

**METALLHALOGENIIDLAMBID. TOIMIVUSE
MÄÄRATLEMINE**

Metal halide lamps - Performance specification

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61167:2018 sisaldab Euroopa standardi EN 61167:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 61167:2018 consists of the English text of the European standard EN 61167:2018.
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 02.11.2018.	Date of Availability of the European standard is 02.11.2018.
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:
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:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Metal halide lamps - Performance specification
(IEC 61167:2018 , modified)**

Lampes aux halogénures métalliques - Spécification de
performances
(IEC 61167:2018 , modifiée)

Halogen-Metall dampflampen - Anforderungen an die
Arbeitsweise
(IEC 61167:2018 , modifiziert)

This European Standard was approved by CENELEC on 2018-06-01. 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 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, Serbia, 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: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 34A/2051/FDIS, future edition 4 of IEC 61167, prepared by IEC/SC 34A "Lamps" of IEC/TC 34 "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61167:2018.

A draft amendment, which covers common modifications to IEC 61167 (34A/2051/FDIS), was prepared by CLC/TC 34A "Lamps" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-05-02
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2021-11-02

EN 61167:2018 supersedes EN 61167:2016.

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

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 61167:2018 are prefixed "Z".

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives.

For the relationship with EU Directives see informative Annexes ZZA, ZZB and ZZC, which are integral parts of this document.

This standard provides test methods related to parameters as prescribed by EC Regulation 245/2009, EU Regulation 1194/2012 and EU Regulation 874/2012 while conformity assessment (sampling, conformity procedures as well as limits) for market surveillance are specified in the text of the above Regulations.

Endorsement notice

The text of the International Standard IEC 61167:2018 was approved by CENELEC as a European Standard with agreed common modifications.

COMMON MODIFICATIONS

CONTENTS **Add the following annexes:**

- | | |
|-------------------------|---|
| Annex ZA (normative) | Normative references to international publications with their corresponding European publications |
| Annex ZZA (informative) | Relationship between this European Standard and the requirements of Commission Regulation (EC) No 245/2009 |
| Annex ZZB (informative) | Relationship between this European Standard and the requirements of Commission Regulation (EU) No 1194/2012 |
| Annex ZZC (informative) | Relationship between this European Standard and the requirements of Commission Regulation (EU) No 874/2012 |

Add the following clause before Clause 2:

Z1 Overall statement

Where a Commission Regulation specifies limits for parameters these limits shall be used instead of the limits specified in this standard.

3 Terms and definitions

After 3.18 **add** new definitions 3.Z1 up to 3.Z7:

3.Z1

directional lamp

lamp having at least 80 % light output within a solid angle of π sr (corresponding to a cone with angle of 120°)

[SOURCE: Regulation 1194/2012, Article 2]

3.Z2

beam angle

angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through the centre of the front face of the lamp and through points at which the luminous intensity is 50 % of the centre beam intensity

[SOURCE: EN 61341]

3.Z3

partial luminous flux (of a light source, within a specified cone angle)

luminous flux emitted from a light source within a specified cone angle α determined from the luminous intensity distribution $I(\theta, \varphi)$ of the source:

$$\Phi_{\alpha} = \int_{\varphi=0}^{2\pi} \int_{\theta=0}^{\alpha/2} I(\theta, \varphi) \sin \theta d\theta d\varphi \quad (2)$$

Note 1 to entry: Partial luminous flux is expressed in lumen (lm).

Note 2 to entry: $(\theta, \varphi)=(0,0)$ is the direction of the cone axis.

Note 3 to entry: The cone angle α is the full angle (diameter) of the cone.

[SOURCE: EN 13032-4:2015, 3.41, modified, – Notes 4 and 5 removed]

3.24

useful luminous flux, Φ_{use}

partial luminous flux of a lamp falling within the cone used for calculating the lamp's energy efficiency according Annex III, point 1.1 of regulation (EU) No 1194/2012

Note 1 to entry: Useful luminous flux is expressed in lumen (lm).

