

Proposal on making R37 *technology neutral*
by implementing another technology,
in this case LED

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GRE 82 Report

“21. The expert of the Task Force on Substitutes and Retrofits (TF SR) presented their progress report (GRE-82-17-Rev.2) and sought the consent of GRE for the following activities of TF SR:

- *Not include Light Emitting Diode (LED) retrofits in UN Regulation No. 128.*
- *Make UN Regulation No. 37 performance based and technology neutral by amending its scope to also include other light generating technologies, e.g. LED.*
- *Allow interchange of light sources in the same category, as approved according to UN Regulation No. 37, independent of the technology used for light generation.*

22. GRE agreed to the above activities.”

Content

1. Structure of the light source regulations
 - Including the simplification by R.E.5
2. Key in the light source regulations
 - Category
 - Type
3. Appropriate term instead of LED “Retrofit”
4. Model

*“Make UN Regulation No. 37 performance based and technology neutral **by amending its scope to also include other light generating technologies, e.g. LED**”*
5. Main paragraphs to be amended to include LED technology
6. Way of implementation
 - Refer to or to copy/amend parts of R128 and insert new provisions
 - Some basic choices to be made

Structure of light source regulations

Scope

Administrative provisions (partially technical)

Technical requirements

Conformity of production

Names and addresses of Technical Services ...

Transitional provisions in R37

Key

Administrative

Technical

Sheets (definition of categories)

