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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Lamps and light sources for road vehicles – Dimensional, electrical and luminous requirements

Lampes et sources lumineuses pour véhicules routiers – Exigences dimensionnelles, électriques et lumineuses

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Lamps and light sources for road vehicles – Dimensional, electrical and luminous requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LAMPS AND LIGHT SOURCES FOR ROAD VEHICLES – DIMENSIONAL, ELECTRICAL AND LUMINOUS REQUIREMENTS

FOREWORD

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IEC 60809 has been prepared by subcommittee 34A: Electric light sources, of IEC technical committee 34: Lighting. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2014, Amendment 1:2017, Amendment 2:2017 and Amendment 3:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Introduction of a light technical measurement on LED light sources intended for use in front-lighting applications.
b) As the original data sheets and some figures from previous editions were not available in an editable format, they have been reproduced from their old format, following the current drafting rules and are now in single language format. Some reproductions constitute minor (obvious) editorial changes of the original text sections and original figures; no technical changes were introduced.

The text of this International Standard is based on the following documents:

Draft	Report on voting
34A/2232/FDIS	34A/2235/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,
- replaced by a revised edition, or
- amended.

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LAMPS AND LIGHT SOURCES FOR ROAD VEHICLES – DIMENSIONAL, ELECTRICAL AND LUMINOUS REQUIREMENTS

1 Scope

This document is applicable to electric light sources (see Note 1) for use in automotive applications, for example in road illumination devices and/or light signalling devices for road vehicles.

It is especially applicable to light sources listed in UN Resolution R.E.5 and light sources subject to other legislations.

This document specifies the technical requirements for interchangeability for example dimensional, electrical and photometrical characteristics, and includes test methods.

For the light sources listed in this document, the data sheets are contained either in this document or are included by reference to UN Resolution R.E.5.

Performance requirements are specified in IEC 60810, for example life, torsion strength, resistance to vibration and shock.

The requirements for miniature light sources for supplementary purposes, not subject to legislation, are specified in IEC 60983.

NOTE 1 The terms "lamp" and "light source" are both used in this document to mean the same product, so the two terms are interchangeable throughout this document.

NOTE 2 In various vocabularies and standards, different terms are used for "incandescent lamp" (IEC 60050-845:1987, 845-07-04), "discharge lamp" (IEC 60050-845:1987, 845-07-17) and "LED lamp". In this document "filament lamp", "discharge lamp" and "LED light source" are used, however, where only "lamp" or "light source" is written, all light sources, independent of the technology used, are meant, unless the context clearly shows that it applies to one kind of technology only. In the UN Regulations, the word "light source" is used for the products specified in this document.

NOTE 3 Wherever the term "device" is used, it is meant to designate equipment which is used as a luminaire. It can for instance take the form and purpose of a headlight or signal light.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-845, *International Electrotechnical Vocabulary – Part 845: Lighting* (available at http://www.electropedia.org/)

IEC 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps* (available at http://std.iec.ch/iec60061)

IEC 60810:2017, *Lamps, light sources and LED packages for road vehicles – Performance requirements*
IEC 60810:2017/AMD1:2019

CIE 015:2018, *Colorimetry*

United Nations, Vehicle Regulations – 1958 Agreement, *Agreement concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations (Revision 3)*[1]
Available at: www.unece.org/trans/main/wp29/wp29regs.html (website checked 2021-01-18)

Addendum 3: Regulation No. 4, *Uniform provisions concerning the approval of devices for the illumination of rear registration plates of power-driven vehicles and their trailers*

Addendum 5: Regulation No. 6, *Uniform provisions concerning the approval of direction indicators for power-driven vehicles and their trailers*

Addendum 6: Regulation No. 7, *Uniform provisions concerning the approval of front and rear position lamps, stop-lamps and end-outline marker lamps for motor vehicles and their trailers*

Addendum 22: Regulation No. 23, *Uniform provisions concerning the approval of reversing and manoeuvring lamps for power-driven vehicles and their trailers*

Addendum 36: Regulation No. 37, *Uniform provisions concerning the approval of filament lamps for use in approved lamp units of power-driven vehicles and of their trailers*

Addendum 37: Regulation No. 38, *Uniform provisions concerning the approval of rear fog lamps for power-driven vehicles and their trailers*

Addendum 47: Regulation No. 48, *Uniform provisions concerning the approval of vehicles with regard to the installation of lighting and light-signalling devices*

Addendum 49: Regulation No. 50, *Uniform provisions concerning the approval of front position lamps, rear position lamps, stop lamps, direction indicators and rear-registration-plate illuminating devices for vehicles of category L*

Addendum 76: Regulation No. 77, *Uniform provisions concerning the approval of parking lamps for power-driven vehicles*

Addendum 86: Regulation No. 87, *Uniform provisions concerning the approval of daytime running lamps for power-driven vehicles*

Addendum 90: Regulation No. 91, *Uniform provisions concerning the approval of side-marker lamps for motor vehicles and their trailers*

Addendum 98: Regulation No. 99, *Uniform provisions concerning the approval of gas-discharge light sources for use in approved gas-discharge lamp units of power-driven vehicles*

Addendum 100: Regulation No. 101, *Uniform provisions concerning the approval of passenger cars powered by an internal combustion engine only, or powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories* M_1 *and* N_1 *vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range*

Addendum 118: Regulation No. 119, *Uniform provisions concerning the approval of cornering lamps for power-driven vehicles*

Addendum 127: Regulation No. 128, *Uniform provisions concerning the approval of light emitting diode (LED) light sources for use in approved lamp units on power-driven vehicles and their trailers*

Addendum 147: Regulation No. 148, *Uniform provisions concerning the approval of light-signalling devices (lamps) for power-driven vehicles and their trailers*

[1] Also known as *The 1958 Agreement.* In the text of this document the regulations under this agreement are referred to as, for example, UN Regulation 37 or R 37.

Addendum 148: Regulation No. 149, *Uniform provisions concerning the approval of road illumination devices (lamps) and systems for power-driven vehicles*

R.E.5, United Nations Consolidated Resolution on the common specification of light source categories (R.E.5)

R.E.5 is published by UNECE under the reference ECE/TRANS/WP.29/1127 and is available at the following address (website checked on 2021-01-18):
http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-845, IEC 60810, R.E.5 and UN-Regulation No. 48 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
ageing period
preconditioning period of the light source before initial values are taken

[SOURCE: IEC 60050-845:2020, 845-27-108, modified – "period" has been added to the term and the note to entry has been deleted.]

3.2
category
basic design of standardized light sources

Note 1 to entry: Each specific designation, for example P21/5W, H4, D2R forms a category. Most of these designations are taken from the R.E.5.

3.3
conformity of production
compliance of the series production of a given type with the requirements of the relevant specification

Note 1 to entry: Local regulations may require checking the conformity of production by a government agency.

3.4
dipped beam
passing beam
low beam
headlight designed to illuminate the road ahead of the vehicle without causing undue glare to people in front of the vehicle carrying it, particularly to the drivers of approaching vehicles

Note 1 to entry: The term used in the UN regulation No. 48 is "passing-beam".

3.5
initial luminous flux
luminous flux measured at the end of the ageing period

3.6
life B10
time during which 10 % of a number of the tested light sources of the same type have reached the end of their individual lives

Note 1 to entry: In general the Weibull distribution method is used.

3.7
limiting value
lowest and/or highest value for a characteristic with which the light source has to comply when operated under specified conditions

3.8
luminous flux maintenance factor
ratio of the luminous flux of a light source at a given time in its operational life to its initial luminous flux, the light source being operated under specified conditions

EXAMPLE 70 % after 500 h.

Note 1 to entry: In IEC 60810 "luminous flux maintenance" is used with the same meaning

[SOURCE: IEC 60050-845:2020, 845-27-114, modified – "electric light source" has been replaced with "light source" and the 3 notes to entry have been replaced with a new note to entry and example.]

3.9
main beam
driving beam
high beam
headlight designed to illuminate the road for a considerable distance ahead of the vehicle

Note 1 to entry: The term used in the UN regulations is "driving-beam".

[SOURCE: IEC 60050-845:2020, 845-31-066, modified – "headlight" has been deleted from the terms, "driving beam" has become a second preferred term and "high beam" an admitted term; in the definition "the road" has been added, "carrying it" has been deleted and the notes to entry have been replaced with a new note to entry.]

3.10
nominal voltage
voltage used to designate a light source

Note 1 to entry: The term used in the UN regulations is "rated voltage".

Note 2 to entry: The nominal voltage is the battery voltage (6 V, 12 V or 24 V) of the road vehicle supply network.

3.11
nominal wattage
wattage used to designate a light source

3.12
non-replaceable light source
light source which cannot be removed from the device or luminaire

Note 1 to entry: Non-replaceable light sources are usually intended as components for integration into the luminaire or device by manufacturers. They are designed and intended to be indivisible parts of a lighting or light signalling device, or of parts or modules or units of such devices.