

Lamps for road vehicles — Dimensional, electrical and luminous requirements

ICS 29.140.20; 43.040.20

National foreword

This British Standard is the UK implementation of EN 60809:1996+A5:2012. It is identical to IEC 60809:1995, incorporating amendment 5:2012. It supersedes BS EN 60809:1996+A4:2009, which is withdrawn.

The amendment by which each page of the European Standard was introduced is indicated by an extension to the shoulder heading at the top of the page (e.g. EN 60809:1996/A2:2002). Where no such extension appears, the page is part of the original European Standard.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by A1 A1.

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A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Lamps for road vehicles — Dimensional, electrical and luminous requirements

Lampes pour véhicules routiers —
Prescriptions dimensionnelles, électriques et
lumineuses

Lampen für Straßenfahrzeuge —
Maße, elektrische und lichttechnische
Anforderungen

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 34A/592/DIS, future edition 2 of IEC 60809, prepared SC 34A, Lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60809 on 1995-11-28.

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Annexes designated “normative” are part of the body of the standard. In this standard, Annex A to Annex F and Annex ZA are normative.

Annex ZA has been added by CENELEC.

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Annexes designated “informative” are given for information only.

In this standard, Annex A, Annex B, Annex C, Annex D, Annex E, Annex F, Annex H and Annex ZA are normative and Annex G and Annex J are informative.

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of amendment 4:2009 to the International Standard IEC 60809:1995 was approved by CENELEC as an amendment to the European Standard without any modification.

Foreword to amendment A5

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Endorsement notice

The text of the International Standard IEC 60809:1995/A5:2012 was approved by CENELEC as a European Standard without any modification.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMPS FOR ROAD VEHICLES – DIMENSIONAL, ELECTRICAL AND LUMINOUS REQUIREMENTS FOREWORD

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International Standard IEC 60809 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This consolidated version of IEC 60809 is based on the second edition (1995) [documents 34A/592/DIS and 34A/626/RVD], its Amendment 1 (1996) [documents 34A/653/FDIS and 34A/686/RVD], its Amendment 2 (2002) [documents 34A/979/FDIS and 34A/987/RVD], its Amendment 3 (2004) [documents 34A/1077/FDIS and 34A/1081/RVD] and its Amendment 4 (2009) [documents 34A/1314/FDIS and 34A/1321/RVD].

It bears the edition number 2.4.

The origin (edition 2 or Amendment 1, 2, 3 or 4) of the standard sheets constituting this consolidated edition may be identified by the headers of the sheets.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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Section 1. General

1.1 Scope

This International Standard is applicable to replaceable lamps (filament lamps and discharge lamps) to be used in headlamps, fog-lamps and signalling lamps for road vehicles.

It is especially applicable to those lamps which are the subject of legislation. In particular, it includes the lamps contained in Regulations¹⁾ No. 37 and No. 99 of the Geneva Agreement of 20 March 1958 of the United Nations Economic Commission for Europe (ECE). However, the standard may be used for other lamps falling under the scope of this standard.

The standard specifies the technical requirements with methods of tests and basic interchangeability (dimensional, electrical and luminous) for lamps of normal production and for standard (étalon) lamps.

 For most of the requirements given in this standard, reference is made to the “relevant lamp data sheet”. For all lamps listed in Clause 5, data sheets are contained in this standard or included by reference. For other lamps, the relevant data are supplied by the lamp manufacturer or responsible vendor. It could be based on national legislation. 

Other requirements such as lamp life, lumen maintenance, torsion strength and resistance to vibration and shock are specified in IEC 60810. The latter standard also gives information for guidance of lighting equipment design, such as temperature limits and maximum lamp outlines.

Road vehicle lamps for supplementary purposes which are not the subject of legislation are specified in IEC 60983.

In countries which legislate for approval, for example under the terms of the aforementioned ECE Regulations, it is suggested that reference is made to this standard for assessment of compliance. IEC 60810 and IEC 60983 are not intended for that purpose.

NOTE In the various vocabularies and standards, different terms are used for “incandescent lamp” (IEV 845-07-04) and “discharge lamp” (IEV 845-07-17). In this standard “filament lamp” and “discharge lamp” are used. However, where only “lamp” is written both types are meant, unless the context clearly shows that it applies to one type only.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to or revisions of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(845), *International Electrotechnical Vocabulary (IEV) — Chapter 845: Lighting*.

