

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Miscellaneous lampholders –
Part 1: General requirements and tests

STANDARD PREVIEW
(standards.iteh.ai)

Douilles diverses pour lampes –
Partie 1: Exigences générales et essais

IEC 60838-1:2016
<https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068c296/iec-60838-1-2016>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2016 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Miscellaneous lampholders –
Part 1: General requirements and tests

Douilles diverses pour lampes –
Partie 1: Exigences générales et essais

ITeH STANDARD PREVIEW
(standards.iteh.ai)

IEC 60838-1:2016
<https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068c296/iec-60838-1-2016>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.140.10

ISBN 978-2-8322-3356-6

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	6
4 General requirement.....	9
5 General conditions for tests	9
6 Classification.....	10
7 Marking	11
8 Protection against electric shock.....	13
9 Terminals	13
10 Provision for earthing.....	15
11 Construction.....	16
12 Moisture resistance, insulation resistance and electric strength	17
13 Mechanical strength.....	19
14 Screws, current-carrying parts and connections.....	20
15 Creepage distances and clearances.....	20
16 Endurance.....	23
17 Resistance to heat and fire.....	24
18 Resistance to excessive residual stresses (season cracking) and to rusting	27
Annex A (informative) Lampholders covered by this standard.....	29
Annex B (normative) Suitable metals.....	31
Annex C (normative) Season cracking/corrosion test	32
Annex D (normative) Pendulum impact test apparatus	34
Annex E (informative) Schedule of amended clauses and subclauses containing more serious/ critical requirements which require products to be retested	36
Bibliography	37
Figure 1 – Ball-pressure test apparatus.....	25
Figure D.1 – Impact test apparatus.....	34
Figure D.2 – Mounting fixture	35
Table 1 – Minimum values of insulation resistance.....	18
Table 2 – Height of fall.....	19
Table 2a – Minimum distances for AC (50 Hz/60 Hz) sinusoidal voltages – Impulse withstand category II.....	21
Table 2b – Minimum distances for AC (50 Hz/60 Hz) sinusoidal voltages – Impulse withstand category III.....	22
Table 3 – Minimum distances for non-sinusoidal pulse voltages.....	22
Table A.1 – Lampholders covered by this standard.....	29
Table C.1 – Test solution	32

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MISCELLANEOUS LAMPHOLDERS –**Part 1: General requirements and tests**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60838-1 has been prepared by subcommittee 34B: Lamp caps and holders, of IEC technical committee 34: Lamps and related equipment.

This fifth edition cancels and replaces the fourth edition published in 2004, Amendment 1:2008 and Amendment 2:2011. This edition constitutes a technical revision.

The significant technical changes in this edition with respect to the previous edition include the introduction of new or revised requirements for single and dual contact ignition voltages, steel test caps and brass test caps and an Annex E listing amended requirements/clauses which require products to be retested.

The text of this standard is based on the following documents:

FDIS	Report on voting
34B/1850A/FDIS	34B/1856/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 60838 series, published under the general title *Miscellaneous lampholders*, can be found on the IEC website.

In this standard, the following type is used:

- *compliance statements: in italic type.*

The committee has decided that the contents of this publication 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 60838-1:2016](https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068c296/iec-60838-1-2016)

<https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068c296/iec-60838-1-2016>

MISCELLANEOUS LAMPHOLDERS –

Part 1: General requirements and tests

1 Scope

This part of IEC 60838 applies to lampholders of miscellaneous types intended for building-in (to be used with general purpose light sources, projection lamps, floodlighting lamps and street-lighting lamps with caps as listed in Annex A) and the methods of test to be used in determining the safe use of lamps in lampholders.

This part of IEC 60838 also covers lampholders which are integral with a luminaire. It covers the requirements for the lampholder only.

This part of IEC 60838 also covers lampholders integrated in an outer shell and dome similar to Edison screw lampholders. Such lampholders are further tested in accordance with the relevant clauses of IEC 60238.

Requirements for lampholders for tubular fluorescent lamps, Edison screw lampholders and bayonet lampholders are covered by separate standards.

2 Normative references (standards.iteh.ai)

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 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety* (available at <http://std.iec.ch/iec60061>)

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 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60238, *Edison screw lampholders*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60352-1, *Solderless connections – Part 1: Wrapped connections – General requirements, test methods and practical guidance*

IEC 60399, *Barrel thread for lampholders with shade holder ring*

IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*¹

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

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

IEC 60664-1, *Insulation co-ordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

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

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

ISO 1456, *Metallic and other inorganic coatings – Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium*

ISO 2081, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

ISO 2093, *Electroplated coatings of tin – Specification and test methods*

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

3 Terms and definitions

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

3.1 rated voltage

voltage declared by the manufacturer to indicate the highest working voltage for which the lampholder is intended

3.2 working voltage

highest r.m.s. voltage that may occur across any insulation, transients being disregarded, both when the lamp is operating under normal conditions and when the lamp is removed

3.3 rated current

current declared by the manufacturer to indicate the highest current for which the lampholder is intended

¹ A consolidated version of this publication exists, comprising IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

3.4 lampholder for building-in

lampholder designed to be built into a luminaire, an additional enclosure or the like

3.4.1 unenclosed lampholder

lampholder for building-in so designed that it requires additional means, for example enclosures, to meet the requirements of this standard with regard to protection against electric shock

3.4.2 enclosed lampholder

lampholder for building-in so designed that it fulfils on its own the requirements of this standard with regard to protection against electric shock

3.5 rated operating temperature

highest temperature for which the lampholder is designed

3.6 rated pulse voltage

highest peak value of pulse voltages the holder is able to withstand

3.7 lamp connector

set of contacts specially designed to provide for electrical contact but not supporting the lamp

3.8 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

3.9 type test sample

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

3.10 live part

conductive part which may cause an electric shock

3.11 impulse withstand category

numeral defining a transient overvoltage condition

Note 1 to entry: Impulse withstand categories I, II, III and IV are used.

a) Purpose of classification of impulse withstand categories

Impulse withstand categories are to distinguish different degrees of availability of equipment with regard to required expectations on continuity of service and on an acceptable risk of failure.

By selection of impulse withstand levels of equipment, insulation co-ordination can be achieved in the whole installation reducing the risk of failure to an acceptable level providing a basis for overvoltage control.

A higher characteristic numeral of an impulse withstand category indicates a higher specific impulse withstand of the equipment and offers a wider choice of methods for overvoltage control.

The concept of impulse withstand categories is used for equipment energized directly from the mains.

b) Description of impulse withstand categories

Equipment of impulse withstand category I is equipment which is intended to be connected to the fixed electrical installations of buildings. Protective means are taken outside the equipment – either in the fixed

installation or between the fixed installation and the equipment – to limit transient overvoltages to the specific level.

Equipment of impulse withstand category II is equipment to be connected to the fixed electrical installations of buildings.

Equipment of impulse withstand category III is equipment which is part of the fixed electrical installations and other equipment where a higher degree of availability is expected.

Equipment of impulse withstand category IV is for use at or in the proximity of the origin of the electrical installations of buildings upstream of the main distribution board.

3.12

primary circuit

circuit which is directly connected to the AC mains supply

Note 1 to entry: It includes, for example, the means for connection to the AC mains supply, the primary windings of transformers, motors and other loading devices.

3.13

secondary circuit

circuit which has no direct connection to a primary circuit and derives its power from a transformer, converter or equivalent isolation device, or from a battery

Note 1 to entry: Exception: autotransformers. Although having direct connection to a primary circuit, the tapped part of them is also deemed to be a secondary circuit as defined above.

Note 2 to entry: Mains transients in such a circuit are attenuated by the corresponding primary windings. Also inductive ballasts reduce the mains transient voltage height. Therefore, components located after a primary circuit or after an inductive ballast can be suited for an impulse withstand category of one step lower, i.e. for impulse withstand category II.

3.14

basic insulation

insulation applied to live parts to provide basic protection against electric shock

Note 1 to entry: Basic insulation does not necessarily include insulation used exclusively for functional purposes.

