5.4. Testing with LED substitute light sources is exempted from conformity of production control.**"

Insert a new paragraph 4.7.7., to read:

- "**4.7.7. In the case where the lamp, at the discretion of the applicant, also has to be approved with LED substitute light source(s), all measurements, photometric and colorimetric, shall be repeated using the LED substitute light source(s) prescribed.**"

Annex 1, item 9.2., amend to read:

- "9.2 By light signalling function and category:
For mounting either outside or inside or both²
Colour of light emitted: red/white/amber/colourless²

Number, category **or categories** and kind of light source(s):^{3/}

Voltage and wattage:

...."

- ^{3/} **Indicate LED substitute light source(s) explicitly, if any. "**

II. Justification

1. The use of LED substitute light sources in lamps and on vehicles for which such light sources were not foreseen during the original design of the lamp/vehicle needs to be verified to guarantee the correct operation of both the lamp and the vehicle. For these reasons, in parallel to the introduction of the LED substitute light sources into Regulation No. 128 and into the Consolidated Resolution R.E.5, amendments to the Regulations for type approval of lamps and for type approval of vehicles for their lamp installation are necessary.

2. Due to the schedule of the simplification of light and light-signalling Regulations (SLR) process, the necessary changes to the various lamp Regulations (Nos. 4, 6, 7, etc.) could not be presented to GRE before the time these Regulations were "frozen". Consequently, the changes contained in the present document have been prepared with the aim to be directly introduced in the draft new Regulation on Light-Signalling Devices (LSD).

3. The main changes to the LSD Regulation are as follows:

- (a) Use of LED substitute light source(s) is allowed and does not constitute a change of the lamp type. However, lamp performances shall be tested during type approval also with the LED substitute light source. Approval of the lamp using filament light source(s) is a prerequisite for approval of the lamp using LED substitute light source(s);
- (b) Conformity of Production (COP) testing of the lamp is required with an (etalon) filament light source only, because the LED substitute is the counterpart light source of the filament light source, resulting in equivalent photometrical lamp performance. The quality, i.e. the equivalence with the filament light source, is controlled by Regulation No. 128.;
- (c) Use of LED substitute light sources is at the discretion of the applicant, who shall declare this use, if any, to the Type Approval Authorities at the time of application for the first lamp approval or subsequent extension of approval issued for the version using the LED substitute light source;
- (d) The use of LED substitute light source(s) in a certain lamp type shall be indicated on the lamp by marking of the LED substitute light source category, in addition to the marking of the filament light source of which the LED substitute light source is the counterpart;
- (e) This marking on the lamp will be used for checking the allowance for use of lamps with LED substitute light sources in application of the Regulation on lamps installation on vehicle;
- (f) The indication of both the filament light source and of its LED counterpart light source, if any, shall be explicitly provided in the communication form;
- (g) For legal enforcement verification purposes, the category of light sources shall be visible when the lamp is fitted on the vehicle or when a movable part such as the hood or boot lid or a door is opened.