IEC 60051, *Direct acting indicating analogue electrical measuring instruments and their accessories*.

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety — Part 1: Lamp caps*.

IEC 60810, *Lamps for road vehicles — Performance requirements*.

IEC 60983, *Miniature lamps*.

 United Nations, *Agreement concerning the adoption of uniform technical prescription 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 prescriptions, 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* (in this standard referred to as UNECE Regulation 37 or R37; internet source: www.unece.org/trans/main/wp29/wp29regs.html) (website checked 2012-04-03) 

¹⁾ United Nations Economic Commission for Europe (ECE), Regulation 37:1992, *Uniform provisions concerning the approval of filament lamps for use in approved lamp units of power-driven vehicles and of their trailers*.

United Nations Economic Commission for Europe (ECE), Regulation 99:1996, *Uniform provisions concerning the approval of gas-discharge light sources for use in approved gas-discharge lamp units of power-driven vehicles*. 

^{A5} United Nations, *Agreement concerning the adoption of uniform technical prescription 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 prescriptions, 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* (in this standard referred to as UNECE Regulation 99 or R99; internet source: www.unece.org/trans/main/wp29/wp29regs.html) (website checked 2012-04-03) ^{A5}

1.3 Definitions

1.3.1

category

this term is used to describe different basic designs of standardized lamps

NOTE Each specific designation, for example P21/5W, H4, D2R forms a category. Most of these designations are taken from the ECE Regulations.

^{A3} 1.3.2

type

lamps of different types are those within the same category which differ in such essential respects as:

a) trade name or mark;

NOTE Lamps bearing the same trade name or mark but produced by different manufacturers are considered as being of different types. Lamps produced by the same manufacturer differing only by the trade name or mark may be considered to be of the same type.

b) bulb design, insofar as it affects the optical results;

c) for filament lamps, nominal voltage.

NOTE A selective-yellow bulb or a selective-yellow additional outer bulb, solely intended to change the colour but not the other characteristics of a light source emitting white light, does not constitute a change of type of the light source.

1.3.3

type test

test or series of tests, made on a type test sample, for the purpose of checking compliance of the design of a given product with the requirements of the relevant specification

1.3.4

type test sample

sample consisting of one or more similar units, submitted by the manufacturer or responsible vendor for the purpose of a type test

1.3.5

conformity of production

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

NOTE 1 Production lamps are of the same design as the approved type test sample.

NOTE 2 Local regulations may provide for checking conformity of production by a government agency.

1.3.6

nominal voltage

voltage used to designate a lamp, usually being the battery voltage (6, 12 or 24 V) of the road vehicle supply network

^{A5} NOTE 1 to entry: The term used in the UNECE regulations is “rated voltage”. ^{A5}

1.3.7

nominal wattage

wattage used to designate a lamp

1.3.8

test voltage

voltage at the cap terminals for filament lamps and at the input terminals of the ballast for discharge lamps for which some characteristics are specified and at which they shall be tested

1.3.9**rated value**

value of a characteristic specified for operation of a lamp at test voltage and/or other specified conditions

 NOTE 1 to entry: The term used in the UNECE regulations is “objective value”. 

1.3.10**tolerance**

allowable variation from a rated value generally expressed as percentage of the rated value

1.3.11**limit values**

lowest and/or highest values for characteristics to which the lamp has to comply when operated under specified conditions

1.3.12**test luminous flux**

specified luminous flux of a standard (étalon) lamp at which the photometric characteristics of lighting and light-signalling devices shall be measured and which has to be adjusted for testing a lamp in the standard headlamp according to 2.8 

 1.3.13**reference plane**

plane defined with reference to the cap or base and with respect to which positions of certain parts of the lamp are measured

1.3.14**reference axis**

axis defined with reference to the cap or base and with respect to which the positions of certain parts of the lamp are measured

1.3.15**ageing period**

period during which unused lamps are operated at their test voltage in order to stabilize their performance

1.3.16**standard lamp (étalon lamp)**

lamp emitting white or amber or red light with reduced dimensional tolerances, used for the photometric testing of lighting and light-signalling devices

NOTE Standard lamps are specified for only one nominal voltage for each category.