3.15

supplementary insulation

independent insulation applied in addition to basic insulation in order to provide protection against electric shock in the event of a failure of basic insulation

3.16

double insulation

insulation comprising both basic insulation and supplementary insulation

3.17

reinforced insulation

single insulation system applied to live parts, which provides a degree of protection against electric shock equivalent to double insulation under the conditions specified

Note 1 to entry: The term "insulation system" does not imply that the insulation shall be one homogeneous piece. It may comprise several layers which cannot be tested singly as supplementary or basic insulation.

3.18

enclosed reinforced insulated lampholder

lampholder for building-in so designed that on its own it fulfils the requirements for double or reinforced insulated parts in class II applications

3.19

partly reinforced insulated lampholder

lampholder for building-in, so designed that some parts of the lampholder require additional means to fulfil the requirements with regard to double or reinforced insulation

Note 1 to entry: In some cases, the dimensions might be achieved only after mounting into the luminaire.

3.20

polarized lampholder

lampholder for building-in, specially designed for asymmetric rated pulse voltages, where the rated ignition voltage (higher rated pulse voltage) is designated to a fixed contact

3.21

single contact ignition voltage

ignition voltage which appears on one contact of the lampholder only

3.22

dual contact ignition voltage

ignition voltage which is split between the two contacts of the lampholder

4 General requirement

Lampholders shall be so designed and constructed that in normal use they function reliably and cause no danger to persons or surroundings.

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

5 General conditions for tests

5.1 Tests according to this standard are type tests.

NOTE 1 The requirements and tolerances permitted by the standard are related to testing of type test sample submitted for that purpose. Compliance of type test sample does not ensure compliance of the whole production of a manufacturer with this safety standard. Conformity of production is the responsibility of the manufacturer and can include routine tests and quality assurance in addition to type testing.

NOTE 2 For further information on conformity testing during manufacture see IEC 60061-4.

5.2 Unless otherwise specified, the tests are made at an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$ and with the holder in the most unfavourable position for normal use.

If a lampholder is declared to accept different lamp fits, it shall comply with the requirements of each of the fits mentioned.

Compliance is checked with separate sets of specimens according to 5.3.

If the use of different lamp fits in turn is permitted by the manufacturer, only one set of specimens is used to check compliance with all requirements.

For all tests the most critical of the relevant fits and gauges shall be used and in the most onerous sequence.

5.3 The tests and inspections are carried out in the order of the clauses, on a total of

- 10 pairs of matching holders intended for linear double-capped lamps;

If a pair of holders consists of identical holders, it is sufficient that one holder instead of one pair is subjected to all the tests, except for the tests of Clause 8, of 11.2, 11.3, of Clause 13, Clause 16 and of 17.6 where pairs are needed.

- 10 specimens intended for single-capped lamps;

in the order of the clauses, as follows:

- three pairs or three specimens: Clause 4 up to and including Clause 15 (except for 9.2);

NOTE The tests of 9.2 are carried out on the number of separate specimens as required by the relevant standards.

- three pairs or three specimens: Clause 16 and 17.6;
- one pair or one specimen: 17.1;
- one pair or one specimen: 17.3;
- one pair or one specimen: 17.4;
- one pair or one specimen: 17.5 and Clause 18.

Together with these units, the manufacturer's mounting instructions (see 7.3) shall be supplied.

In such cases, where according to the mounting instructions the rated pulse voltage of the holder can only be achieved with a cap inserted, suitable caps shall be supplied together with the type test sample. The relevant tests are then carried out with a cap inserted.

5.4 Lampholders are deemed to comply with this standard if no specimen fails in the complete series of tests specified in 5.3.

If one specimen fails in one test, that test and the preceding ones which may have influenced the result of that test are repeated on another set of specimens for the number required by 5.3, all of which shall then comply with the repeated tests and with the subsequent tests. Lampholders are deemed not to comply with this standard if there are more failures than one.

The applicant may submit, together with the first set of specimens, the additional set which may be needed in case of failure of one specimen. The testing station shall then, without further request, test the additional specimens and will reject only if a further failure occurs.

If the additional set of specimens is not submitted at the same time, a failure of one specimen will entail the rejection.

6 Classification

Lampholders are classified as follows.

6.1 According to their installation conditions

- unenclosed lampholders;
- enclosed lampholders;
- partly reinforced insulated lampholders;
- enclosed reinforced insulated lampholders.

NOTE 1 Where a lampholder is used with a working voltage of 50 % or less of its maximum rating, it can be regarded as equivalent to a reinforced insulated lampholder.

6.2 According to their resistance to heat:

- for rated operating temperatures up to and including 80 °C;
- for rated operating temperatures over 80 °C (T-marked lampholders).

The measuring point for the operating temperature is that area of the lampholder which makes electrical contact with the lamp cap/base. If the heat resistance of insulating parts, terminals and leads of the lampholder deviates from this operating temperature, these different values shall be stated in the manufacturer's catalogue and are checked after appropriate installation in a luminaire or other additional enclosure, when that equipment is tested according to its own standard.

6.3 According to polarization

- non-polarized lampholders;
- polarized lampholders.

6.4 According to the application of ignition voltages

- lampholders for single-contact ignition voltages
- lampholders for dual-contact ignition voltages

NOTE 2 By using dual contact ignition voltages advantage can be taken of reduced creepage distance and clearance requirements.

7 Marking

7.1 Lampholders shall be marked with the following mandatory markings:

- a) mark of origin (this may take the form of a trade mark, manufacturer's identification mark or the name of the responsible vendor);
- b) either a unique catalogue number or an identifying reference.

Available technical documentation of the manufacturer such as printed catalogues or online catalogues shall allow a clear identification of a lampholder either by a unique catalogue number or by an identifying reference on the holder, specifying the essential characteristic features and the basic design of the product supplemented by a clear description. Variations of the basic design, for example different cable length, fixing means, colours, which do not affect safety or performance of the lampholder, may be disregarded in the type reference marked on the product. Variations included in the type testing procedure are listed in the corresponding test reports.

IEC 60838-1:2016

<https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50c3368c2290/iec-60838-1-2016>

If a combination of lampholder components determines the lampholder designation, for example an assembly of a lamp connector and a retaining spring, the combination should be clearly identifiable.

Compliance is checked by inspection.

7.2 In addition to the above mandatory markings, the following information shall be given either on the lampholder or be made available in the manufacturer's catalogue or the like:

- a) the rated voltage in volts and rated pulse voltage in kilovolts (kV), if applicable; for polarized lampholders, the rated voltage in volts and the pair of rated pulse voltages;


NOTE 1 Some lampholders still show rated voltages higher than 500 V. This is an earlier way of expressing the permissible pulse voltage via a rated voltage. For such lampholders, the creepage distances and clearances can be found in IEC 60598-1.

- b) the rated current in amperes;
- c) the rated operating temperature T , if greater than 80 °C, in steps of 10 °C;
- d) the conductor sizes for which the terminal is designed;
- e) the high voltage arrow (see IEC 60417-5036:2002-10) for polarized lampholders to identify the connection for the higher pulse voltage, if applicable; it shall be visible close to the relevant terminal or wire entry during lampholder installation;
- f) information on the application of ignition voltages.

If symbols are used, these shall be as follows.

For electrical rating:

- volt: V;

- ampere: A;
- watt: W;
- pulse voltage: kV;
- high pulse voltage terminal/wire on polarized lampholders:  (see IEC 60417-5036:2002-10)

NOTE 2 Alternatively, for volt and ampere ratings, figures can be used alone, the figure for the rated current being marked before or above that for the rated voltage and separated from the latter by an oblique stroke or line. Therefore the marking of current and voltage can be as follows:

$$2 \text{ A } 250 \text{ V or } 2/250 \text{ or } \frac{2}{250}$$

For the rated pulse voltage, the symbol shall be preceded by its value (e. g. 5 kV). For polarized lampholders as well as for dual contact ignition voltage lampholders, the two rated pulse voltages shall be separated by an oblique stroke (e. g. 15/2,5 kV or 5/2,5 kV).

