

## **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 74<sup>th</sup> 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 ~~of publication~~ as indicated in the following table until the date ~~of publication~~ of on which the next revision of this Resolution becomes valid, as indicated in the following table:

Version of the Resolution	Date * as from which the version is valid of publication	Adopted by WP.29		Clarification
		Session No.	Amendment Document document No.	
Original	[ <del>2016</del> 2017-xx-xx]	[168]	[WP.29/2016/xx]	Based upon Annexes 1 of Regulations: <ul style="list-style-type: none"> <li>• No. 37, up to and including Supplement 44</li> <li>• No. 99, up to and including Supplement 11</li> <li>• No. 128, up to and including Supplement 45</li> </ul>

\* 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. 45.
2. This Resolution is intended for reference from and approval of light sources according to:
  - Regulation No. 37 "Filament ~~lamps~~ 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.

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## 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 ~~and general specifications~~

### 2.1. ~~Definitions~~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*" ~~(filament lamp)~~ 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 ~~injection~~ **electroluminescence** / possibly completed with one or more elements for fluorescence-based conversion.

### ~~2.2. General specifications~~

~~2.2.1. The filament(s) shall be the only element(s) of the filament light source that generate(s) and emit(s) light when energized.~~

~~2.2.2. The discharge arc shall be the only element of the gas discharge light source that generates and emits light when energized.~~

~~2.2.3. The solid state junction(s) shall be the only element(s) of the LED light source that generate(s) and emit(s) light, either directly or via fluorescence based conversion, when energized.~~

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

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- 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<sup>1</sup>.
- 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.

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<sup>1</sup> Based on term 17-267 from CIE standard *CIE S 017/E:2011: ILV: International Lighting Vocabulary*, online version [eILV](#)

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

<i>Group 1</i>			
<i>Filament light source categories (or types within these categories) without general restrictions:</i>			
	<i>Category</i>	<i>Note(s)</i>	<i>Sheet number(s)</i>
	H1	* <sup>6</sup>	H1/1 to 3
	H3	* <sup>6</sup>	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	* <sup>3</sup>	H9/1 to 4
	H9B	* <sup>3</sup>	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	* <sup>2</sup>	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	* <sup>6</sup>	HS1/1 to 5
	<del>HS2</del>	<del>*<sup>6</sup></del>	<del>HS2/1 to 3</del>
	HS5	* <sup>5</sup>	HS5/1 to 4
	<del>HS5A</del>	<del>*<sup>5</sup></del>	<del>HS5A/1 to 3</del>
	PSX24W	* <sup>2</sup>	P24W/1 to 3
	PSX26W	* <sup>2</sup>	PSX26W1 to 3
	<del>PX24W</del>	<del>*<sup>2</sup></del>	<del>P24W/1 to 3</del>
	S2	* <sup>5</sup> , * <sup>6</sup>	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	
<del>P24W</del>		<del>P24W/1 to 3</del>	
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	

Group 2				
<i>Filament light source categories (or types within these categories) only for use in signalling lamps, cornering lamps, reversing lamps and rear registration plate lamps:</i>				
	Category	Note(s)	Sheet number(s)	
	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	
	<del>WP21W</del>		<del>WP21W/1 to 2</del>	
	<del>WPY21W</del>		<del>WP21W/1 to 2</del>	
	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				
<i>Filament light source categories (or types within these categories) only for use in lamps as replacement parts for lamps <del>installed</del> on vehicles in use <i>originally equipped with such lamps</i>:</i>				
	Category	Note(s)	Sheet number(s)	From date onwards
	C5W	*7, *8	C5W/1	26 July 2013



Group 3				
Filament light source categories (or types within these categories) only for use in lamps as replacement parts for lamps <i>installed</i> on vehicles in use <i>originally equipped with such lamps</i> :				
	Category	Note(s)	Sheet number(s)	From date onwards
	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
	<b>HS2</b>	<b>*7</b>	<b>HS2/1 to 3</b>	<b>26 July 2013</b>
		<b>*6</b>		<b>1 September 2018</b>
	<del>HS2</del>	<del>*7</del>	<del>HS2/1 to 3</del>	<del>26 July 2013</del>
	<b>HS5A</b>	<b>*5</b>	<b>HS5A/1 to 3</b>	<b>1 September 2018</b>
	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
	<b>P24W</b>	<b>*8</b>	<b>P24W/1 to 3</b>	<b>1 September 2018</b>
	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
	<b>PX24W</b>	<b>*2</b>	<b>P24W/1 to 3</b>	<b>1 September 2018</b>
	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

Group 3				
<i>Filament light source categories (or types within these categories) only for use in lamps as replacement parts for lamps <b>installed</b> on vehicles in use <b>originally equipped with such lamps</b>:</i>				
	Category	Note(s)	Sheet number(s)	From date onwards
	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
	<b>WP21W</b>	<b>*8</b>	<b>WP21W/1 to 2</b>	<b>1 September 2018</b>
	<b>WPY21W</b>	<b>*8</b>	<b>WP21W/1 to 2</b>	<b>1 September 2018</b>
	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.

\*<sup>2</sup> Not for use in passing beam headlamps.

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

\*<sup>4</sup> Not for use in Regulation No. 112 headlamps.

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

\*<sup>6</sup> All types except from 6 V type

\*<sup>7</sup> 6 V types only

\*<sup>8</sup> Only 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:

<i>Gas-discharge light source categories only for use in passing beam, driving beam and cut-off front fog lamps:</i>			
	<i>Category</i>		<i>Sheet number(s)</i>
	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:

<i>"RESERVED"</i>			
<i>Group 1</i>			
<i>LED light source categories without general restrictions:</i>			
	<i>Category</i>		<i>Sheet number(s)</i>

<i>Group 2</i>	
<i>LED light source categories only for use in signalling lamps, cornering lamps, reversing lamps and rear registration plate lamps:</i>	
<i>Category</i>	<i>Sheet number(s)</i>
LR1	LR1/1 to 5
LW2	LW2/1 to 5
LR3A	L3/1 to 6 <del>LR3/1 to 5</del>
LR3B	L3/1 to 6 <del>LR3/1 to 5</del>
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