1.3.17**production lamp**

lamp which shall comply with the requirements of this standard as indicated in the column “production lamps” on the relevant lamp data sheet

 NOTE 1 to entry: The term used in the UNECE regulations is “lamp of normal production”. 

1.3.18**heavy duty lamp**

lamp declared as such by the manufacturer or responsible vendor which shall comply with the heavy duty test conditions specified in Table B.2 of IEC 60810 in addition to the requirements specified in this standard

 1.3.19**main beam**

No definition given.

NOTE 1 to entry: The term used in the UNECE regulations is “driving beam”.

1.3.20**dipped beam**

No definition given.

NOTE 1 to entry: The term used in the UNECE regulations is “passing beam”. 

1.4 Numbering system for lamp data sheets

The first number represents the number of this standard (60809) followed by the letters “IEC”.

The second number represents the lamp data sheet number.

The third number on the sheet indicates the edition of the sheet. 

Section 2. Requirements and test conditions for filament lamps

2.1 General requirements

Filament lamps shall be so designed as to be and to remain in good working order when in normal use. They shall, moreover, exhibit no fault in design or manufacture.

2.2 Lamp marking

The following information shall be legibly and durably marked on all filament lamps:

- the trade name or mark of the manufacturer or responsible vendor;
- the nominal voltage;
- the international designation of the relevant category;
- the nominal wattage (in the sequence: high wattage filament/low wattage filament for dual filament lamps); this need not be indicated separately if it is part of the international designation of the relevant filament lamp category.

Additionally, halogen filament lamps meeting the requirements of 2.9 shall be marked with a “U”.

NOTE Halogen filament lamps are filament lamps whose category designation starts with the letter “H”.

Inscriptions other than the above may be affixed.

NOTE An example of such an inscription is the approval mark conferred by an administrative authority.

Compliance shall be checked by the following:

- a) presence and legibility — by visual inspection;
- b) durability — by applying the following test on unused lamps.

The area of the marking on the lamp shall be rubbed by hand with a smooth cloth, dampened with water, for a period of 15 s.

After this test the marking shall still be legible.

If the marking is on the bulb, it shall not adversely affect the luminous characteristics.

2.3 Bulbs

Filament lamp bulbs shall exhibit no scores or spots which might impair their optical performance.

2.4 Colour

2.4.1 Colour of light

The colour of the light emitted by the filament lamp shall be white, unless otherwise prescribed on the relevant filament lamp data sheet. For some categories other colour(s) of light are allowed. 

A3 The colorimetric characteristics of the light emitted, expressed in CIE chromaticity co-ordinates, shall lie within the following limits:

- finished filament lamps emitting white light
 - limit towards blue: $x \geq 0,310$
 - limit towards yellow: $x \leq 0,500$
 - limit towards green: $y \leq 0,150 + 0,640 x$
 - limit towards green: $y \leq 0,440$
 - limit towards purple: $y \geq 0,050 + 0,750 x$
 - limit towards red: $y \geq 0,382$
- finished filament lamps emitting selective-yellow light
 - limit towards red: $y \geq 0,138 + 0,580 x$
 - limit towards green: $y \leq 1,290 x - 0,100$
 - limit towards white: $y \geq 0,940 - x$ and $y \geq 0,440$
- finished filament lamps emitting amber light
 - limit towards green: $y \leq x - 0,120$
 - limit towards red: $y \geq 0,390$
 - limit towards white: $y \geq 0,790 - 0,670 x$
- finished filament lamps emitting red light
 - limit towards yellow: $y \leq 0,335$
 - limit towards purple: $y \geq 0,980 - x$

The colour of the light emitted shall be measured by the method specified in Annex B.

Each measured value shall lie within the required tolerance area. Moreover, in the case of filament lamps emitting white light, the measured values shall not deviate more than 0,020 units in the x and/or y direction from a point of choice on the Planckian locus.

