

Incandescent lamps — Safety specifications —

Part 3: Tungsten-halogen lamps (non-vehicle)

ICS 29.140.20

National foreword

This British Standard is the UK implementation of EN 60432-3:2003+A2:2008. It is identical with IEC 60432-3:2002, incorporating amendment 2:2008. It supersedes BS EN 60432-3:2003+A1:2005 which is withdrawn.

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.

The UK participation in its preparation was entrusted by Technical Committee CPL/34, Lamps and related equipment, to Subcommittee CPL/34/1, Electric Lamps.

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

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**Incandescent lamps -
Safety specifications
Part 3: Tungsten-halogen lamps (non-vehicle)
(IEC 60432-3:2002)**

Lampes à incandescence -
Prescriptions de sécurité
Partie 3: Lampes tungstène-halogène
(véhicules exceptés)
(CEI 60432-3:2002)

Glühlampen -
Sicherheitsanforderungen
Teil 3: Halogen-Glühlampen
(Fahrzeuglampen ausgenommen)
(IEC 60432-3:2002)

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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 document 34A/1011/FDIS, future edition 1 of IEC 60432-3, 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 EN 60432-3 on 2003-03-01.

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Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, D, F and ZA are normative and annexes C and E are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60432-3:2002 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60127-2	NOTE	Harmonized as EN 60127-2:1991 (not modified).
IEC 60269-3-1	NOTE	Harmonized as HD 630.3.1 S3:2002 (modified).
IEC 60335-2-56	NOTE	Harmonized as EN 60335-2-56:2003 (not modified).
IEC 60432-1	NOTE	Harmonized as EN 60432-1:2000 (modified).
IEC 60432-2	NOTE	Harmonized as EN 60432-2:2000 (modified).
IEC 60598-1	NOTE	Harmonized as EN 60598-1:2000 (modified).
IEC 60598-2	NOTE	Harmonized as 60598-2-x series (partly modified).
IEC 60682	NOTE	Harmonized as EN 60682:1993 (not modified).
IEC 60838-1	NOTE	Harmonized as EN 60838-1:1998 (not modified).

Foreword to amendment A1

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Endorsement notice

The text of amendment 1:2005 to the International Standard IEC 60432-3:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

Foreword to amendment A2

The text of document 34A/1267/FDIS, future amendment 2 to IEC 60432-3:2002, 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 60432-3:2003 on 2008-05-01.

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Annex ZA has been added by CENELEC.

Endorsement notice

The text of amendment 2:2008 to the International Standard IEC 60432-3:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

In the official version of EN 60432-3:2003, Bibliography, delete the note added for IEC 60432-3:2002.

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INCANDESCENT LAMPS – SAFETY SPECIFICATIONS –

Part 3: Tungsten halogen lamps (non-vehicle)

1 General

1.1 Scope

This part of IEC 60432 specifies the safety requirements for single-capped and double-capped tungsten halogen lamps, having rated voltages of up to 250 V, used for the following applications:

- Projection (including cinematograph and still projection)
- Photographic (including studio)
- Floodlighting
- Special purpose
- General purpose
- Stage lighting

This International Standard does not apply to general purpose single-capped tungsten halogen lamps, covered by IEC 60432-2, that are used as replacement for conventional tungsten filament lamps.

1.2 Normative references

The following referenced documents are indispensable for the application 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 60050-845:1987, *International Electrotechnical Vocabulary (IEV) – Chapter 845: Lighting*

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

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges*

IEC 60061-4, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 4: Guidelines and general information*

IEC 60357, *Tungsten halogen lamps (non-vehicle)*

Ⓐ IEC 60432-1:1999, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes* Ⓐ

1.3 Definitions

For the purpose of this International Standard, the definitions given in IEC 60050(845), as well as the following apply:

1.3.1

tungsten halogen lamp

gas-filled lamp containing halogens or halogen compounds, the filament being of tungsten

1.3.2

single-capped tungsten halogen lamp

tungsten halogen lamp having a single cap or base

1.3.3

double-capped tungsten halogen lamp

tungsten halogen lamp having a cap or base on each end of the lamp

1.3.4

extra low voltage tungsten halogen lamp

tungsten halogen lamp with a rated voltage lower than 50 V

NOTE Abbreviated: ELV tungsten halogen lamp

1.3.5

extra low voltage low-pressure tungsten halogen lamp

tungsten halogen lamp with a gas pressure below a certain value and a rated voltage less than or equal to 12 V

1.3.6

self-shielded tungsten halogen lamp

tungsten halogen lamp for which the luminaire needs no protective shield

NOTE Abbreviated: self-shielded lamp.

Examples of self-shielded tungsten halogen lamps are:

- ELV tungsten halogen lamps with integral outer envelope;
- ELV low-pressure tungsten halogen lamps;
- mains voltage tungsten halogen lamps which conform to IEC 60432-2;
- mains voltage tungsten halogen lamps which conform to the relevant clauses of this standard.

1.3.7

outer envelope

transparent or translucent enclosure containing a tungsten halogen light source

NOTE The enclosure can also consist of a reflector with integral front cover

1.3.8

rated voltage

voltage or voltage range specified in this standard or assigned by the manufacturer or responsible vendor

NOTE If lamps are marked with a voltage range, they are appropriate for use on any supply voltage within that range.

1.3.9

test voltage

rated voltage unless otherwise specified

NOTE If lamps are marked with a voltage range, the test voltage is the mean of the voltage range, unless otherwise specified.

