

Lamps for road vehicles — Performance requirements

The European Standard EN 60810:1994, with the incorporation of amendments A1:2001 and A2:2001, has the status of a British Standard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee CPL/34/1, Electrical lamps, upon which the following bodies were represented:

- British Lighting Association for the Preparation of Standards (BRITLAPS)
- Chartered Institution of Building Services Engineers
- Electricity Association
- Engineering Equipment and Materials Users' Association
- Institution of Lighting Engineers
- Lighting Industry Federation Ltd.
- London Regional Transport
- National Illumination Committee of Great Britain
- Society of Motor Manufacturers and Traders Ltd.

The following bodies were also represented through the work of Subcommittees:

- Consumer Policy Committee of BSI
- Department of Transport

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 May 1995

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The following BSI references relate to the work on this standard:
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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	2
Text of EN 60810	5

National foreword

This British Standard has been prepared by Technical Committee CPL/34/1 and is the English language version of EN 60810:1994 *Lamps for road vehicles — Performance requirements*, including amendments A1:2001 and A2:2001, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 60810:1993, including amendment 1:1994 and amendment 2:2001, published by the International Electrotechnical Commission (IEC).

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A₁** **A₁**. 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**.

This standard supersedes BS 6797:1986 which will be withdrawn on 15 July 1995.

The following print types are used in this standard:

requirement proper:	in roman type
test specifications:	<i>in italic type</i>
explanatory matter:	in smaller roman type

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 29 and a back cover.

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Descriptors: Road vehicle, electrical equipment, signalling lamp, incandescent lamp, characteristic

English version

Lamps for road vehicles — Performance requirements

(includes amendments A1:2001 and A2:2001)

(IEC 60810:1993 + A1:1994 + A2:2001)

Lamps pour véhicules routiers —
Prescription de performances
(inclut les amendements A1:2001 et A2:2001)
(CEI 60810:1993 + A1:1994 + A2:2001)

Lampen für Straßenfahrzeuge —
Anforderungen bezüglich des
Betriebsverhaltens
(enthält Änderungen A1:2001 und A2:2001)
(IEC 60810:1993 + A1:1994 + A2:2001)

This European Standard was approved by CENELEC on 1994-10-04. Amendment A1 was approved by CENELEC on 2001-03-01 and amendment A2 was approved by CENELEC on 2001-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 810:1993, prepared by IEC SC 34A, Lamps, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60810 on 1994-10-04 without any modification.

This European Standard supersedes HD 503 S2:1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-07-15
- latest date of withdrawal of conflicting national standards (dow) 1995-07-15

Annexes designated “normative” are part of the body of the standard. In this standard, Annex A, Annex B, Annex C and Annex ZA are normative. Annex ZA has been added by CENELEC.

Foreword to amendment A1

The text of amendment 1:1994 to the International Standard IEC 60810:1993, prepared by SC 34A, Lamps, of IEC TC 34, Lamps and related equipment, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A1 to EN 60810:1994 on 2001-03-01 without any modification.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2002-04-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2004-04-01

Foreword to amendment A2

The text of document 34A/962/FDIS, future amendment 2 to IEC 60810:1993, prepared by 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 amendment A2 to EN 60810:1994 on 2001-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2002-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2004-12-01

Annexes designated “normative” are part of the body of the standard.

In this amendment, Annex D, Annex E and Annex ZA are normative.

Annex ZA has been added by CENELEC.

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Section 1. General

1.1 Scope

A2 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 especially is applicable to those lamps which are listed in IEC 60809. However, the standard may be used for other lamps falling under the scope of this standard.

It specifies requirements and test methods for the measurement of performance characteristics such as lamp life, lumen maintenance, torsion strength, glass bulb strength and resistance to vibration and shock. Moreover, information on temperature limits, maximum lamp outlines and maximum tolerable voltage surges is given for the guidance of lighting and electrical equipment design.

For some of the requirements given in this standard, reference is made to data given in tables. For lamps not listed in such tables, the relevant data are supplied by the lamp manufacturer or responsible vendor.

The performance requirements are additional to the basic requirements specified in IEC 60809. They are, however, not intended to be used by authorities for legal type approval purposes.

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. **A2**

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions to the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(845):1987, *International Electrotechnical Vocabulary (IEV) — Chapter 845: Lighting*

IEC 60068-2-6:1982, *Environmental testing — Part 2: Tests — Test Fc and guidance: Vibration (sinusoidal) Amendment No. 2* (1985)

IEC 60068-2-47:1982, *Environmental testing — Part 2: Tests — Mounting of components, equipment and other articles for dynamic tests including shock (Ea), bump (Eb), vibration (Fc and Fd) and steady-state acceleration (Ga) and guidance*

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60682:1980, *Standard method of measuring the pinch temperature of quartz-tungsten-halogen lamps Amendment No. 1* (1987)

IEC 60809:1985, *Filament lamps for road vehicles — Dimensional, electrical and luminous requirements Amendment No. 1* (1987)

Amendment No. 2 (1989)

Amendment No. 3 (1992)

ISO 2854:1976, *Statistical interpretation of data — Techniques of estimation and tests relating to means and variances*

ISO 3951:1989, *Sampling procedures and charts for inspection by variables for percent non-conforming*

A2 Reference deleted **A2**

1.3 Definitions

In addition to the definitions in IEC 60809 the following definitions apply.

**1.3.1
life**
the total time during which a lamp has been operated before it becomes useless. For filament lamps, it is considered to be so according to one of the following criteria:

- a) the end of life is the time when the filament fails;
- b) the life of a dual filament lamp is the time until either filament fails, if the lamp is tested in a switching cycle involving alternative operation of both filaments.

Lamp life is expressed in hours $\langle A_2 \rangle$

**1.3.2
characteristic life T**
the characteristic life T is a constant of the Weibull distribution and indicates the time up to which 63,2 % of a number of tested $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamps of the same type have ended their individual lives

**1.3.3
life B3**
life B3 is a constant of the Weibull distribution indicating the time during which 3 % of a number of the tested $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamps of the same type have reached the end of their individual lives

**1.3.4
lumen maintenance**
ratio of the luminous flux of a $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamp at a given time in its life to its initial luminous flux, the $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamp being operated under specific conditions

**1.3.5
initial luminous flux**
 $\langle A_2 \rangle$ luminous flux of a lamp measured after ageing as specified in Annex C of IEC 60809 for filament lamps or in Annex D of this standard for discharge lamps $\langle A_2 \rangle$

**1.3.6
rated value**
value of a characteristic specified for operation of a $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamp at test voltage and/or other specified conditions

**1.3.7
pinch temperature limit**
the maximum admissible pinch temperature to ensure satisfactory filament lamp performance in service

**1.3.8
solder temperature limit**
the maximum admissible solder temperature to ensure satisfactory filament lamp performance in service

**1.3.9
maximum filament lamp outline**
contour limiting the space to be reserved for the $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ lamp in the relevant equipment

**1.3.10
heavy duty filament lamp**
 $\langle A_2 \rangle$ *Text deleted* $\langle A_2 \rangle$ 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 this standard in addition to the requirements specified in IEC 60809

Section 2. Requirements and test conditions ^{A2} for filament lamps ^{A2}

2.1 Basic function and interchangeability

Filament lamps shall comply with IEC 60809.

2.2 Torsion strength

The cap shall be strong and firmly secured to the bulb.

Compliance is checked before and after the life test by submitting the filament lamp to the following torque values:

Filament lamps with bayonet caps:

with 9 mm shell-diameter 0,3 Nm¹⁾;

with 15 mm shell-diameter 1,5 Nm¹⁾;

with 20 mm shell-diameter 3,0 Nm¹⁾.

Filament lamps with screw caps:

with 10 mm shell-diameter 0,8 Nm¹⁾.

The torque shall not be applied suddenly, but shall be increased progressively from zero to the specified amount.

Values are based on a non-compliance level of 1 %.

2.3 Characteristic life *T*

The life *T* measured on a test quantity of at least 20 filament lamps shall be at least 96 % of the rated value, given in Table 3.

Compliance is checked by life tests as prescribed in Annex A.

2.4 Life B3

The life B3 shall not be less than the rated value, given in Table 3.

Compliance is checked by life tests as prescribed in Annex A.

Conditions of compliance:

The number of filament lamps failing before the required time shall not exceed the values in Table 1.

Table 1 — Conditions of compliance for life B3

Number of filament lamps tested	Acceptance number
23 to 35	2
36 to 48	3
49 to 60	4
61 to 74	5
75 to 92	6

2.5 Lumen maintenance

The lumen maintenance shall be not less than the rated value, given in Table 4. This value is based on a non-compliance level of 10 %.

2.6 Resistance to vibration and shock

In the event of service life being influenced by vibration or shock, the test methods and schedules detailed in Annex B shall be used to assess the performance.

^{A1} The filament lamps are deemed to have satisfactorily completed the wide-band or narrow-band random vibration test as described in Annex B, if they continue to function during and after the test. ^{A1}

¹⁾ Under consideration.