A5 For conformity of production purposes of amber and red colour only, at least 80 % of the measuring results shall lie within the required tolerance area. **A5**

2.4.2 Colour endurance

A5 Filament lamps, but for conformity of production purposes only colour coated lamps, for use in light signalling devices shall be operated under test conditions for colour endurance measurements as specified in Annex K.

Thereafter the colour of the light shall be measured by the method specified in Annex B, and all measuring results, but for amber and red colour at least 80 % of the measuring results for conformity of production purposes, shall be within the limits specified in 2.4.1.

In case of colour filter coatings, no cracks in these coatings shall be visible without specific optical tools.

Test samples that have been operated under conditions as specified in Annex K shall no longer be used in light signalling devices and are to be considered end of life for that purpose. **A5**

2.4.3 Coated bulb

In the case of a coated bulb, after the ageing period corresponding to C.1, the surface of the bulb shall be lightly wiped with a cotton cloth soaked in a mixture of 70 % by volume of n-heptane and 30 % by volume of toluol. After about 5 min, the surface shall be inspected visually. It shall not show any apparent changes.

2.5 Lamp dimensions

The filament lamp dimensions shall comply with the limiting values given in the lamp drawing or on the relevant filament lamp data sheet.

The definition of and the measuring condition for the filament shape, length and position, shall be in accordance with the appropriate requirements of Annex A, Annex D, Annex E and Annex F respectively.

2.6 Caps and bases

Filament lamps shall have standard caps or bases as specified on the relevant filament lamp data sheet and shall comply with the relevant cap data sheet of IEC 60061-1. **A3**

A3 2.7 Initial electrical and luminous requirements

Filament lamp wattage and luminous flux shall comply with the limiting values given on the relevant lamp data sheet.

The luminous flux specified on the relevant filament lamp data sheet applies for filament lamps emitting white light, unless a special colour is stated there.

In the case where selective-yellow colour is allowed the luminous flux of the filament lamp with selective-yellow (outer) bulb shall be at least 85 % of the specified luminous flux of the relevant filament lamp with colourless bulb.

Compliance shall be checked by the tests specified in Annex C.

2.8 Check on optical quality

This requirement applies only to double filament lamps with internal shield for headlamps emitting an asymmetrical dipped beam when the relevant regulation requires such a test.

The check on optical quality shall be carried out at a voltage such that the test luminous flux is obtained.

2.8.1 12 V lamps emitting white light

The sample which most nearly conforms to the requirements laid down for the standard filament lamp shall be tested in an appropriate standard headlamp and it shall be verified that the assembly comprising the aforesaid headlamp and the filament lamp being tested meets the light-distribution requirements laid down for the dipped beam in the relevant regulation, directive or standard.

2.8.2 6 V and 24 V lamps emitting white light

The sample which most nearly conforms to the rated dimension values shall be tested in an appropriate standard headlamp and it shall be verified that the assembly comprising the aforesaid headlamp and the filament lamp being tested meets the light-distribution requirements laid down for the dipped beam in the relevant regulation, directive or standard. Deviations not exceeding 10 % of the minimum values will be acceptable.

2.8.3 Lamps emitting selective-yellow light

Filament lamps emitting selective-yellow light shall be tested in the same manner as described in 2.8.1 and 2.8.2 in an appropriate standard headlamp to ensure that the illuminance complies with at least 85 % for 12 V filament lamps, and at least 77 % for 6 V and 24 V filament lamps, with the minimum values of the light-distribution requirements laid down for the dipped beam in the relevant regulation, directive or standard. The maximum illuminance limits remain unchanged.

In the case of a filament lamp having a selective-yellow bulb, the test shall be left out if the approval is also given to the same type of filament lamp emitting white light. **A3**

A4 2.9 UV radiation

The UV radiation of a halogen filament lamp shall be such that:

$$k_1 = \frac{\int_{315 \text{ nm}}^{400 \text{ nm}} \Phi_{\lambda} d\lambda}{\int_{380 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) d\lambda} \leq 2 \times 10^{-4} \text{ W/lm}$$

$$k_2 = \frac{\int_{250 \text{ nm}}^{315 \text{ nm}} \Phi_{\lambda} d\lambda}{\int_{380 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) d\lambda} \leq 2 \times 10^{-6} \text{ W/lm}$$

A4

A₄ where

$$k_m = 683 \text{ [lm/W]} ; \text{A}_4$$

A₃ Φ_λ [W/nm] is the spectral distribution of the radiant flux;

$V(\lambda)$ [1] is the spectral luminous efficiency;

λ [nm] is the wavelength.

These values shall be calculated using intervals of five nanometres.

2.10 Standard (étalon) filament lamps

Standard filament lamps shall fulfil the additional requirements as specified on the relevant filament lamp data sheets.

Bulbs of standard (étalon) filament lamps emitting white light shall not alter the CIE chromaticity co-ordinates of a luminous source having a colour temperature of 2 856 K by more than 0,010 units in the x and/or y direction. For standard (étalon) filament lamps emitting amber or red light, changes of the bulb temperature shall not affect the luminous flux which might impair photometric measurements of signalling devices. Moreover, for amber standard (étalon) filament lamps the colour shall be in the lower part of the tolerance area, i.e. towards the red.

3 Requirements and test conditions for discharge lamps

3.1 General requirements

Discharge lamps shall be so designed as to be and to remain in good working order when in normal use. They shall, moreover, exhibit no fault in design or manufacture.

3.2 Lamp marking

The following information shall be legibly and durably marked on the cap of the discharge lamps:

- the trade name or mark of manufacturer or responsible vendor;
- the nominal wattage;
- the international designation of the relevant category.

Inscriptions other than the above may be affixed.

NOTE 1 An example of such inscription is the approval mark conferred by an administrative authority.

NOTE 2 The ballast used for starting and operating the discharge lamps should be marked with type and trade mark identification and with the nominal voltage and wattage, as indicated on the relevant data sheet. **A₃**

A₂ 3.3 Bulbs

The bulb of the discharge lamps shall exhibit no scores or spots which might impair their optical performance.

The bulb shall comply with the dimensional specifications given on the relevant data sheet.

In the case of a coloured (outer) bulb after an operating period of 15 h with the ballast at test voltage, the surface of the bulb shall be lightly wiped with a cotton cloth of 70 % by volume of n-neptane and 30 % by volume of toluol. After 5 min, the surface shall be inspected visually. It shall not show any apparent changes.

3.4 Caps

Discharge lamps shall be equipped with standard caps complying with the cap data sheets of IEC 60061-1 as specified on the relevant data sheet. The cap shall be strong and firmly secured to the bulb. **A₂**

A2 3.5 Position and dimensions of electrodes, arc and black stripes

3.5.1 Electrodes

The geometric position and dimensions of the electrodes, shall be as specified on the relevant data sheet. Compliance shall be checked before the ageing period, the discharge lamp unlit and using optical methods through the glass envelope.

3.5.2 Arc

The shape and the displacement of the arc shall conform to the requirements as given on the relevant data sheet.

Compliance shall be checked after ageing with the lamp supplied by the ballast at test voltage.

3.5.3 Black stripes

The position, dimensions and transmission of the black stripes (if any) shall comply with the requirements as given on the relevant data sheet.

Compliance shall be checked after ageing, with the lamp supplied by the ballast at test voltage.

NOTE An example of a method of measuring arc and electrode position is given in Annex G. Other methods may be used.

3.6 Starting, run-up and hot-restrike characteristics

3.6.1 Starting

The discharge lamp shall start directly and remain alight.

3.6.2 Run-up

After being started, the discharge lamp shall emit at least:

After 1 s : 25 % of its rated luminous flux

After 4 s : 80 % of its rated luminous flux.

The rated luminous flux as indicated on the relevant data sheet.

3.6.3 Hot-restrike

After being switched-off for a period as indicated on the relevant data sheet, when switched-on, the lamp shall restart directly.

After 1 s the lamp shall emit at least 80 % of its rated luminous flux.

3.6.4 Compliance

Compliance shall be checked by the tests specified Annex H.

3.7 Electrical and photometric characteristics

3.7.1 Voltage and wattage

The voltage and wattage of the lamp shall be within the limits given on the relevant data sheet.

3.7.2 Luminous flux

The luminous flux shall be within the limits given on the relevant data sheet. In the case where white and yellow is specified for the same type, the rated value applies to the lamp emitting white light, whereas the luminous flux of the lamp emitting yellow light shall be at least 68 % of the specified value.

