

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Discharge lamps (excluding fluorescent lamps) – Safety specifications**

**Lampes à décharge (à l'exclusion des lampes à fluorescence) – Prescriptions de sécurité**

Document Preview

IEC 62035:2014

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**DISCHARGE LAMPS  
(EXCLUDING FLUORESCENT LAMPS) –  
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**IEC 62035 edition 2.1 contains the second edition (2014-04) [documents 34A/1600/CDV and 34A/1643/RVC] and its amendment 1 (2016-11) [documents 34A/1873/CDV and 34A/1909/RVC].**

**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 62035 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This edition includes the following significant technical changes with respect to the previous edition. Photobiological safety requirements are taken care of on basis of the risk group concept of IEC 62471 and the technical report IEC TR 62778 on blue light hazard. This has consequences for terms, marking, structure of 4.6, and introduction of a new symbol “Caution, do not stare at light source”. Special attention is given to blue light hazard.

The French version of this standard has not been voted upon.

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

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## DISCHARGE LAMPS (EXCLUDING FLUORESCENT LAMPS) – SAFETY SPECIFICATIONS

### 1 Scope

This International Standard specifies the safety requirements for discharge lamps (excluding fluorescent lamps) for general lighting purposes.

This International Standard is applicable to low-pressure sodium vapour lamps and to high-intensity discharge (HID) lamps, i.e. high-pressure mercury vapour lamps (including blended lamps), high-pressure sodium vapour lamps and metal halide lamps. It applies to single- and double-capped lamps, having caps as listed in Annex A.

This standard only concerns safety criteria and does not take into account performance. The performance standards IEC 60188, IEC 60192, IEC 60662, IEC 61167 and IEC 61549 should be referred to for such characteristics.

It may be expected that lamps which comply with this standard will operate safely at supply voltages between 90 % and 110 % of rated supply voltage and when operated with a ballast complying with IEC 61347-2-9 and IEC 60923, with a starting device complying with IEC 61347-2-1 and IEC 60927, and in a luminaire complying with IEC 60598-1.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050, *International Electrotechnical Vocabulary* (available at <http://www.electropedia.org>)

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

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders*

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 60155, *Glow-starters for fluorescent lamps*

IEC 60598-1:2014, *Luminaires – Part 1: General requirements and tests*

IEC 60662, *High-pressure sodium vapour lamps*

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60923, *Auxiliaries for lamps – Ballasts for discharge lamps (excluding tubular fluorescent lamps) – Performance requirements*

IEC 61347-2-1, *Lamp controlgear – Part 2-1: Particular requirements for starting devices (other than glow starters)*

IEC 61167, *Metal halide lamps – Performance specification*

IEC TR 62778, *Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires*

ISO 4046-4:2002, *Paper, board, pulp and related terms – Vocabulary – Part 4: Paper and board grades and converted products*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-845 and IEC TR 62778, as well as the following apply.

#### 3.1

##### **HID lamp**

##### **high intensity discharge lamp**

electric discharge lamp in which the light-producing arc is stabilised by wall temperature and the arc has a bulb wall loading in excess of  $3 \text{ W/cm}^2$

Note 1 to entry: HID lamps include groups of lamps known as high-pressure mercury, metal halide and high-pressure sodium lamps.

[SOURCE: IEC 60050-845:1987, 845.07.19]

#### 3.2

##### **high pressure mercury vapour lamp**

high-intensity discharge lamp in which the major portion of the light is produced, directly or indirectly, by radiation from mercury operating at a partial pressure in excess of 100 kPa

Note 1 to entry: This term covers clear, phosphor coated (mercury fluorescent) and blended lamps. In a fluorescent mercury discharge lamp, the light is produced partly by the mercury vapour and partly by the layer of phosphors excited by the ultraviolet radiation of the discharge.

[SOURCE: IEC 60050-845:1987, 845.07.20]

#### 3.3

##### **blended lamp**

##### **self-ballasted mercury lamp, US**

lamp containing in the same bulb certain elements of a mercury vapour lamp and an incandescent lamp filament connected in series

Note 1 to entry: The bulb may be diffusing or coated with phosphors.

[SOURCE: IEC 60050-845:1987, 845.07.21, modified — The words "certain elements of" are added.]

**3.4****high pressure sodium vapour lamp**

high-intensity discharge lamp in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kPa

Note 1 to entry: The term covers lamps with clear or diffusing bulb.

[SOURCE: IEC 60050-845:1987, 845.07.23]

**3.5****low pressure sodium vapour lamp**

discharge lamp in which the light is produced by radiation from sodium vapour operating at a partial pressure of 0,1 Pa to 1,5 Pa

[SOURCE: IEC 60050-845:1987, 845.07.24]

**3.6****metal halide lamp**

high-intensity discharge lamp in which the major portion of the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides

Note 1 to entry: The definition covers clear and coated lamps.

[SOURCE: IEC 60050-845:1987, 845.07.25, modified — The words "radiation" and "metal halides" are added.]

**3.7****nominal power**

approximate quantity value of lamp power used to designate or identify a lamp

**3.8****ultraviolet hazard efficacy of luminous radiation**

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

Note 1 to entry: Ultraviolet hazard efficacy of luminous radiation is expressed in mW/klm.

Note 2 to entry: The effective power of the UV radiation is obtained by weighting the spectral power distribution of the lamp with the UV hazard function  $SUV(\lambda)$ . Information about the relevant UV hazard function is given in IEC 62471. It only relates to possible hazards regarding UV exposure of human beings. It does not deal with the possible influence of optical radiation on materials, like mechanical damage or discoloration.

**3.9****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 standard

[SOURCE: IEC 60081:1997, 1.4.10]

**3.10****type test sample**

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

[SOURCE: IEC 60081:1997, 1.4.11]

**3.11****group**

lamps of the same generic type