

GRE Task Force LED Substitutes / Retrofits (TFSR)

Status report for GRE84

09/04/2021

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Meetings of TF

- 1st meeting: 2017-12-14, Aachen (report: TFSR-01-11)
- 2nd meeting: 2018-02-06, Bonn (report: TFSR-02-05)
- 3rd meeting: 2018-03-27, Brussels (report: TFSR-03-09)
- 4th meeting: 2018-06-06 Brussels (report: TFSR-04-09)
- 5th meeting: 2018-01-30 Aachen (report: TFSR-05-09)
- 6th meeting: 2019-05-15 Paris (report: TFSR-06-06)
- 7th meeting: 2019-07-18 Karlsruhe (report: TFSR-07-07)
- 8th meeting: 2019-12-10 Bonn (report: TFSR-08-04)
- 9th meeting: 2020-01-17 by telephone (report: TFSR-09-04)
- 10th meeting: 2020-03-12 in Aachen (report: TFSR-10-05)
- 11th meeting: 2020-05-25 by telephone (report: TFSR-11-06)
- 12th meeting: 2020-07-02 by telephone (report: TFSR-12-05)
- 13th meeting: 2020-09-24 by telephone (report: TFSR-13-09)
- 14th meeting: 2020-11-20 by telephone (report: TFSR-14-05)
- 15th meeting: 2021-01-11 by telephone (report: TFSR-15-07)

Two-step approach:

- Step 1: LED Substitutes
 - Step 1A: light signaling applications
 - Step 1B: road illumination applications
- Step 2: LED Replacement (“retrofit”)
 - Step 2A: Administrative items
 - Step 2B: Technical items

Step 1A → entered-into force

Step 1B → approved by GRE83

Step 2A }
Step 2B } → **GRE84**

Step 1A: LED Substitutes for light signaling applications

- Package of documents approved by GRE80
 - R128
 - RE5
 - R148 (LSD)
 - Installation Regulations
- Entered-into-force
 - R128 and RE5 in October 2019
 - Installation Regulations and R148 in May 2020
- GRE Reference Document published
 - GRE-80-02 - (TF SR) Equivalence criteria



Step 1B: LED Substitutes for road illumination applications

- Detailed discussion started in the 5th TFSR meeting in Aachen and continued in the 6th and 7th TFSR meetings
- Documents submitted to GRE82 and GRE83 :
 - GRE/2019/19 to amend R-149 (RID) → confirmed by GRE82
 - GRE-82-03 to extend the equivalence criteria documents → confirmed by GRE82
 - GRE/2020/06 to include H11/LED/6 into RE5 → approved by GRE83



Step 2: LED replacement light sources

Step 2A: Administrative items

Status after GRE83 (GRE83-report, item 18) :

“The expert from TF SR presented a set of proposals for amendments to UN Regulations Nos. 37 and 128 as well as to R.E.5 which introduced LED replacement light sources into UN Regulation No. 37 (ECE/TRANS/WP.29/GRE/2020/15, ECE/TRANS/WP.29/GRE/2020/16, ECE/TRANS/WP.29/GRE/2020/17, GRE-83-05, GRE-83-11, GRE-83-12, GRE-83-13, GRE-83-14, GRE-83-15, GRE-83-16). The expert from OICA commented on these proposals GRE-83-38. The expert from France expressed concerns. GRE re-confirmed the approach chosen by TF SR and decided to revert to the package at the next session. Meanwhile, GRE requested TF SR to liaise with the expert from France with the aim to take into consideration his concerns.”