If a lamp holder is intended to be used for dual contact ignition voltages this information shall be indicated in the manufacturer's catalogue or the like.

For polarized lampholders the figure marked before the oblique stroke represents the higher pulse voltage, the figure behind represents the rated pulse voltage based on the impulse withstand category of the lampholder. For dual contact ignition voltage lampholders the figure marked before the oblique stroke represents the total ignition voltage, the figure behind the oblique stroke represents the ignition voltage from the contacts to the mounting surface or the outer accessible surface.

Compliance is checked by inspection. [IEC 60838-1:2016](https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068-296/iec-60838-1-2016)
<https://standards.iteh.ai/catalog/standards/sist/834205e1-8121-45bf-aca1-50653068-296/iec-60838-1-2016>

For lampholders according to this standard, the distances for impulse withstand category II are usually applicable. For holders in equipment where a higher degree of availability is expected, distances for impulse withstand category III may be applicable. This information has to be indicated in the manufacturer's catalogue or the like.

Enclosed reinforced insulated lampholders offer an adequate level of protection for use in luminaires where they are accessible in normal use. This information shall be indicated in the manufacturer's catalogue or the like.

For partly reinforced insulated lampholders, sufficient creepage distances and clearances to outer accessible surfaces will require additional protection to some parts of the lampholder by the luminaire design or by use of additional attachment(s) or cover(s). This information shall be indicated in the manufacturer's catalogue or the like.

7.3 The instructions supplied by the holder manufacturer or responsible vendor shall contain all the information required to ensure correct mounting and operation of the connectors or holders.

NOTE The information could be part of the manufacturer's or responsible vendor's catalogue.

Compliance is checked by inspection.

7.4 Marking shall be durable and easily legible.

Compliance is checked by inspection and, after the tests of 17.6 have been completed, by trying to remove the marking by rubbing lightly for 15 s with a piece of cloth soaked with water and for a further 15 s with a piece of cloth soaked with petroleum spirit.

After the test the marking shall still be legible.

NOTE The petroleum spirit used typically consists of a solvent hexane with a content of aromatics of maximum 0,1 volume percentage, a kauri-butanol value of 29, an initial boiling point of approximately 65 °C, a dry-point of approximately 69 °C and a specific density of approximately 0,68 g/cm³.

8 Protection against electric shock

8.1 Enclosed lampholders shall be so constructed that, when the holder has been built in or installed and wired as in normal use, their live parts are not accessible

- without a lamp inserted;
- with the appropriate lamp inserted, and
- during insertion or removal of the lamp.

For lampholders which have been in use for a long time, such as B22d-3, BY22d, G22, G38, P28s, P30s and P40, the above requirement applies only with the appropriate lamp inserted.

The insertion of only one pin of the lamp (in case of caps with more than one pin) to the first point of contact with live parts shall be prevented.

Lampholders G22 and G38 are exempted from this requirement.

Compliance is checked by means of the standard test finger specified in IEC 60529. This test finger is applied in every possible position with a force not exceeding 10 N, an electrical indicator being used to show contact with live parts.

It is recommended that a voltage of not less than 40 V be used.

The lampholders are mounted as in normal use, i.e. on a supporting surface or the like with the most unfavourable conductor size fitted for which it is intended before being subjected to the above test.

Unenclosed lampholders are only tested after appropriate installation in a luminaire or other additional enclosure when that equipment is tested according to its own standard.

8.2 Lampholders for double-ended lamps shall be so constructed that, when the two holders have been built in or installed and wired as in normal use, their live parts are not accessible

- without a lamp inserted,
- with the appropriate lamp inserted, and
- during insertion and removal of the lamp.

In case of lampholders R7s/RX7s, a test which simulates insertion or removal of the lamp is not available because in both cases testing has to be done against the spring force of the single contact. This situation does not give the repeatability required for judgement. Therefore, this test is replaced by one with the lamp inserted.

Compliance is checked in accordance with IEC 60061 or unless otherwise specified in IEC 60061, with the standard test finger.

9 Terminals

9.1 Lampholders shall be provided with at least one of the following means of connection:

- screw-type terminals;