Annexes

Sheets for light source categories

Communication

Example of the arrangement of the approval mark

Prescriptions for technical testing

Prescriptions for conformity of production

Analysis amendments Statistics

Extract from WP29-164-18

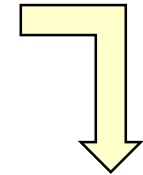
Bubbles

Size

Reflects number of pages per paragraph/annex

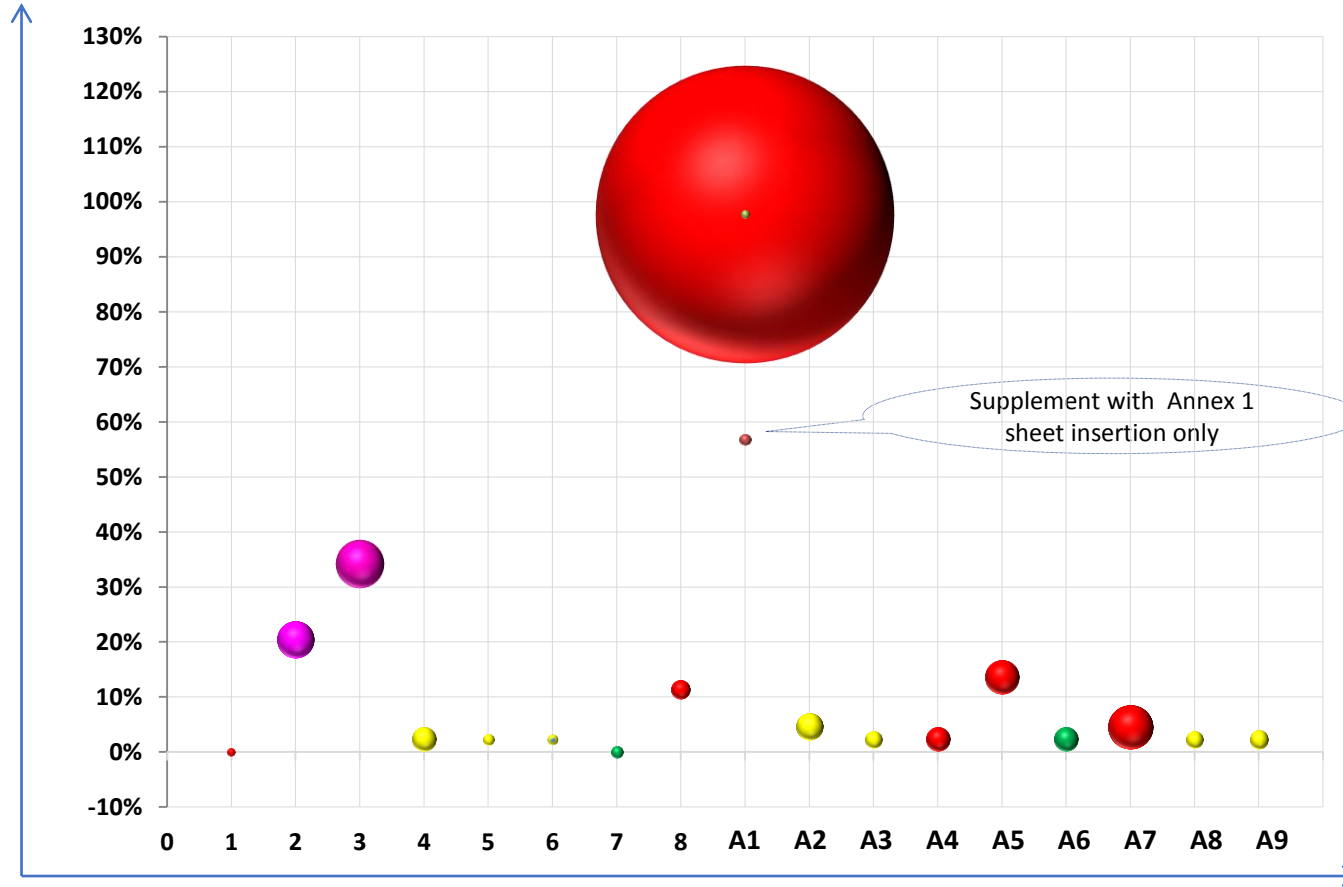
Colour

- Green** Common text shared between light source regulations
- Yellow** Common text with minor technology related lines
- Purple** Common text with frequent technology related lines
- Red** Totally different paragraphs



R37

Percentage of supplements amending a paragraph/annex



1. Frequent changes concern the category sheets.
2. Most of the text is *technology related testing*.
3. There is very little common text.
 - This is why R.E. 5 was created.
- plus
4. The main future developments will not be in incandescent or gas-discharge light sources.
 - This is why light source regulations were not merged.

R37 03 series
In effect for 28 years
44 Supplements

Key in light source regulations

N means:
For R37: “filament”
For R99: “gas-discharge”
For R128: “LED”

2. Administrative definitions

Category

To describe the different **basic design** of standardised N light sources

“**Types**” are N light sources **within the same category** of N light source which differ in such essential respects as:

- Trade name or mark
- Bulb design and/or cap (**R128: light source**) design, in so far as these differences affect the optical results
- Rated voltage (**R37, R128**)
- Halogen (**R37**)
- Excluded (**R37**) : A selective-yellow bulb or an additional selective-yellow outer bulb, solely intended to change the colour

Key in light source regulations

N means:
For R37: “filament”
For R99: “gas-discharge”
For R128: “LED”

1. Scope

Category sheets in Annex 1

Annex 1

Reference to (groups of) N light source categories in R.E.5 including use restrictions for approval of devices using these light source categories

Note: before the simplification and R.E.5 the category sheets were placed in the Regulation

This is referring to the light generating technology and is necessary here to refer the proper place in R.E.5

Appropriate term instead of LED “Retrofit”

Shortlist, derived from a long list

Term	Oxford Dictionary, ISO/IEC Directives Part 2, suggested as one of the Spelling reference works; https://www.lexico.com/en
Alternative	One of two or more available possibilities
Comparable	Of equivalent quality; worthy of comparison
Corresponding	Analogous or equivalent in character, form, or function; comparable
Counterpart	A person or thing that corresponds to or has the same function as another person or thing in a different place or situation.
Equivalent	A person or thing that is equal to or corresponds with another in value, amount, function, meaning, etc.
Interchangeable	Put each of (two things) in the other's place; (of a thing) be able to be exchanged with another
Original	Present or existing from the beginning; first or earliest
Replacement	Replace: Take the place of.; Provide a substitute for (something that is broken, old, or inoperative); Fill the role of (someone or something) with a substitute.; Put (something) back in a previous place or position
Retrofit	Add (a component or accessory) to something that did not have it when manufactured.
Substitute	A person or thing acting or serving in place of another.