- Continued the discussion, including the experts from OICA and FRANCE, in the 14th and 15th meeting of the TF S/R
- All concerns could be resolved in the TFSR-15 meeting

Target achieved:

- “administrative” equivalence, i.e. by introducing LED replacement light sources into R37
- ... to allow full interchangeability of the R37-approved “filament original” with the R37-approved “LED replacement”

Step 2: LED replacement light sources:

Step 2B: Technical items

- Photometric equivalence was taken over from LED substitutes
 - Other technical items were addressed in detail and led to
 - additional electrical requirements
 - additional thermal requirements
 - additional mechanical requirements
 - TFSR-11-02rev1 serves as summary/reference
 - No open technical items left after TFSR-15
- Agreement to submit package of formal documents and supporting informal documents to GRE84 (see next slide)

The **new** document scope

R37

Filament Light Sources

- By thermal radiation (incandescence)
- By LED technology → GRE/2020/15 rev1

R99

HID light sources

R128

LED light sources

LED substitute light sources

Excluding LEDr (→ GRE/2020/17)

R.E.5 Category sheets

Filament light sources by thermal radiation

LED replacement light sources incl H11, C5W (→ GRE/2020/16 rev1, GRE/2021/3)

HID light sources

LED light sources, including LED substitute light sources

Equivalence Document
GRE-83-15



Outcome: documents submitted to GRE84

- Proposal for Amendment to R37
 - **GRE/2020/15rev1**
 - Keeping the current requirements for filament light sources
 - introducing additional requirements for LED replacement light sources
 - Taking-over requirements from R128, where relevant
 - Adding specific sections for Documentation, Marking, Testing, User information
 - → Responsibilities clearly defined (TFSR-15)
 - **GRE-84-02**: based on GRE/2020/15 with track changes visible
- Proposal for R.E.5, incl H11, C5W (LEDr)
 - **GRE/2021/16rev1 (H11 LEDr) , GRE/2021/3 (C5W LEDr)**
 - Photometric, Geometric, Electrical, Thermal specification
 - GRE-83-16: Equivalence report for H11 (LEDr)
 - **GRE-84-03**: Equivalence report for C5W (LEDr)
- Proposal for Amendment to R128
 - **GRE/2020/17**
 - Clarifying that LED replacement light source shall not be approved according R128
- Equivalence Criteria: GRE-83-15

The necessary changes

R37 Filament Light Sources

→ GRE/2020/15 rev1

- 1 Scope (incl LED replacements)
- 2 Administrative Provisions (incl LED replacements)
- 3 Technical requirements (incl LED replacements)
- 4 Requirements to the packaging of LED replacements
- 5 Conformity of production
- 6 Penalties for non-conformity of production
- 7 Production definitively discontinued
- 8 Names and addresses ...
- 9 Transitional provisions
- Annex 1 (incl ref. to LED replacements in R.E.5)
- Annexes (editorial changes plus adding specific LED replacements testing)

R.E. 5 Light Source Categories

→ GRE/2020/16 rev1,
GRE/2021/3

- 1 Scope
- 2 Definitions
LED Replacement light source
AE device
- 3.1 Filament light sources
- 3.2 Gas Discharge
- 3.3 LED Light sources
- Group 1: no restrictions
- Group 2: signalling
- Group 3: [reserved]
- Group 4: LED substitutes
- Group 5: LED replacements
Category sheets H11, C5W

R128 LED Light Sources

→ GRE/2020/17

- 1 Scope
- 2 Administrative Provisions
- 3 Technical requirements
- 4 Requirements to the packaging of LED substitute light sources
- 5 Conformity of production
- 6 Penalties for non-conformity of production
- 7 Production definitively discontinued
- 8 Names and addresses ...
- Annexes (Exclude LED Replacements)

Changes compared to GRE83

R37 Filament Light Sources

GRE/2020/15, GRE-83-11

→ GRE/2020/15rev1

The definitions of “category” and “type” clarified

Light producing technology declared at type approval application

Editorial correction in two places for “the rated voltage” and “maximum wattage”

Clarification for marking LEDr on the light source

Clarification for marking for oversize cap

Clarification of responsibilities during type approval with regards to system / vehicle compatibility

Editorial clarification for colour measurement and minor editorial changes in the two subsequent paragraphs

Editorial clarification for 3.4.8.

In Annex 2, *Communication*, the light producing technology of the category was explicitly inserted.

R.E. 5 Light Source Categories

GRE/2020/16, GRE-83-13

→ GRE/2020/16rev1

Clarification that filament light sources are using incandescent technology (par. 3.1 and Title of Annex 1)

Minor editorial clarifications incl update of IEC references

END