Note 2 to entry: The regulation specifies 90° or 120° cones according to the product characteristics.

Note 3 to entry: Useful luminous flux is similar to partial luminous flux. It is determined with the cone axis coincident with the observed optical beam axis of the light source, the axis about which the luminous intensity is substantially symmetrical.

3.25

efficacy

'luminous efficacy of a source', 'light source efficacy' or 'lamp efficacy' (η_{source})

quotient of the luminous flux emitted (Φ) by the power consumed by the source (P_{source}). $\eta_{\text{source}} = \Phi / P_{\text{source}}$. Unit: lm/W.

The power dissipated by auxiliary equipment such as ballasts is not included in the power consumed by the source

[SOURCE: Regulation 245/2009 Annex II, 1.a)]

3.26

Lamp Lumen Maintenance Factor (LLMF)

ratio of the luminous flux emitted by the lamp at a given time in its life to the initial luminous flux

[SOURCE: Regulation 245/2009 Annex II, 1.b)]

3.27

Lamp Survival Factor (LSF)

fraction of the total number of lamps which continue to operate at a given time under defined conditions and switching frequency

[SOURCE: Regulation 245/2009 Annex II, 1.c)]

4 Lamp requirements

4.2 Marking

Add the following new sub-clause after 4.2.2

4.2.Z1 Special purpose product

Where a lamp is to be considered as a special purpose product according to Regulation (EC) No 1194/2012 this shall be declared by the supplier.

4.8.4 Requirements and test conditions

Replace "Under consideration" with the following new text:

The chromaticity coordinates and correlated colour temperature of an individual lamp shall be calculated according to CIE 15 from a measurement made under the conditions of Annex B or Annex E as appropriate.

The colour rendering index of an individual lamp shall be calculated according to CIE 13.3 from a measurement made under the conditions of Annex B or Annex E as appropriate.

4.Z1 After sub-clause 4.7 **add** new sub-clause 4.Z1 as follows:

4.Z1 Useful luminous flux

The useful luminous flux of a directional lamp shall be measured under the conditions of Annex B or Annex E as appropriate, by luminous intensity integration as described in EN 13032-4:2015, 6.3 "Partial luminous flux".

Alternative measurement methods may be used if they can be shown to give equivalent results for the product being tested, if necessary by applying correction factors. Measurements with lamps operating horizontally are often much easier to carry out. The reference method, however, uses the measurement position according to A.1.

In case of doubt a goniophotometry measurement of EN 13032-4:2015, 6.3 shall be used.

NOTE Below are a few examples of alternative measurement methods. It is not an exhaustive list.

- For small beam angles shine into integrating sphere.
- Mount lamp on internal surface of integrating sphere.
- Mount lamp inside integrating sphere with screening (LM-20 technique).
- Illuminate a surface and measure the illuminance across the surface with a photometer.
- Illuminate a surface and measure the surface luminance with a luminance camera.
- Illuminate a translucent screen and measure the surface luminance of the rear side with a luminance camera

4.Z2 After 4.9 **add** new sub-clauses 4.Z2 up to 4.Z5 as follows:

4.Z2

The efficacy of an individual lamp shall be calculated from a measurement of luminous flux and power according to the conditions of Annex B or Annex E as appropriate.

4.Z3

The lamp lumen maintenance factor of an individual lamp shall be calculated from measurements of its luminous flux made at appropriate times according to the conditions of Annex B or Annex E as appropriate. Lamp operation between these measurements shall be as prescribed in Annex C.

4.Z4

The survival of an individual lamp shall be determined by operating lamps under the conditions prescribed in Annex C until the lamp fails to remain alight or delivers low light output (in case of doubt, low light output refers to noticeably less than 50 % of rated light output).

4.Z5

The average mercury content shall be measured in accordance with the CV AAS method as described in EN 62321-4.