IMPORTANT	from previous slides
Type	Not available since this is an important descriptor within a category; LED- type is not on par with e.g. rated voltage
Filament	Not available since a filament is a fibre and design prescriptive; use incandescent instead if there is confusion



Replacement light sources

In general

Replacement light sources	Comment
Original technology	
Original light source	Light regulations do not discriminate between original or replacement light sources, so no need to specify separately
Substitute light source	Example is the LED Substitutes for filament light sources
Another technology	
Another than the original light source	Example is a <i>LED replacement light source</i> It is not needed to mention the technology of the original L.S. here since this is clear from the regulation and not needed for testing requirements

Replacement light sources

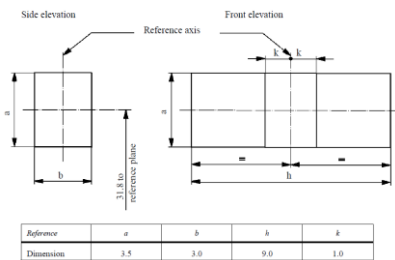
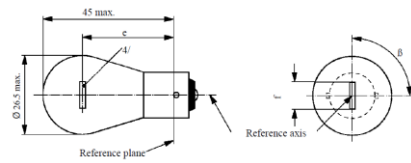
Additional reasons in favour of this term

- Equivalence criteria are one-way criteria and approval of the device is done with the original technology light source only
- R37 should not become a “universal” light source regulation
- In case of confusion concerning a filament, use “incandescent” filament

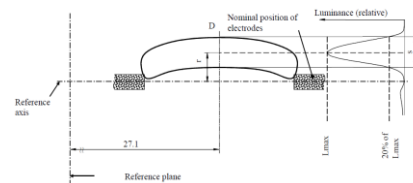
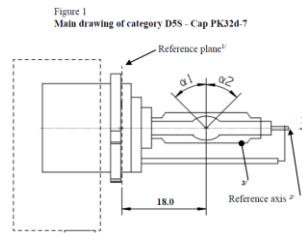
➤ ***LED Replacement light source*** is the appropriate term

Model

Filament L.S. approved according to R37
LED replacement L.S.
 Future L.S. of another technology



Gas discharge L.S. approved according to R99



LED L.S. approved according to R128

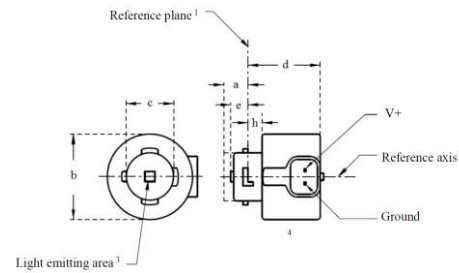


Figure 2
 Box definition of the light emitting area with dimensions as specified in table 2

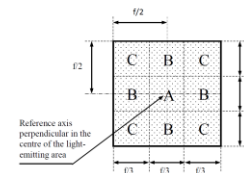


Table 2
 Dimensions of the box system in Figure 2

Dimensions in mm	f
LED light sources of normal production	4.5
Standard LED light sources	4.5

LED substitute L.S. approved according to R128

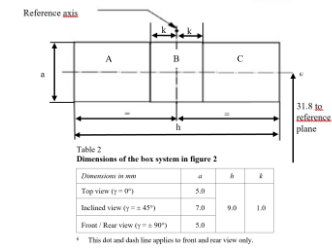
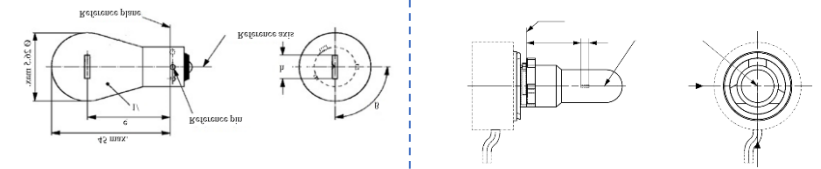


Table 2
 Dimensions of the box system in Figure 2

Dimensions in mm	a	b	f
Top view ($\gamma = 0^\circ$)	5.0	9.0	1.0
Inclined view ($\gamma = \pm 45^\circ$)	7.0	9.0	1.0
Front / Rear view ($\gamma = \pm 90^\circ$)	5.0	9.0	1.0

* This dot and dash line applies to front and rear view only.

Main paragraphs in R37 to be amended to include LED technology

Scope

Administrative provisions (partially technical)

Technical requirements

Packaging requirements for LED Replacements in R37

Conformity of production

Names and addresses of Technical Services ...

Transitional provisions in R37

Annexes

Reference to the Sheets for light source categories in R.E.5

Communication

Example of the arrangement of the approval mark

Prescriptions for technical testing

Prescriptions for conformity of production

Main changes

R37 Filament Light Sources

1 Scope (incl LED replacements)

2 Administrative Provisions
(incl LED replacements)

3 Technical requirements
(incl LED replacement)

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 reference to LED replacements)

Annexes (editorial changes plus specific
LED replacement testing)

R.E. 5 Light Source Categories

1 Scope

2 Definitions

3.1 Filament light sources

Group 1: no restrictions

Group 2: signalling

Group 3: „phase out“

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

R128 LED Light Sources

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)

Some basic choices to be made

Implementation method

- When the number of changes to a paragraph is small, insert LED Replacements in the paragraph (for most paragraphs)
- When the number of changes to a paragraph is large, split the paragraph (technical requirements and annexes on measurement prescriptions):
 - n.1 Filament light sources (incandescent technology)
 - n.2 Replacement light sources (LED technology)
- For technical requirements and test methods that apply to all LED light sources, a reference should be made to R128
- For technical provisions that require a lot of minor amendments to a referred paragraph in R128, these provisions should be copied and amended, not referred to

R37

Title of the Regulation

Uniform provisions concerning the approval of filament light sources and their [LED] replacement light sources for use in approved lamps of power-driven vehicles and of their trailers

OR

Uniform provisions concerning the approval of filament light sources ~~and their LED replacement light sources~~ for use in approved lamps of power-driven vehicles and of their trailers

R37

1. Scope



This Regulation applies to **filament** light sources shown in Annex 1 and intended for use in approved lamps of power-driven vehicles and of their trailers.

OR

1.1. This Regulation applies to filament light sources shown in Annex 1 and intended for use in approved lamps of power-driven vehicles and of their trailers.

- 1.2. This Regulation applies to **[LED]** replacement light sources shown in Annex 1,
- (a) having a counterpart filament light source with the same category designation shown in Annex 1,
 - (b) intended for use in lamps of power-driven vehicles and of their trailers approved for this counterpart filament light source, and
 - (c) **keeping the characteristics of these lamps when used in these lamps.***

* See R115, LPG systems

R37

Annex 1

Sheets* for [filament light] sources [~~and their replacement light sources~~]

The sheets of the relevant filament light source category or LED replacement light source category and the group in which this category is listed with restrictions on the use of this category shall apply as incorporated in Resolution [R.E.4] R.E.5 or its subsequent revisions, applicable at the time of application for type approval of the filament light source

Depending on the title and scope

Necessary for correct reference to R.E.5

OR preferred

This title is in each regulation specific

➔ Sheets* for filament light sources and their LED replacement light sources

The sheets of the relevant filament light source category and the group in which this category is listed with restrictions on the use of this category shall apply as incorporated in Resolution [R.E.4] R.E.5 or its subsequent revisions, applicable at the time of application for type approval of the filament light source.

R37

3. Technical requirements

3.1. Filament light sources (incandescent technology)

3.1.1. Definitions

....

3.2. LED replacement light sources

3.2.1. The LED replacement light source shall, in addition to the technical requirements of this Regulation, also conform to the relevant* technical requirements for LED light sources of the latest version of Regulation No. 128;

3.2.2. The LED replacement light source shall be equipped with a cap of the same cap designation as its counterpart filament light source as defined in the relevant data sheet of Annex 1;

3.2.3. The electrical current of the LED replacement light source shall be measured at ambient temperature of (23 ± 2) °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

To consider additional test points for

- PWM operation e.g. for dual level operation
- Higher ambient temperature values

* list numbers of relevant paragraphs

R.E.5

3.3. LED light sources

.....

Group 5	
LED replacement light source categories* only for use in lamps approved with light source(s) of their counterpart light source category	
Category	Sheet number(s)
PY21W/1 to 4

* Not for use in conformity of production control of lamps.

R128

Annex 1

Sheets¹ for LED light sources

The sheets of the relevant LED light source category and the group in which this category is listed with restrictions on the use of this category shall apply as incorporated in Resolution R.E.5 or its subsequent revisions, applicable at the time of application for type approval of the LED light source; however, the sheets of LED replacement light sources are excluded from this annex.

END