3.7.3 Compliance

Compliance shall be checked by the tests specified in Annex H.

3.8 Colour

The colour of the light emitted shall be white unless yellow is prescribed on the relevant data sheet.

In case of white the colorimetric characteristics, expressed in CIE chromaticity co-ordinates, shall lie within the limits given on the relevant data sheet. **A2**

A_2 In case of yellow, the colorimetric characteristics shall lie within the area formed by the following limits:

limit towards red	$y \geq 0,138 + 0,580 x$
limit towards green	$y \leq 1,29 x - 0,100$
limit towards white	$y \geq -x + 0,940$ and $y \geq 0,440$
limit towards spectral value	$y \leq -x + 0,992$

The minimum red content of the light of a discharge lamp emitting white light shall be such that: A_2

$$k_{\text{red}} = \frac{\int_{610 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) d\lambda}{\int_{380 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) d\lambda} \geq 0,05 \quad \text{A}_4$$

A_2 where

Φ_{λ} [W/nm] is the spectral distribution of the radiant flux;

$V(\lambda)$ [1] is the spectral luminous efficiency;

λ [nm] is the wavelength.

This value shall be calculated using intervals of one nanometre.

Compliance is checked by the tests specified in annex H.

3.9 UV radiation

The maximum UV content of the light of a discharge lamp shall be such that: A_2

$$k_{\text{UV}} = \frac{\int_{250 \text{ nm}}^{400 \text{ nm}} \Phi_{\lambda} S(\lambda) d\lambda}{k_m \cdot \int_{380 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) d\lambda} \leq 10^{-5} \text{ W/lm} \quad \text{A}_4$$

where

$$k_m = 683 \text{ [lm/W]} ; \quad \text{A}_4$$

A_2 $S(\lambda)$ [1] is the spectral weighting function.

For the definition of the parameters Φ_{λ} , $V(\lambda)$ and λ , see 3.8.

This value shall be calculated using intervals of one nanometre. A_2

A2 3.10 Standard (étalon) discharge lamps

Standard discharge lamps shall comply with the requirements applicable to production lamps and to the specific requirements as stated in the relevant data sheet. In case of a type emitting white and yellow light, the standard lamp shall emit white light.

4 Sampling and conditions of compliance

Requirements for sampling and conditions of compliance are specified in the relevant regulation for example ECE Regulations No. 37 and No. 99. **A2**

5 Lamp data sheets

5.1 List of specific lamp types



IEC sheet no. ¹	UNECE sheet no. ²	Category	Voltage V	Wattage W	Cap
60809-IEC-2110-	R37-R2	R2	6 12 24	45/40 45/40 55/50	P45t P45t P45t
60809-IEC-2120-	R37-H4	H4	12 24	60/55 75/70	P43t-38 P43t-38
60809-IEC-2125-	-	H6	12	65/55	PZ43t
60809-IEC-2130-	R37-HS1	HS1	6 12	35/35 35/35	PX43t PX43t
60809-IEC-2132-	R37-HS5	HS5	12	35/30	P23t
60809-IEC-2135-	-	HB1	12	65/45	P29t
60809-IEC-2140-	R37-S1/S2	S1	6 12	25/25 25/25	BA20d BA20d
60809-IEC-2150-	R37-S1/S2	S2	6 12	35/35 35/35	BA20d BA20d
60809-IEC-2160-	-	S4	6 12	15/15 15/15	BAX15d BAX15d
60809-IEC-2305-	-	H5	12	50	PY43d
60809-IEC-2310-	R37-H1	H1	6 12 24	55 55 70	P14.5s P14.5s P14.5s
60809-IEC-2315-	R37-H7	H7	12 24	55 70	PX26d PX26d
60809-IEC-2320-	-	H2	6 12 24	55 55 70	X511 X511 X511
60809-IEC-2325-	R37-HB3	HB3 HB3A	12 12	60 60	P20d P20d
60809-IEC-2330-	R37-H3	H3	6 12 24	55 55 70	PK22s PK22s PK22s
60809-IEC-2335-	R37-HB4	HB4 HB4A	12 12	51 51	P22d P22d
60809-IEC-2340-	R37-HS2	HS2	6 12	15 15	PX13.5s PX13.5s
60809-IEC-2350-	-	HS3	6	2,4	PX13.5s
60809-IEC-2360-	R37-S3	S3	6 12	15 15	P26s P26s
60809-IEC-2365-	R37-H8	H8	12	35	PGJ19-1
60809-IEC-2370-	R37-H9	H9	12	65	PGJ19-5
60809-IEC-2375-	R37-H10	H10	12	42	PY20d
60809-IEC-2380-	R37-H11	H11	12 24	55 70	PGJ19-2 PGJ19-2
60809-IEC-2385-	R37-H12	H12	12	53	PZ20d
60809-IEC-2410-	R37-HIR1	HIR1	12	65	PX20d

