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Edition 1.1 2016-01
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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Fluorescent induction lamps – Safety specifications

Lampes à fluorescence à induction – Spécifications de sécurité

IEC 62532:2011-01+AMD1:2016-01 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 62532 edition 1.1 contains the first edition (2011-01) [documents 34A/1422/FDIS and 34A/1446/RVD] and its amendment 1 (2016-01) [documents 34A/1871/FDIS and 34A/1883/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62532 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability 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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Amendment 1 to this standard contains requirements for photobiology and information on water contact.

FLUORESCENT INDUCTION LAMPS – SAFETY SPECIFICATIONS

1 Scope

This International Standard specifies the safety requirements for fluorescent induction lamps for general lighting purposes.

It also specifies the method a manufacturer should use to show compliance with the requirements of this standard on the basis of whole production appraisal in association with his test records on finished products. This method can also be applied for certification purposes.

Details of a batch test procedure, which can be used to make limited assessment of batches, are also given in this standard.

The schematic drawings of the systems are shown in Annex A.

NOTE Self-ballasted induction lamps (where the discharge vessel, the power coupler and the control gear are integrated in the same product) are excluded from the scope of this standard.

This standard covers photobiological safety according to IEC 62471 and IEC TR 62471-2. Blue light and infrared hazards are below the level which requires marking.

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 60061, *Lamp caps and holders together with gauges for the control of interchangeability and safety*

IEC 60360:1998, *Standard method of measurement of lamp cap temperature rise*

IEC 60598-1:2008, *Luminaires – Part 1: General requirements and tests*

IEC 60901, *Single-capped fluorescent lamps. Performance specifications*

IEC 60695-2-10, *Fire Hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 61347-1, *Lamp control gear – Part 1: General and safety requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
induction lamp
assembly of a low pressure mercury discharge vessel and an inductive power coupler

3.2
discharge vessel *(closed containment description)*
vessel containing at least a low pressure mercury vapour, which will be energized by means of the inductive coupler

NOTE 1 The ultra violet radiation from the resulting discharge is converted by a layer of fluorescent material into visible light.

NOTE 2 The discharge vessel may have means of mechanical fixation to position it to the inductive power coupler.

3.3
inductive power coupler
component to transform high frequency electrical energy, by means of induction, in order to energize the low pressure mercury in the discharge vessel

NOTE 1 The component includes electrical connection.

NOTE 2 The inductive power coupler can contain a means to fixate and position the discharge vessel.

3.4
mechanical interface
means to fixate and position the induction lamp

3.5
internally coupled induction lamp
induction lamp where the coupler is partly surrounded by the discharge vessel

3.6
externally coupled induction lamp
induction lamp where the discharge vessel is partly surrounded by the coupler

3.7
group
lamps having the same electrical characteristics and physical dimensions

3.8
type
lamps of the same group having the same photometric and colour characteristics

3.9
family
lamp groups which have common features of materials, components, and/or method of processing

3.10
nominal wattage
wattage used to designate the lamp

3.11
working voltage
highest RMS voltage which may occur across any insulation at rated supply voltage, transients being neglected, in open-circuit conditions or during normal operation

3.12
equilibrium temperature
steady-state temperature of a lamp reached after a sufficient operating time

3.13
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

3.14
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

3.15
running test
test repeated at frequent intervals to provide data for assessment

3.16
batch
all lamps of one family and/or group and identified as such and put forward at one time for test or checking compliance

3.17
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

4 Safety requirements

4.1 General

In this document, the term “lamp” stands for “induction lamp”.

Lamps shall be so designed and constructed that in normal use they present no danger to the user or the surroundings if operated with a ballast complying with IEC 61347-1.

In general, compliance is checked by carrying out all the tests specified.

All plastic materials shall meet all safety requirements of this standard after exposure to UV and temperature over the claimed lifetime of the lamp. Any accelerated test shall correspond to the real lifetime effect. The allowed temperature range for the use of the lamp as given by the lamp manufacturer or responsible vendor shall be noticed.

Plastic material which is directly exposed to UV by the lamp shall be tested at a wavelength of 254 nm. UV irradiance, temperature and testing time are under consideration.

Schematic drawings of the construction of internally and externally coupled induction lamps are given in Annex A.

4.2 Marking

4.2.1 Marking of the lamps

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

a) mark of origin (this may take the form of a trade mark, the manufacturer's name or the name of the responsible vendor);

b) the nominal wattage (marked "W" or "watts") or any other indication which identifies the lamp.

4.2.2 Requirements

Compliance is checked by the following:

a) presence and legibility of the marking by visual inspection;

b) durability of marking 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 damped with water for a period of 15 s.

After this test, the marking shall still be legible.

4.3 Requirements for mechanical and electrical connections

4.3.1 Construction and assembly of the lamp

The construction shall be such that the whole assembly remains safe during and after operation.

Wiring and cables shall be so situated or protected that they cannot be damaged by sharp edges, rivets, screws and similar components. Wiring and cables shall not be twisted through an angle exceeding 360°.

Compliance is checked by visual inspection.

Minimum bending radius, as specified in the manufacturer's documentation, of the applied cables and wiring should be observed.

Compliance is checked by measurement of the radii.

4.3.2 Requirements for electrical connections

Electrical connections shall have adequate electrical performance and mechanical strength.

Compliance is checked by carrying out the same kind of tests as given in section 15 of IEC 60598-1.

4.3.3 Caps and holders

If applicable, the requirements of IEC 60061 apply.

4.4 Insulation resistance

4.4.1 Test method to determine insulation resistance after humidity treatment

Wrap a copper foil around the lamp and connect it to metal parts if any. For schematic drawing, see Annex c. The lamp shall be conditioned for 48 h in a cabinet containing air with a relative humidity between 91 % and 95 %. The temperature of the air, t, is maintained within 1 °C of any convenient value between 20 °C and 30 °C.

Before being placed in the humidity cabinet, the lamp wrapped with copper foil is brought to a temperature between t and (t + 4) °C.

Before the insulation test, visible drops of water, if any, are removed by means of blotting paper.