Annex B (normative) Method of measuring electrical and photometrical characteristics (lamps for operation on 50 Hz or 60 Hz supply frequencies)

B.1 General

Replace the following paragraph in B.1

Photometric characteristics shall be measured in accordance with the relevant recommendations of the CIE (Commission Internationale de l'Éclairage) 84. For measurement for the centre beam intensity of reflector lamps, IEC/TR 61341 shall be used.

By

Photometric characteristics shall be measured in accordance with EN 13032-1. For determination of the centre beam intensity of reflector lamps, EN 61341 shall be used.

Annex E (normative) Method of measuring electrical and photometrical characteristics on low frequency square wave reference ballast

E.1 Purpose of this annex

Replace the following paragraph in E.1

Photometric characteristics shall be measured in accordance with the relevant recommendations of the CIE (Commission Internationale de l'Éclairage) 84. For measurement for the centre beam intensity of reflector lamps, IEC/TR 61341 shall be used.

By

Photometric characteristics shall be measured in accordance with EN 13032-1. For determination of the centre beam intensity of reflector lamps, EN 61341 shall be used.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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>
-	-	Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 1: Measurement and file format	EN 13032-1 +A1	2004 2012
-	-	Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 4: LED lamps, modules and luminaires	EN 13032-4	2015
IEC 60050-845	-	International Electrotechnical Vocabulary - Chapter 845: Lighting	-	-
IEC 60061-1	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamp caps	EN 60061-1	1993
IEC 60598-1	-	Luminaires - General requirements and tests	EN 60598-1	2015
IEC 60923	-	Auxiliaries for lamps - Ballasts for discharge lamps (excluding tubular fluorescent lamps) - Performance requirements	EN 60923	2005
IEC 60927	-	Auxiliaries for lamps - Starting devices (other than glow starters) - Performance requirements	EN 60927	2007
IEC/TR 61341	-	Method of measurement of centre beam intensity and beam angle(s) of reflector lamps	EN 61341	2011
IEC 62035	-	Discharge lamps (excluding fluorescent lamps) - Safety specifications	EN 62035	2014
IEC 62321-4	-	Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS	EN 62321-4	2014
IEC 62471	-	Photobiological safety of lamp and lamp systems	EN 62471	2008

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CIE 84	-	The measurement of luminous flux	-	-
CIE 13.3	-	Method of Measuring and Specifying Colour Rendering Properties of Light Sources	-	-

Annex ZZA (informative)

Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EC) No 245/2009 aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/495 to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council [2009 OJ L76].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding ecodesign requirements of that Regulation and associated EFTA Regulations.

Table ZZA.1 – Correspondence between this European Standard and Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council [2009 OJ L76] and Commission's standardization request M/495

Ecodesign requirements of Regulation No 245/2009 [2009 OJ L76]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Annex III, Article 2	Annex B or Annex E as appropriate	Lamp power
Annex III, Article 1.3	Annex B or Annex E as appropriate	Luminous flux
Annex III, Article 1.2, Table 14	Subclause 4.Z4	Lamp survival factor
Annex III, Article 1.2, Table 14	Subclause 4.Z3	Lumen maintenance
Annex II, Article 3(b)	Subclause 4.8.4	Chromaticity coordinates
Annex III, Article 1.3 (h)	Subclause 4.8.4	Colour rendering index (CRI)
Annex III, Article 1.3 (g)	Subclause 4.8.4	Correlated colour temperature (CCT)
Annex III, Article 2	Annex B or Annex E as appropriate	Spectral power distribution
Annex I, Article 1(d), (h)	Annex B or Annex E as appropriate	specific effective radiant UV power
Annex I, Article 1 (i)	Subclause 4.4	Caps
Annex III, Article 1.3 (f), Annex V, Article 2	Subclause 4.Z5	Mercury content

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the products falling within the scope of this standard.

