

Comments from Germany on ECE/TRANS/WP.29/GRE/2017/2

General remarks to all documents dealing with the item “LED substitute light sources”

From our point of view, as mentioned by UK, at first the fundamental questions need to be discussed:

- **Do we want to make LED substitute light sources legal, which are able due to their construction to replace filament light sources in existing approved lamps?**

If the answer of GRE is Yes:

- **The political aspects need to be discussed, because this will influence not only typ-approval and CoP but also Periodical Technical Inspection, Technical Roadside Inspection and inspections by Police and other authorities.**
- **For that purpose we need a clear identification of the approved lamps where the installation of LED substitute light sources is legal.**

I. Proposal – Comments from Germany in yellow

Amend the new paragraph 2.1.2.4., to read:

“2.1.2.4. The correlated* colour temperature, in so far as it concerns **white** LED **substitute** light sources;

LED **substitute** light sources of the colour white with a correlated colour temperature exceeding 3000 K or not exceeding 3000 K are considered as being of different types.

* CIE S 017/E: 2011: ILV: International Lighting Vocabulary, or eILV; term 17-258.“

Paragraph 2.2.2.2., amend to read:

“2.2.2.2. A brief technical description **including the correlated colour temperature of the light emitted in case of a LED substitute light source emitting white light;**”

Insert a new paragraph 2.3.1.5., to read:

“2.3.1.5. The marking as indicated in paragraph 2.3.3., if applicable. “

Delete this new paragraph 2.3.3. and renumber the former paragraph 2.3.3., to read:

~~“2.3.3. LED substitute light sources of the colour white with a correlated colour temperature not exceeding 3000 K shall be marked by a “G”, placed after the LED substitute light source category marking separated by a space.~~

2.3.4. Inscriptions other than those covered by paragraphs 2.3.1., 2.3.3. and 2.4.4. may be affixed, on the condition that they do not adversely affect the luminous characteristics.”

Insert a new paragraph 3.10., to read:

“3.10. LED substitute light sources - additional requirements

3.10.1. The electrical current of the LED substitute light source shall be measured at ambient temperature of $(23 \pm 2) ^\circ\text{C}$ in still air after 1 minute and after 30 minutes of operation at test voltage.

Measured values of the electrical current shall be within the limits as specified in the relevant data sheet of Annex 1. .

3.10.2. The LED substitute light source shall comply with the technical requirements to an electrical/electronic sub-assembly (ESA) as specified by Regulation No. 10 and its series of amendments in force at the time of application for type approval.

3.10.3. The LED substitute light source shall not emit light when activated for 2 milliseconds or shorter.”

Add a further paragraph:

3.10.4. Only such LED substitute light sources are allowed to be approved, which generate the same light performance in any lamp, which was approved with the filament lamp of the same [corresponding] category without any exception.

3.10.4.1. The applicant shall demonstrate to the Technical Service responsible for type approval with measurements, by a sufficient number of lamps of different technology (and different manufacturers), that the LED substitute light source generate the same light performance in [nearly all] [min. 80 %] [any] of the tested lamps.

3.10.4.2. The authority which granted approval shall have the right to check the performance of a LED substitute light source, equivalent to paragraph 3.10.4.1..

Annex 4, introductory part, amend to read:

“Light sources of all categories with integrated ~~heatsink~~ **heat sink** shall be measured **in still air** at ambient temperature of $(23 \pm 2) ^\circ\text{C}$ ~~in still air~~, **and at an additional ambient temperature if indicated in the relevant light source sheet**. For these measurements the minimum free space as defined in the data sheets shall be maintained.

Light sources of all categories with definition of a temperature T_b shall be measured by stabilising the T_b -point at the specific temperature defined on the category data sheet...”

Annex 5, paragraph 1., amend to read:

“1. General

The conformity requirements shall be considered satisfied from a photometric, geometrical, visual and electrical standpoint if the specified tolerances for production LED light sources in the relevant data sheet of Annex 1, ~~and~~ the relevant data sheet for the caps **and in the case of LED substitute light sources the additional requirements to LED substitute light sources in paragraph 3.10.** are met.”

Annex 6, table 1, insert an additional row at the bottom, to read:

“Table 1

Characteristics

<i>Grouping of characteristics</i>	<i>Grouping* of test records between LED light source types</i>	<i>Minimum 12 monthly sample per grouping*</i>	<i>Acceptable level of non-compliance per grouping of characteristics (%)</i>
Marking, legibility and durability	All types with the same external dimensions	315	1
External LED light source dimensions (excluding cap/base)	All types of the same category	200	1
Dimensions of caps and bases	All types of the same category	200	6.5
Dimensions related to light emitting surface and internal elements**	All LED light sources of one type	200	6.5
Initial readings, power, colour and luminous flux**	All LED light sources of one type	200	1
Normalised luminous intensity or cumulative luminous flux distribution	All LED light sources of one type	20	6.5

Electrical current ***	All LED light sources of one type	20	1
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* The assessment shall in general cover series production LED light sources from individual factories. A manufacturer may group together records concerning the same type from several factories, provided these operate under the same quality system and quality management.

** In case a LED light source has more than one light output function the grouping of characteristics (dimensions, power, colour and luminous flux) applies to each element separately.

*** LED substitute light sources only “

II. Justification

With regard to the comments of the expert of Germany the following principle is an important item:

Fundamental Law of Replaceable Light Sources:

Replaceable light sources of the same category and the same cup-holder-system shall generate in any lamp , which was approved with that category,

- **the same lighting performance**
- **independently from the optical construction of the lamp and**
- **independently from the light source technology.**

Therefore is a marking with “G” for general use not acceptable.