Modifications to the body of the draft Resolution on the common specification of light source categories (ECE/TRANS/WP.29/GRE/2015/28)

The text reproduced below was prepared by the experts from the Informal Working Group "Simplification of the Lighting and Light-Signalling Regulations" (IWG SLR) to simplify the content and amendment process of the light source Regulations Nos. 37, 99 and 128. The data sheets for light sources are moved from Annexes 1 of these Regulations to the draft Resolution. Moreover, the proposal ECE/TRANS/WP.29/GRE/2015/29 to phase out some filament light source categories and the proposal ECE-TRANS-WP29-GRE-2015-30e to introduce new LED light source categories LW3, LY3, LR5, LW5 and LY5, and to align some drawings of category LR4 with drawings of these new categories, all adopted by the 74th session of GRE, were merged with this proposal.

**Resolution [No. y] on the common specification of light source categories**

Status table

This consolidated version of this Resolution contains all provisions and amendments adopted so far by the World Forum for Harmonization of Vehicle Regulations (WP.29) and is valid from the date as indicated in the following table until the date on which the next revision of this Resolution becomes valid:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Version of the Resolution* | *Date \* as from which the version is valid* | *Adopted by WP.29* | | *Clarification* |
| *Session No.* | *Amendment document No.* |
| Original | [2017-xx-xx] | [168] | [WP.29/2016/xx] | Based upon Annexes 1 of Regulations:   * No. 37, up to and including Supplement 44 * No. 99, up to and including Supplement 11 * No. 128, up to and including Supplement 5 |

\* This date is the date of adoption of the amendment to the Resolution by WP.29 or the date of entering into force of an amendment to Regulation No. 37, 99 or 128 adopted by AC.1 as a package with the amendment to the Resolution in the same session of WP.29.

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**Preamble**

1. The World Forum for Harmonization of Vehicle Regulations (WP.29),

2. DESIRING to harmonize technical requirements while ensuring high levels of safety, environmental protection, energy efficiency and anti-theft performance of wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles,

3. DESIRING to facilitate the trade of wheeled vehicles, equipment and parts with harmonized performance requirements among its participating countries,

4. BEARING IN MIND that the assessment of compliance with the technical prescriptions of Regulations concerning lighting and light signalling requires the specification of light sources in light source category sheets and/or information on which light source categories are applicable or excluded for use in particular lamps,

5. DESIRING to simplify the regulatory process for all stakeholders, while the technical specifications of the characteristics of light source categories and/or information on which light source categories are applicable or excluded for use in particular lamps, are subject of evaluation by the WP.29 Working Party on Lighting and Light-Signalling (GRE),

6. DECIDED that the specification of light sources in light source category sheets and/or the information which light source categories are applicable or excluded for use in particular lamps, are issued in a Resolution on the specification of light source categories.

**Introduction**

1. This Resolution finds its origin in the 1958 Agreement and its attached Regulations:

- Regulation No. 37 "Filament lamps", up to and including Supplement No. 44;

- Regulation No. 99 "Gas-discharge light sources", up to and including Supplement No. 11;

- Regulation No. 128 "Light emitting diodes (LED) light sources", up to and including Supplement No. 5.

2. This Resolution is intended for reference from and approval of light sources according to:

- Regulation No. 37 "Filament light sources"\*;

- Regulation No. 99 "Gas-discharge light sources";

- Regulation No. 128 "LED light sources".

\* Title was harmonised with the the other light source regulations at the occasion of introduction of this Resolution

3. This Resolution may also serve as a reference for other Regulations or standards.

**1. Scope**

This Resolution contains the specifications of light source categories and/or information on which light source categories are applicable or excluded for use in particular lamps.

In the case of “design to conform” requirements, reference should be made to values of characteristics of light sources of normal production, while values for standard (high accuracy) light sources may be ignored.

**2. Definitions**

2.1. General

2.1.1. "*Light source*" means one or more elements for visible radiation, with a base for mechanical and electrical connection, possibly assembled with one or more components to control the elements for visible radiation;

2.1.1.1. "*Filament light source*" means a light source where the only element for visible radiation is one or more filaments producing thermal radiation;

2.1.1.2. "*Gas-discharge light source*" means a light source where the only element for visible radiation is a discharge arc producing electroluminescence;

2.1.1.3. "*Light-emitting diode (LED) light source*" means a light source where the only element for visible radiation is one or more solid state junctions producing electroluminescence possibly completed with one or more elements for fluorescence-based conversion.