Annex ZZB (informative)

Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EU) No 1194/2012 aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/495 to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment [2012 OJ L342].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZB.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding ecodesign requirements of that Regulation and associated EFTA Regulations.

Table ZZB.1 – Correspondence between this European Standard and Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment [2012 OJ L342] and Commission's standardization request M/495

Ecodesign requirements of Regulation No 1194/2012 [2012 OJ L342]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Article 2.4, 3.1, Annex I	Subclause 4.2	Technical description of special purpose lamps for eco-design
Annex III, Article 1 Annex III, Article 3.1	Annex B or Annex E as appropriate	Lamp power
Annex III, Article 3.1.1, 3.1.2 (a), 3.1.3 (c)	Subclause 4.Z1	Useful luminous flux
Annex III, Article 3.1.2 (i), 3.1.3 (k)	Annex B or Annex E as appropriate	Beam angle
Annex III, Table 4, Article 3.1.3	Subclause 4.Z4	Lamp life
Annex III, Table 4, Table 7, Article 3.1.3	Subclause 4.Z3	Lumen maintenance
	Not covered in this standard	Number of switching cycles before failure
Annex III, Table 4	Subclause 4.5, Annex A	Starting time
Annex III, Table 4	Subclause 4.5, Annex A	Warm-up time to 60% ϕ
Annex I	Subclause 4.8.4	Chromaticity coordinates
Annex III, article 3.1.3 (h)	Subclause 4.8.4	Colour rendering index (CRI)
Annex III, article 3.1.1, 3.1.2 (c)	Subclause 4.8.4	Correlated colour temperature (CCT)
	Not covered in this standard	Power factor (only for lamps with integrated control gear)
Annex III, article 3.1.2 (h)	Subclause 4.3 (Data sheets Clause 6)	Lamp dimensions
Annex III, article 3.1.3 (m)	Annex B or Annex E as appropriate	Spectral power distribution

Ecodesign requirements of Regulation No 1194/2012 [2012 OJ L342]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
	appropriate	
Annex III, article 3.1.2 (n), (o)	Subclause 4.Z5	Mercury content
	Not covered in this standard	Dimmability
	Not covered in this standard	Lamp type (MR11 GU4 etc.)
Annex III, article 3.1.3 (j)	Annex B or Annex E as appropriate	Peak intensity in candela

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the products falling within the scope of this standard.

Annex ZZC (informative)

Relationship between this European Standard and the energy labelling requirements of Commission Delegated Regulation (EU) No 874/2012 aimed to be covered

This European standard has been prepared under a Commission's standardisation request M/495 to provide one voluntary means of conforming to the energy labelling requirements of Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires [2012 OJ L258].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZC.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding energy labelling requirements of that Regulation and associated EFTA Regulations.

Table ZZC.1 – Correspondence between this European Standard and Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires [2012 OJ L258] and Commission's standardisation request M/495

Energy labelling requirements of Regulation No 874/2012 [2012 OJ L258]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Article 1	Annex B or Annex E as appropriate	Applicable parameter according to Article 1: luminous flux
Annex VII	Annex B or Annex E as appropriate	Lamp power
Annex VII	Annex B or Annex E as appropriate	Luminous flux (non-directional only)
Annex VII	Subclause 4.Z1	Useful luminous flux (directional only)
Annex VII	Annex B or Annex E as appropriate	Beam angle

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the products falling within the scope of this standard.

Bibliography

Add the following notes for the standards indicated:

IEC 60081	NOTE	Harmonized as EN 60081.
IEC 60188	NOTE	Harmonized as EN 60188.
IEC 60357:2002	NOTE	Harmonized as EN 60357:2003 (modified).
IEC 60682	NOTE	Harmonized as EN 60682.
IEC 61231	NOTE	Harmonized as EN 61231.

Add the following documents:

COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council

COMMISSION REGULATION (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires

COMMISSION REGULATION (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment