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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-second session**

Geneva, 20–22 October 2014

Item 4 (i) (iv) of the provisional agenda

**1958 Agreement - Regulations****Other business – Any other business****Proposal for Supplement 7 to the 01 series of amendments to Regulation No. 123 (Adaptive front-lighting systems (AFS))****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 the GTB to amend the requirements for the mixture for the dirt test and to simplify the measurement of the objective luminous flux of light emitting diode (LED) module(s) and correct the ultraviolet (UV) table. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, 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

Annex 4, paragraph 1.2.1., amend to read:

- “1.2.1. Preparation of the test sample
- Test mixture
- 1.2.1.1. For a system or parts thereof with the outside lens in glass, a mixture of water and polluting agent to be applied to the test sample shall be composed of:
- 9 parts by weight of silica sand with a particle size of 0-100 micro meter ~~corresponding to distribution prescribed in paragraph 1.2.1.3.~~;
- 1 part by weight of vegetable carbon dust **produced from** (beech wood) with a particle size of 0-100 micro meter;
- 0.2 parts by weight of NaCMC<sup>5</sup>, and
- 5 parts by weight of sodium chloride (pure at 99 per cent);**
- an appropriate quantity of distilled water with a conductivity of less than 1 mS/m.
- 1.2.1.2. For a system or parts thereof with the outside lens in plastic material, the mixture of water and polluting agent to be applied to the test sample shall be composed of:
- 9 parts by weight of silica sand with a particle size of 0-100 micro meter ~~corresponding to distribution prescribed in paragraph 1.2.1.3.~~;
- 1 part by weight of vegetable carbon dust **produced from** (beech wood) with a particle size of 0-100 micro meter;
- 0.2 parts by weight of NaCMC<sup>5</sup>;
- 5 parts by weight of sodium chloride (pure at 99 per cent);
- 13 parts by weight of distilled water with a conductivity of less than 1 mS/m; and
- 2 + 1 parts by weight of surface-actant.<sup>6</sup>

Add a footnote 6, to read;

“<sup>6</sup> **The tolerance on quantity is due to the necessity of obtaining dirt that correctly spreads out on all types of plastic lens.**”

~~1.2.1.3. Particle size distribution~~

<del>Article I. — Particle size (in</del>	<del>Article II. — Particle size</del>
<del>Article III. — 0 to 5</del>	<del>Article IV. — 12 ± 2</del>
<del>Article V. — 5 to 10</del>	<del>Article VI. — 12 ± 3</del>
<del>Article VII. — 10 to 20</del>	<del>Article VIII. — 14 ± 3</del>
<del>Article IX. — 20 to 40</del>	<del>Article X. — 23 ± 3</del>
<del>Article XI. — 40 to 80</del>	<del>Article XII. — 30 ± 3</del>
<del>Article XIII. — 80 to 100</del>	<del>Article XIV. — 9 ± 3</del>

1.2.1.43. The mixture must not be more than 14 days old.

1.2.1.54. Application of the test mixture to the test sample:

The test mixture shall be uniformly applied to the entire light- emitting surface(s) of the test sample and then left to dry. This procedure shall be repeated until the illuminating value has dropped to 15-20 per cent of the values measured for each following point under the conditions described in this annex:

point E<sub>max</sub> in driving beam, under neutral state conditions,

50V for a class C passing beam, and each specified passing beam mode.

Annex 11, paragraph 4.2., table UV, amend to read:

“Table UV

Values according to "IRPA/INIRC Guidelines on limits of exposure to ultraviolet radiation".

Wavelengths (in nanometres) chosen are representative; other values should be interpolated.

$\lambda$	S( $\lambda$ )	$\lambda$	S( $\lambda$ )	$\lambda$	S( $\lambda$ )
250	0.430	305	0.060	355	0.000 16
255	0.520	310	0.015	360	0.000 13
260	0.650	315	0.003	365	0.000 11
265	0.810	320	0.001	370	0.000 09
270	1.000	325	0.000 50	375	0.000 077
275	0.960	330	0.000 41	380	0.000 064
280	0.880	335	0.000 34	385	<del>0.000 530</del> <b>0.000 053</b>
285	0.770	340	0.000 28	390	0.000 044
290	0.640	345	0.000 24	395	0.000 036
295	0.540	350	0.000 20	400	0.000 030
300	0.300				

“

Annex 11, paragraph 5.2., amend to read:

“5.2. ~~Three~~ **One** modules of each type shall be submitted by the applicant with the light source control gear, if applicable, and sufficient instructions.

Suitable thermal management (e.g. heat sink) may be provided, to simulate similar thermal conditions as in the corresponding headlamp application.

Before the test ~~the each~~ LED module shall be aged at least for seventy-two hours under the same conditions as in the corresponding headlamp application.

In the case of use of an integrating sphere, the sphere shall have a minimum diameter of one meter, and at least ten times the maximum dimension of the LED module, whichever is the largest. The flux measurements can also be performed by integration using a goniophotometer. The prescriptions in CIE - Publication 84 - 1989, regarding the room temperature, positioning, etc., shall be taken into consideration.

The LED module shall be burned in for approximately one hour in the closed sphere or goniophotometer.

The flux shall be measured after stability has occurred, as explained in paragraph 4.3.1.2. of this annex 10.

~~The average of the measurements of the three samples of each type of LED module shall be deemed to be its objective luminous flux.”~~

## II. Justification

*Amendment to Annex 4, paragraph 1.2.1.*

1. The Regulations currently specify several test mixtures to simulate dirt during testing of lamps. As there is no reason to use different kinds of test mixtures it is proposed to amend the Regulations by introducing a uniform test mixture to be used for all the tests. In addition, to avoid misinterpretation, the wording “beech wood” is replaced by “produced from beech wood”.

*Amendment to Annex 11, paragraph 4.2.*

2. This is a correction to the UV test table.

*Amendment to Annex 11, paragraph 5.2.*

3. This proposal intends to simplify the test procedures that determine the objective luminous flux of LED module(s). As the purpose of this test is to verify that the luminous flux is greater than 1000 lm; it is not required to measure an absolute value, it is sufficient to perform this measurement on one LED module instead of on three modules as currently required.

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