2.1.2. “*Standard (étalon) light source*” means a special light source used for the testing of lighting and light-signalling devices. It has reduced tolerances for dimensional, electrical and photometric characteristics as specified on the relevant data sheet.

2.1.3. "*Ballast*" means one or more components, either between supply and light source or integrated with a light source, to control the electrical current of the gas-discharge light source;

2.1.4. “*Objective value(s)*” means design value(s) to be achieved within specified tolerances when the light source or the ballast of the gas discharge light source is energized at specified test voltage(s)

2.2. Dimensional characteristics

2.2.1 “*Reference axis*” means an axis defined with reference to the cap and to which certain dimensions of the light source are referred.

2.2.2. “*Reference plane*” means a plane defined with reference to the cap and to which certain dimensions of the light source are referred.

2.2.3. “Light centre” means a point that represents the origin of the light emitted.

2.2.4. “*Light centre length*” means the distance between the reference plane and the light centre.

2.2.5. “*Viewing axis on to the light source*” means an axis through the nominal light centre at defined polar and azimuthal angle.

2.3. Electrical characteristics

2.3.1. "*Test voltage*" means the voltage, at the input terminals of the light source or at the terminals of the ballast for the gas-discharge light source, for which the electrical and photometric characteristics of the light source are intended and are to be tested.

2.3.2. “*Rated voltage*” means the voltage (in volts) marked on the light source or on the ballast.

2.3.3. "*Rated wattage*" means the wattage marked on the light source or on the ballast.

2.4. Photometric characteristics

2.4.1. “*Reference luminous flux*“means an accurately specified luminous flux value of a standard light source serving as a reference for the optical characteristics of a lighting or light signalling device.

2.4.2. “*Measuring luminous flux*“means specified value of the luminous flux for testing a filament light source with an internal shield to produce the cut-off.

2.4.3. “*Cumulative luminous flux”* means the luminous flux emitted by the light source under operating conditions, within a cone enclosing a specified solid angle and centred on the reference axis[[1]](#footnote-2).

2.4.4.. “*Normalized luminous intensity*” means luminous intensity divided by the luminous flux of the light source.

**3. Light source categories and their use**

**3.1. Filament light sources**

Characteristics\* of categories of filament light sources as listed below are shown in Annex 1.

Luminous flux values in the light source category sheets concern white light unless otherwise specified in these sheets.

List of categories of filament light sources, grouped according to restrictions on use and their sheet numbers:

| *Group 1* | | | | |
| --- | --- | --- | --- | --- |
| *Filament light source categories (or types within these categories) without general restrictions:* | | | | |
|  | *Category* | *Note(s)* | *Sheet number(s)* |  |
|  |  |  |  |  |
|  | H1 | \*6 | H1/1 to 3 |  |
|  | H3 | \*6 | H3/1 to 4 |  |
|  | H4 |  | H4/1 to 5 |  |
|  | H7 |  | H7/1 to 4 |  |
|  | H8 |  | H8/1 to 4 |  |
|  | H8B |  | H8/1 to 4 |  |
|  | H9 | \*3 | H9/1 to 4 |  |
|  | H9B | \*3 | H9/1 to 4 |  |
|  | H10 |  | H10/1 to 3 |  |
|  | H11 |  | H11/1 to 4 |  |
|  | H11B |  | H11/1 to 4 |  |
|  | H13 |  | H13/1 to 4 |  |
|  | H15 |  | H15/1 to 5 |  |
|  | H16 |  | H16/1 to 4 |  |
|  | H16B |  | H16/1 to 4 |  |
|  | H17 |  | H17/1 to 6 |  |
|  | H18 |  | H18/1 to 4 |  |
|  | H19 |  | H19/1 to 5 |  |
|  | H20 |  | H20/1 to 4 |  |
|  | H21W | \*2 | H21W/1 to 2 |  |
|  | H27W/1 |  | H27W/1 to 3 |  |
|  | H27W/2 |  | H27W/1 to 3 |  |
|  | HB3 |  | HB3/1 to 4 |  |
|  | HB4 |  | HB4/1 to 4 |  |
|  | HIR2 |  | HIR2/1 to 3 |  |
|  | HS1 | \*6 | HS1/1 to 5 |  |
|  | HS5 | \*5 | HS5/1 to 4 |  |
|  | PSX24W | \*2 | P24W/1 to 3 |  |
|  | PSX26W | \*2 | PSX26W1 to 3 |  |
|  | S2 | \*5,\*6 | S1/S2/1 to 2 |  |

| *Group 2* | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| *Filament light source categories (or types within these categories) only for use in signalling lamps, cornering lamps, reversing lamps and rear registration plate lamps:* | | | | | | |
|  | *Category* | *Note(s)* | | *Sheet number(s)* | |  |
|  |  | |  |  | |  |
|  | C5W | | \*6 | C5W/1 | |  |
|  | H6W | |  | H6W/1 | |  |
|  | H10W/1 | |  | H10W/1 to 2 | |  |
|  | HY6W | |  | H6W/1 | |  |
|  | HY10W | |  | H10W/1 to 2 | |  |
|  | HY21W | |  | H21W/1 to 2 | |  |
|  | P13W | |  | P13W/1 to 3 | |  |
|  | P21W | | \*6 | P21W/1 to 2 | |  |
|  | P21/4W | |  | P21/4W/1 | | (P21/5W/2 to 3) |
|  | P21/5W | | \*6 | P21/5W/1 to 3 | |  |
|  | P27W | |  | P27W/1 to 2 | |  |
|  | P27/7W | |  | P27/7W/1 to 3 | |  |
|  | PR21W | |  | PR21W/1 | | (P21W/2) |
|  | PR21/5W | |  | PR21/5W/1 | | (P21/5W/2 to 3) |
|  | PS19W | |  | P19W/1 to 3 | |  |
|  | PS24W | |  | P24W/1 to 3 | |  |
|  | PSY19W | |  | P19W/1 to 3 | |  |
|  | PSY24W | |  | P24W/1 to 3 | |  |
|  | PW13W | |  | P13W/1 to 3 |  | |
|  | PW16W | |  | PC16W/1 to 3 |  | |
|  | PWR16W | |  | PC16W/1 to 3 |  | |
|  | PWY16W | |  | PC16W/1 to 3 |  | |
|  | PW19W | |  | P19W/1 to 3 |  | |
|  | PWR19W | |  | P19W/1 to 3 |  | |
|  | PWY19W | |  | P19W/1 to 3 |  | |
|  | PW24W | |  | P24W/1 to 3 |  | |
|  | PWR24W | |  | P24W/1 to 3 |  | |
|  | PWY24W | |  | P24W/1 to 3 |  | |
|  | PY21W | |  | PY21W/1 | (P21W/2) | |
|  | PY21/5W | |  | PY21/5W/1 to 3 |  | |
|  | PY24W | |  | P24W/1 to 3 |  | |
|  | PY27/7W | |  | PY27/7W/1 | (P27/7W/2 to 3) | |
|  | R5W | | \*6 | R5W/1 |  | |
|  | R10W | | \*6 | R10W/1 |  | |
|  | RR5W | |  | R5W/1 |  | |
|  | RR10W | |  | R10W/1 |  | |
|  | RY10W | | \*6 | R10W/1 |  | |
|  | T4W | | \*6 | T4W/1 |  | |
|  | W2.3W | |  | W2.3W/1 |  | |
|  | W3W | | \*6 | W3W/1 |  | |
|  | W5W | | \*6 | W5W/1 |  | |
|  | W10W | | \*6 | W10W/1 |  | |
|  | W15/5W | |  | W15/5W/1 to 3 |  | |
|  | W16W | |  | W16W/1 |  | |
|  | W21W | |  | W21W/1 to 2 |  | |
|  | W21/5W | |  | W21/5W/1 to 3 |  | |
|  | WR5W | |  | W5W/1 |  | |
|  | WR21/5W | |  | WR21/5W/1 | (W21/5W/2 to 3) | |
|  | WT21W | |  | WT21W/1 to 2 |  | |
|  | WT21/7W | |  | WT21/7W/1 to 3 |  | |
|  | WTY21W | |  | WT21W/1 to 2 |  | |
|  | WTY21/7W | |  | WT21/7W/1 to 3 |  | |
|  | WY5W | | \*6 | W5W/1 |  | |
|  | WY10W | | \*6 | W10W/1 |  | |
|  | WY16W | |  | W16W/1 |  | |
|  | WY21W | |  | WY21W/1 to 2 |  | |

| *Group 3* | | | | |
| --- | --- | --- | --- | --- |
| *Filament light source categories (or types within these categories) only for use in lamps as replacement parts for lamps on vehicles in use originally equipped with such lamps:* | | | | |
|  | *Category* | *Note(s)* | *Sheet number(s)* | *From date onwards* |
|  |  |  |  |  |
|  | C5W | \*7, \*8 | C5W/1 | 26 July 2013 |
|  | C21W | \*8 | C21W/1 to 2 | 11 June 2008 |
|  | H1 | \*7 | H1/1 to 3 | 26 July 2013 |
|  | H3 | \*7 | H3/1 to 4 | 26 July 2013 |
|  | H12 |  | H12/1 to 3 | 15 July 2015 |
|  | H13A |  | H13/1 to 4 | 15 July 2015 |
|  | H14 |  | H14/1 to 4 | 26 July 2013 |
|  | HB3A |  | HB3/1 to 4 | 15 July 2018 |
|  | HB4A |  | HB4/1 to 4 | 15 July 2018 |
|  | HIR1 | \*3 | HIR1/1 to 3 | 15 July 2015 |
|  | HS1 | \*7 | HS1/1 to 5 | 26 July 2013 |
|  | HS2 | \*7 | HS2/1 to 3 | 26 July 2013 |
|  | \*6 | 1 September 2018 |
|  | HS5A | \*5 | HS5A/1 to 3 | 1 September 2018 |
|  | HS6 | \*4 | HS6/1 to 4 | 15 July 2018 |
|  | P19W | \*8 | P19W/1 to 3 | 28 October 2016 |
|  | P21W | \*7, \*8 | P21W/1 to 2 | 26 July 2013 |
|  | P21/5W | \*7, \*8 | P21/5W/1 to 3 | 26 July 2013 |
|  | P24W | \*8 | P24W/1 to 3 | 1 September 2018 |
|  | PC16W | \*8 | PC16W/1 to 3 | 28 October 2016 |
|  | PCR16W | \*8 | PC16W/1 to 3 | 28 October 2012 |
|  | PCY16W | \*8 | PC16W/1 to 3 | 28 October 2016 |
|  | PR19W | \*8 | P19W/1 to 3 | 28 October 2012 |
|  | PR21/4W | \*8 | PR21/4W/1 ;  (P21/5W/2 to 3) | 15 July 2015 |
|  | PR24W | \*8 | P24W/1 to 3 | 28 October 2012 |
|  | PR27/7W | \*8 | PR27/7W/1 ;  (P27/7W/2 to 3) | 15 July 2015 |
|  | PSR19W | \*8 | P19W/1 to 3 | 28 October 2012 |
|  | PSR24W | \*8 | P24W/1 to 3 | 28 October 2012 |
|  | PX24W | \*2 | P24W/1 to 3 | 1 September 2018 |
|  | PY19W | \*8 | P19W/1 to 3 | 28 October 2016 |
|  | R2 |  | R2/1 to 3 | 11 June 2008 |
|  | R5W | \*7, \*8 | R5W/1 | 26 July 2013 |
|  | R10W | \*7, \*8 | R10W/1 | 26 July 2013 |
|  | RY10W | \*7, \*8 | R10W/1 | 26 July 2013 |
|  | S1 |  | S1/S2/1 to 2 | 11 June 2008 |
|  | S2 | \*7 | S1/S2/1 to 2 | 26 July 2013 |
|  | S3 |  | S3/1 | 26 July 2013 |
|  | T1.4W | \*8 | T1.4W/1 | 15 July 2015 |
|  | T4W | \*7, \*8 | T4W/1 | 26 July 2013 |
|  | W3W | \*7, \*8 | W3W/1 | 26 July 2013 |
|  | W5W | \*7, \*8 | W5W/1 | 26 July 2013 |
|  | W10W | \*7, \*8 | W10W/1 | 26 July 2013 |
|  | WP21W | \*8 | WP21W/1 to 2 | 1 September 2018 |
|  | WPY21W | \*8 | WP21W/1 to 2 | 1 September 2018 |
|  | WY2.3W | \*8 | WY2.3W/1 | 15 July 2015 |
|  | WY5W | \*7, \*8 | W5W/1 | 15 July 2014 |
|  | WY10W | \*7, \*8 | W10W/1 | 26 July 2013 |

\* Tables, Electrical and Photometric characteristics:

Voltage is expressed in V;

Wattage is expressed in W;

Luminous flux is expressed in lm.

In a case of a category of filament light source where more than one value of reference luminous flux is specified, the value at approximately 12 V for a lighting device and 13.5 V for a light-signalling device shall be applied unless otherwise specified by the regulation used for the device.

\***2** Not for use in passing beam headlamps.

\***3** Not for use in front fog lamps marked "B" as defined in Regulation No. 19.

\***4** Not for use in Regulation No. 112 headlamps.

\***5** Not for use in headlamps other than Regulation No. 113 class C headlamps

\*6 All types except from 6 V type

\*7 6 V types only

\*8Only for use in signalling lamps, cornering lamps, reversing lamps and rear registration plate lamps.

**3.2. Gas-discharge light sources**

Characteristics of categories of gas-discharge light sources as listed below are shown in Annex 2.

Luminous flux values in the light source category sheets concern white light unless otherwise specified in these sheets.

List of categories of gas-discharge light sources, grouped according to restrictions on use and their sheet numbers:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Gas-discharge light source categories only for use in passing beam, driving beam and cut-off front fog lamps:* | | | | |
|  | *Category* |  | *Sheet number(s)* |  |
|  |  |  |  |  |
|  | D1R |  | DxR/1 to 7 |  |
|  | D1S |  | DxS/1 to 6 |  |
|  | D2R |  | DxR/1 to 7 |  |
|  | D2S |  | DxS/1 to 6 |  |
|  | D3R |  | DxR/1 to 7 |  |
|  | D3S |  | DxS/1 to 6 |  |
|  | D4R |  | DxR/1 to 7 |  |
|  | D4S |  | DxS/1 to 6 |  |
|  | D5S |  | D5S/1 to 5 |  |
|  | D6S |  | D6S/1 to 5 |  |
|  | D8R |  | D8R/1 to 6 |  |
|  | D8S |  | D8S/1 to 5 |  |
|  | D9S |  | D9S1 to 5 |  |

**3.3. LED light sources**

Characteristics of categories of LED light sources as listed below as shown in Annex 3.

Luminous flux values in the light source category sheets concern white light unless otherwise specified in these sheets.

List of categories of LED light sources, grouped according to restrictions on use and their sheet numbers:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *“RESERVED”*  *Group 1* | | | | |
| *LED light source categories without general restrictions:* | | | | |
|  | *Category* |  | *Sheet number(s)* |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Group 2* | | | | |
| *LED light source categories only for use in signalling lamps, cornering lamps, reversing lamps and rear registration plate lamps:* | | | | |
|  | *Category* |  | *Sheet number(s)* |  |
|  | LR1 |  | LR1/1 to 5 |  |
|  | LW2 |  | LW2/1 to 5 |  |
|  | LR3A |  | L3/1 to 6 |  |
|  | LR3B |  | L3/1 to 6 |  |
|  | LW3A |  | L3/1 to 6 |  |
|  | LW3B |  | L3/1 to 6 |  |
|  | LY3A |  | L3/1 to 6 |  |
|  | LY3B |  | L3/1 to 6 |  |
|  | LR4A |  | LR4/1 to 5 |  |
|  | LR4B |  | LR4/1 to 5 |  |
|  | LR5A |  | L5/1 to 6 |  |
|  | LR5B |  | L5/1 to 6 |  |
|  | LW5A |  | L5/1 to 6 |  |
|  | LW5B |  | L5/1 to 6 |  |
|  | LY5A |  | L5/1 to 6 |  |
|  | LY5B |  | L5/1 to 6 |  |
|  |  |  |  |  |

1. Based on term 17-267 from CIE standard *CIE S 017/E:2011: ILV: International Lighting Vocabulary*, online version *[eILV](http://eilv.cie.co.at/)* [↑](#footnote-ref-2)