¹ If an UNECE sheet number is referenced in the second column, the IEC sheet number refers to a data sheet withdrawn with Amendment 5 of this standard and is given for information only.

² The number in front of the dash indicates the number of the UNECE regulation.



IEC sheet no. ¹	UNECE sheet no. ²	Category	Voltage V	Wattage W	Cap
60809-IEC-2420-	R37-HIR2	HIR2	12	55	PX22d
60809-IEC-3110-	R37-P21/5W	P21/5W	6 12 24	21/5 21/5 21/5	BAY15d BAY15d BAY15d
60809-IEC-3120-	R37-P21/4W	P21/4W	6 12 24	21/4 21/4 21/4	BAZ15d BAZ15d BAZ15d
60809-IEC-3130-	R37-W21/5W	W21/5W	12	21/5	W3x16q
60809-IEC-3135-	R37-WR21/5W	WR21/5W	12	21/5	WY3x16q
60809-IEC-3140-	R37-P27/7W	P27/7W	12	27/7	W2.5x16q
60809-IEC-3141-	R37-PY27/7W	PY27/7W	12	27/7	WX2.5x16q
60809-IEC-3310-	R37-P21W	P21W	6 12 24	21 21 21	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-IEC-3311-	R37-PY21W	PY21W	12 24	21 21	BAU15s BAU15s
60809-IEC-3315-	R37-P27W	P27W	12	27	W2.5x16d
60809-IEC-3320-	R37-R5W	R5W	6 12 24	5 5 5	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-IEC-3330-	R37-R10W	R10W	6 12 24	10 10 10	BA15s(BA15d) BA15s(BA15d) BA15s(BA15d)
60809-IEC-3340-	R37-T4W	T4W	6 12 24	4 4 4	BA9s BA9s BA9s
60809-IEC-3410-	R37-H6W	H6W	12	6	BAX9s
60809-IEC-3420-	R37-H21W	H21W	12 24	21 21	BAY9s BAY9s
60809-IEC-3430	R37-H27W	H27W/1 H27W/2	12 12	27 27	PG13 PGJ13
60809-IEC-4110-	R37-C5W	C5W	6 12 24	5 5 5	SV8.5 SV8.5 SV8.5
60809-IEC-4120-	R37-C21W	C21W	12	21	SV8.5
60809-IEC-4305-	R37-W2.3W	W2.3W	12	2,3	W2x4.6d
60809-IEC-4310	R37-W3W	W3W	6 12 24	3 3 3	W2.1x9.5d W2.1x9.5d W2.1x9.5d
60809-IEC-4320-	R37-W5W	W5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d
60809-IEC-4321-	R37-W5W	WY5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d
60809-IEC-4330-	R37-W21W	W21W	12	21	W3x16d
60809-IEC-4335-	R37-WY21W	WY21W	12	21	WX3x16d
60809-IEC-4340-	R37-W16W	W16W	12	16	W2.1x9.5d
60809-IEC-5010-	R37-T1.4W	T1.4W	12	1,4	P11.5d
60809-IEC-7110-	R99-DxS	D1S D2S D3S D4S	12 12 12 12	35 35 35 35	PK32d-2 P32d-2 PK32d-5 P32d-5





IEC sheet no. ¹	UNECE sheet no. ²	Category	Voltage V	Wattage W	Cap
60809-IEC-7120-	R99-DxR	D1R D2R D3R D4R	12 12 12 12	35 35 35 35	PK32d-3 P32d-3 PK32d-6 P32d-6
60809-IEC-9310-	-	B1.13W	2,7	1,13	PX13.5s
60809-IEC-9610-	-	B0.6W	6	0,6	E10
60809-IEC-9620-	-	B2.4W	6	2,4	EP10/14x11
-	R37-H10W	H10W/1 HY10W	12 12	10 10	BAU9s BAUZ9s
-	R37-H11	H11B	12 24	55 70	PGJY19-2 PGJY19-2
-	R37-H13	H13 H13A	12 12	55/60 55/60	P26.4t PJ26.4t
-	R37-H14	H14	12	55/60	P38t
-	R37-H15	H15	12 24	15/55 20/60	PGJ23t-1 PGJ23t-1
-	R37-H16	H16 H16B	12 12	19 19	PGJ19-3 PGJY19-3
-	R37-H21W	HY21W	12 24	21 21	BAW9s BAW9s
-	R37-H6W	HY6W	12	6	BAZ9s
-	R37-H8	H8B	12	35	PGJY19-1
-	R37-H9	H9B	12	65	PGJY19-5
-	R37-HS5A	HS5A	12	45/40	PX23t
-	R37-P13W	P13W PW13W	12 12	13 13	PG18.5d-1 WP3.3x14.5-7
-	R37-P19W	P19W PY19W PR19W PS19W PSY19W PSR19W PW19W PWR19W PWY19W	12 12 12 12 12 12 12 12 12	19 19 19 19 19 19 19 19 19	PGU20-1 PGU20-2 PGU20-5 PG20-1 PG20-2 PG20-5 WP3.3x14.5-1 WP3.3x14.5-2 WP3.3x14.5-5
-	R37-P24W	P24W PX24W PY24W PR24W PS24W PSX24W PSY24W PSR24W PW24W PWR24W PWY24W	12 12 12 12 12 12 12 12 12 12 12	24 24 24 24 24 24 24 24 24 24 24	PGU20-3 PGU20-7 PGU20-4 PGU20-6 PG20-3 PG20-7 PG20-4 PG20-6 WP3.3x14.5-3 WP3.3x14.5-4 WP3.3x14.5-6
-	R37-P27/7W	P27/7W	12	27/7	WU2.5x16
-	R37-PC16W	PC16W PCY16W PCR16W PW16W PWR16W PWY16W	12 12 12 12 12 12	16 16 16 16 16 16	PU20d-1 PU20d-2 PU20d-7 WP3.3x14.5-8 WP3.3x14.5-9 WP3.3x14.5-10
-	R37-PR21/4W	PR21/4W	12 24	21/4 21/4	BAU15d BAU15d
-	R37-PR21/5W	PR21/5W	12 24	21/5 21/5	BAW15d BAW15d





IEC sheet no. ¹	UNECE sheet no. ²	Category	Voltage V	Wattage W	Cap
-	R37-PR21W	PR21W	12 24	21 21	BAW15s BAW15s
-	R37-PSX26W	PSX26W	12	26	PG18.5d-3
-	R37-R10W	RR10W RR10W RR10W RY10W RY10W RY10W	6 12 24 6 12 24	10 10 10 10 10 10	BAW15s BAW15s BAW15s BAU15s BAU15s BAU15s
-	R37-R5W	RR5W	6 12 24	5 5 5	BAW15s BAW15s BAW15s
-	R37-W10W	W10W W10W WY10W WY10W	6 12 6 12	10 10 10 10	W2.1x9.5d W2.1x9.5d W2.1x9.5d W2.1x9.5d
-	R37-W15/5W	W15/5W	12	15/5	WZ3x16q
-	R37-W16W	WY16W	12	16	W2.1x9.5d
-	R37-W5W	WR5W	6 12 24	5 5 5	W2.1x9.5d W2.1x9.5d W2.1x9.5d
-	R37-WP21W	WP21W WPY21W	12 12	21 21	WY2.5x16d WZ2.5x16d
-	R37-WR21/5W	WR21/5W	12	21/5	WY3x16q
-	R37-WY2.3W	WY2.3W	12	2,3	W2x4.6d
-	R37-WY21W	WY21W	12	21	WX3x16d

