

LAHENDUSLAMBID (VÄLJAARVATULT
LUMINOFOORLAMBID). OHUTUSNÕUDED

Discharge lamps (excluding fluorescent lamps) - Safety specifications

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62035:2014 sisaldab Euroopa standardi EN 62035:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 62035:2014 consists of the English text of the European standard EN 62035:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 05.12.2014.	Date of Availability of the European standard is 05.12.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.140.30

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Discharge lamps (excluding fluorescent lamps) - Safety specifications
(IEC 62035:2014 , modified)**

Lampes à décharge (à l'exclusion des lampes à fluorescence) - Prescriptions de sécurité
(CEI 62035:2014 , modifiée)

Entladungslampen (ausgenommen Leuchtstofflampen) -
Sicherheitsanforderungen
(IEC 62035:2014 , modifiziert)

This European Standard was approved by CENELEC on 2014-09-15. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN 62035:2014) consists of the text of IEC 62035:2014 prepared by SC 34A "Lamps", of IEC/TC 34 "Lamps and related equipment", together with the common modifications prepared by CLC/TC 34A "Lamps".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2015-09-15
at national level by publication of an identical
national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2017-09-15
with this document have to be withdrawn

This document supersedes EN 62035:2000.

EN 62035:2014 includes the following significant technical changes with respect to EN 62035:2000.

Photobiological safety requirements are taken care of on basis of the risk group concept of EN 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 62035:2014 was approved by CENELEC as a European Standard with agreed common modifications.

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

IEC 60432-1	NOTE Harmonized as EN 60432-1.
IEC 60927	NOTE Harmonized as EN 60927.
IEC 60598-1	NOTE Harmonized as EN 60598-1.
IEC 61347-2-9	NOTE Harmonized as EN 61347-2-9.

COMMON MODIFICATIONS

Delete all references to E26 and E39 lamp caps in the following clauses and figures:

Annex A	Data sheet references of IEC 60061 (Table A.1)
Annex B	Torsion test values (Table B.2)
Annex C	Torsion test holders (Figure C.1)
Annex F	Maximum lamp cap temperatures (Table F.1)

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	-	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60061-1	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamp caps	EN 60061-1	-
IEC 60061-2	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 2: Lampholders	EN 60061-2	-
IEC 60061-3	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 3: Gauges	EN 60061-3	-
IEC 60061-4	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 4: Guidelines and general information	EN 60061-4	-
IEC 60155	-	Glow-starters for fluorescent lamps	EN 60155	-
IEC 60662	-	High pressure sodium vapour lamps - Performance specifications	EN 60662	-
IEC 60695-2-10	2000	Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure	EN 60695-2-10	2001
IEC 60923	-	Auxiliaries for lamps - Ballasts for discharge lamps (excluding tubular fluorescent lamps) - Performance requirements	EN 60923	-
IEC 61167	-	Metal halide lamps - Performance specification	EN 61167	-
IEC 61347-2-1	-	Lamp controlgear - Part 2-1: Particular requirements for starting devices (other than glow starters)	EN 61347-2-1	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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, pulps and related terms - Vocabulary - Part 4: Paper and board grades and converted products	-	-

CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 General safety requirements.....	10
4.1 General.....	10
4.2 Marking.....	10
4.2.1 Lamp marking.....	10
4.2.2 Additional information to be provided	11
4.3 Mechanical requirements	11
4.3.1 Requirements for caps.....	11
4.3.2 Construction and assembly.....	12
4.4 Electrical requirements	13
4.4.1 Parts which can become accidentally live	13
4.4.2 Insulation resistance.....	13
4.4.3 Electric strength	13
4.5 Thermal requirements	14
4.5.1 General	14
4.5.2 Resistance to heat.....	14
4.5.3 Resistance to abnormal heat and fire.....	15
4.6 Photobiological requirements	15
4.6.1 UV Hazard.....	15
4.6.2 Blue light hazard.....	16
4.6.3 IR hazard.....	16
5 Particular safety requirements	17
5.1 High-pressure sodium vapour lamps	17
5.2 Metal halide lamps.....	17
5.2.1 General	17
5.2.2 Marking	17
5.2.3 Containment.....	17
6 Information for luminaire design.....	17
7 Assessment.....	17
7.1 General.....	17
7.2 Assessment of whole production by means of manufacturer's records	18
7.2.1 General	18
7.2.2 Assessment of manufacturer's records for particular tests	19
7.2.3 Sampling procedures for the whole production testing	19
7.3 Assessment of batches	23
7.3.1 Sampling for batch testing	23
7.3.2 Number of lamps in batch sample	23
7.3.3 Sequence of the tests	23
7.3.4 Rejection conditions for large batches (>500 lamps)	23
7.3.5 Rejection conditions for small batches (≤500 lamps).....	24
Annex A (normative) List of lamp caps and gauges.....	26
Annex B (normative) Pull and torsion test values	27

Annex C (normative) Torsion test holders	28
Annex D (normative) Information for thermal tests	30
Annex E (normative) Measurement of pulse height for lamps with internal starting device	31
E.1 Introduction	31
E.2 Test circuit	31
E.2.1 Test circuit and key	31
E.2.2 Ballast characteristics	31
E.2.3 Power factor capacitor	32
E.2.4 Pulse height measuring circuit	32
E.3 Tests	32
E.3.1 Lamps with an internal glow switch	32
E.3.2 Lamps with an internal thermal switch	32
Annex F (informative) Information for luminaire design	34
F.1 Guidelines for safe lamp operation	34
F.2 Maximum lamp cap temperature	34
F.3 Cap/holder – key configuration	34
F.4 Protection against lamp shattering	34
F.5 Protection against UV radiation	35
F.6 Possible condition at end of lamp life	35
Annex G (normative) Conditions of compliance for design tests	36
G.1 Insulation resistance (see 4.4.2) Electric strength (see 4.4.3)	36
G.2 Cap construction and assembly (see 4.3.2.2 b) and 4.3.2.3 b))	36
G.3 Cap creepage distance (see 4.3.1.2) Resistance to heat (see 4.5.2.1 and 4.5.2.2) Resistance to abnormal heat and fire (see 4.5.3.1) Pulse height (see 5.1.) UV radiation (see 4.6.1.3)	36
Annex H (normative) Symbols	37
H.1 General	37
H.2 Symbol indicating that the lamp shall be operated only in a luminaire provided with a protective shield	37
H.3 Symbol indicating that the lamp emits a high level of UV radiation	37
H.4 Symbol indicating that the lamp shall not be operated when the outer bulb is broken	37
H.5 Self-shielded lamp symbol indicating that the lamp can be operated in a luminaire without a protective shield	38
H.6 Symbol indicating not to stare at a light source, for example, a lamp, a luminaire, a video projector etc.	38
Annex I (normative) Containment testing procedure for metal halide lamps with quartz arc tubes	39
I.1 General	39
I.1.1 Purpose	39
I.1.2 Test description	39
I.2 Experimental setup	39
I.2.1 Safety precautions	39
I.2.2 Electrical circuit	39
I.2.3 Enclosure requirements	41
I.3 Test procedures	41
I.3.1 Lamp selection and preparation	41
I.3.2 Determination of median rupture energy	41

I.3.3	Rupture test procedure	42
I.4	Self-shielded lamp design	42
I.4.1	Definition of damage to the outer bulb	42
I.4.2	Determination of self-shielded	42
Annex J (normative) Containment testing procedure for metal halide lamps with ceramic arc tubes		43
J.1	General.....	43
J.1.1	Purpose	43
J.1.2	Test description	43
J.2	Experimental setup	43
J.2.1	Safety precautions	43
J.2.2	Electrical circuit	43
J.2.3	Enclosure requirements	44
J.3	Test procedures	44
J.3.1	Lamp selection and preparation	44
J.3.2	Determination of median rupture energy	44
J.3.3	Rupture test procedure	45
J.4	Self-shielded lamp design	45
J.4.1	Definition of damage to the outer bulb	45
J.4.2	Determination of containment rating	45
Bibliography.....		47
Figure 1 – Edison screw-capped lamp		13
Figure C.1 – Holder for torsion test on lamps with Edison screw caps		28
Figure C.2 – Holder for torsion test on lamps with bayonet caps		29
Figure D.1 – Ball pressure test apparatus		30
Figure E.1 – Test circuit.....		31
Figure I.1 – Basic electrical diagram for quartz metal halide lamp containment test		40
Figure J.1 – Electrical diagram for containment test.....		44
Table 1 – Classification of risk groups.....		15
Table 2 – Grouping of test records – Sampling and acceptable quality levels (AQL)		20
Table 3 – Acceptance numbers AQL = 0,65 %		21
Table 4 – Acceptance numbers AQL = 2,5 %		22
Table 5 – Batch sample size and rejection number (for batches >500 lamps).....		24
Table 6 – Batch sample size and rejection number (for batches ≤500 lamps).....		25
Table A.1 – Data sheet references of IEC 60061		26
Table B.1 – Pull test values		27
Table B.2 – Torsion test values.....		27
Table D.1 – Temperatures		30
Table E.1 – Test ballast resonance characteristics		32
Table E.2 – Power factor capacitor values for tests.....		32
Table F.1 – Maximum lamp cap temperatures.....		34