1.3.10

rated wattage

wattage specified in this standard or assigned by the manufacturer or responsible vendor

1.3.11

rated current

current specified in this standard or assigned by the manufacturer or responsible vendor

1.3.12

test current

rated current unless otherwise specified

1.3.13

specific effective radiant UV power

effective power of the UV radiation of a lamp related to its luminous flux

Unit: mW/klm

For a reflector lamp, this is the effective irradiance of the UV radiation related to the illuminance.

Unit: mW/(m²·klx)

NOTE The effective power (or irradiance) of the UV radiation is obtained by weighting the spectral power distribution of the lamp with the action spectrum published by the American Conference of Governmental Industrial Hygienists (ACGIH), which is endorsed by the World Health Organization (WHO) and recommended by the International Radiation Protection Association (IRPA). For references, see Bibliography.

1.3.14

maximum pinch temperature

maximum temperature which the components in the pinch/seal of a lamp are designed to withstand over the expected life of the lamp

1.3.15

maximum lamp cap-contact, base-pin or base-post temperature

maximum temperature of the lamp cap-contact, base-pin or base-post, which should be observed to safeguard electrical contact over the expected life of the lamp

1.3.16

maximum cap temperature

maximum temperature for which the components in the cap area of a lamp are designed to withstand over the expected life of the lamp

1.3.17

maximum reflector-rim temperature

maximum temperature for which the connection between front cover and reflector is designed to withstand over the expected life of the lamp

1.3.18

group

lamps for the same application as defined by the scope of this standard

1.3.19

type

lamps of the same group having the same nominal wattage, bulb shape and cap

1.3.20

family

grouping of lamps characterized by common features such as materials, components and/or method of processing

1.3.21

design test

test made on a sample for the purpose of checking compliance of the design of a family, group or a number of groups with the requirements of the relevant clause

1.3.22

periodic test

test, or series of tests, repeated at intervals in order to check that a product does not deviate in certain respects from the given design

1.3.23

running test

test repeated at frequent intervals to provide data for assessment

1.3.24

batch

all lamps in one family and/or group and identified as such and put forward at one time for checking compliance

1.3.25

whole production

production during a period of twelve months of all types of lamps within the scope of this standard and nominated in a list of the manufacturer for inclusion in the certificate

1.3.26

breakdown

plasma discharge between two points inside the bulb of the lamp with maximum difference of electrical potential

For the purposes of this standard it is assumed that breakdown has occurred if the current exceeds the rated current by a factor of 5 (under consideration). 

2 Requirements

2.1 General

Tungsten halogen lamps shall be so designed and constructed that in normal use they present no danger to the user or surroundings.

In general compliance is checked by carrying out all the relevant tests specified in this standard.  For the purposes of this standard, the voltage designations shown in IEC 60357 apply. 

2.2 Marking

2.2.1 Lamp marking

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

- mark of origin (this may take the form of a trademark, the manufacturer's name, the brand name or the name of the responsible vendor);
- rated wattage (marked “W” or “watts”);
- rated voltage or rated voltage range (marked “V” or “volts”), or for airfield lamps the rated current (marked “A”).

The rated voltage marking for lamps intended for use on United Kingdom supply voltages may be “240 volts” or “240 V”.

NOTE The United Kingdom implementation of 230 V (European harmonization process) allows supply voltages to remain at 240 V.

Compliance is checked on unused lamps as follows:

- presence and legibility by visual inspection;
- durability by applying the following test.

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

After this test, the marking shall still be legible.

2.2.2 Additional information and marking

If applicable, the following information shall be given.

- a) Lamps shall be supplied with an appropriate cautionary notice indicating the need of a protective shield to be fitted to the luminaire. Alternatively the immediate lamp wrapping or container may be marked with the corresponding symbol as shown in A.1.

NOTE In North America a suitable cautionary notice is required. Use of the symbol is optional.

- b) For self-shielded lamps, (not needing luminaire shielding), the immediate lamp wrapping or container shall be marked with the symbol as shown in A.2.

NOTE 1 This does not apply to lamps covered by IEC 60432-2.

 NOTE 2 In North America, a written notice may be used in place of this symbol. 

- c) For dichroic-coated reflector lamps the immediate lamp wrapping or container shall be marked with the symbol as shown in A.3.

NOTE This symbol is not required in North America.

- d)  Double-capped lamps, with rated voltages 50 V – 250 V, shall be supplied with a cautionary notice or symbol as shown in Clause A.4 indicating that the luminaire shall be disconnected from the power supply before insertion or withdrawal of the lamp.

NOTE 1 In the USA special package marking is required regarding the use of 500 W double-capped halogen lamps in residential indoor luminaires.

NOTE 2 In North America a suitable cautionary notice is required. Use of the symbol is optional. 

2.3 Caps or bases

2.3.1 General

Caps or bases originally developed for single-capped ELV lamps shall not be used for general purpose tungsten halogen lamps with rated voltages higher than 50 V.

NOTE Examples of such ELV fits are: G4, GU4, GY4, GX5.3, GU5.3, G6.35, GY6.35, GU7 and G53.

The GU10 base shall be used for aluminised reflector lamps only.

 The G9, GU10 or GZ10 base shall be used for self-shielded lamps only. 

Compliance is checked by inspection.

2.3.2 Creepage distances

The minimum creepage distance between contacts or between contacts and the metal shell of the cap, if any, shall be in accordance with the recommendations in IEC 60061-4.

Compliance is checked by measurement.