

INTERNATIONAL STANDARD

**Organic light emitting diode (OLED) Light sources for general lighting – Safety –
Part 1: General requirements and tests**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2025 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.

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

Tel.: +41 22 919 02 11
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 corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

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 It also gives information on projects, replaced and withdrawn publications.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 once a month by email.

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: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.



IEC 62868-1

Edition 1.1 2025-02
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

**Organic light emitting diode (OLED) Light sources for general lighting – Safety –
Part 1: General requirements and tests**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.140.99

ISBN 978-2-8327-0278-9

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 General	10
4.1 General requirements	10
4.2 General test requirements.....	10
5 Marking	11
5.1 Contents and location	10
5.2 Durability and legibility of marking.....	11
6 Construction	11
6.1 General.....	11
6.2 Mechanical strength.....	12
6.2.1 Requirements	12
6.2.2 Vibration test	12
6.3 Internal short circuit.....	12
6.4 Wireways	13
6.5 Resistance to dust, solid objects and moisture.....	13
7 Mechanical hazard	13
8 Fault conditions	13
8.1 General.....	13
8.2 Overload condition	14
8.3 Input stability test.....	14
9 Insulation resistance and electric strength	14
9.1 General requirements	14
9.2 Insulation resistance.....	14
9.3 Electric strength.....	14
10 Thermal stress.....	14
11 Creepage distances and clearances	15
12 Resistance to heat and fire.....	15
12.1 Resistance to heat.....	15
12.2 Resistance to fire flame and ignition	15
13 Photobiological safety.....	15
14 Terminals	15
15 Information for luminaire design.....	16
16 Protection against accidental contact with live parts	16
17 Screws, current-carrying parts and connections.....	16
18 Resistance to corrosion	16
19 Provisions for protective earthing.....	16
Annex A (informative) Construction of OLED panels	17
Annex B (informative) Information for luminaire design	19
Annex C (normative) Method of provoking an internal short circuit.....	21
C.1 Method for an OLED panel with glass substrates	21

C.2 Method for an OLED panel with flexible plastic substrates	21
Annex D (informative) Overview of the OLED lighting system consisting of OLED panel or module OLED lighting system overview.....	22
Annex E (informative) Classification of OLED modules	24
E.1 Power supply classification	24
E.2 Installation method classification.....	24
Bibliography.....	25
Figure A.1 – Schematic diagram of OLED tile for lighting	17
Figure A.2 – Schematic diagram of OLED panel (Example 1) for lighting	17
Figure A.3 – Schematic diagram of OLED panel (Example 2) for lighting	18
Figure A.4 – Schematic diagram of OLED panel (Example 3) for lighting	18
Figure D.1 – Schematic diagram of OLED lighting system consisting of OLED panel or module.....	23
Table 1 – Contents and location of marking	11

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ORGANIC LIGHT EMITTING DIODE (OLED) LIGHT
SOURCES FOR GENERAL LIGHTING – SAFETY –****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, attest 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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

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

IEC 62868-1 edition 1.1 contains the first edition (2020-05) [documents 34A/2177/FDIS and 34A/2185/RVD] and its amendment 1 (2025-02) [documents 34A/2421/FDIS and 34A/2433/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 62868-1 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This first edition cancels and replaces IEC 62868 published in 2014.

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

A list of all parts in the IEC 62868 series, published under the general title *Organic light emitting diode (OLED) light sources for general lighting – Safety*, can be found on the IEC website.

In this document, the following print types are used:

- requirements: roman type,
- *test specifications: italic type*,
- notes: smaller roman type.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This part of IEC 62868 provides a set of general safety requirements and tests of OLED light sources which are applicable to general indoor lightings. This document specifies the requirements and tests for simple OLED light sources which do not include active electronic components and consist of rigid substrates. It applies to the common requirements and tests to verify the safety of all types of OLED light sources such as OLED modules and flexible OLED panels. This document applies to OLED panels and tiles which consist of rigid substrates. It also applies to any OLED light sources which are not specified in IEC 62868-2 (all parts)¹.

The parts which make up the IEC 62868-2 series, in referring to any clauses of this document, specify the extent of application of this document; they also include additional requirements and tests as necessary.

Where the requirements of any clauses of this document are referred to in the various parts that make up the IEC 62868-2 series by the phrase "The requirements of Clause n of IEC 62868-1 apply", this phrase will be interpreted as meaning that all requirements of the clauses in question of this document apply, except any which are clearly inapplicable to a particular type of OLED light source covered by the Part n of the IEC 62868-2 series concerned.

The safety requirements of this document are intended to ensure that electrical lightings constructed in accordance with this document do not endanger the safety of users or properties when the light sources are properly installed, maintained and used in applications.

Particular requirements and tests for OLED light sources which include any active electronic components and consist of flexible substrate will be the subject of a separate standard, as the need arises.

¹ Under preparation. Stage at the time of publication IEC AFDIS 62868-2-1:2020, IEC AFDIS 62868-2-2:2020 and IEC ACDV 62868-2-3:2020.

ORGANIC LIGHT EMITTING DIODE (OLED) LIGHT SOURCES FOR GENERAL LIGHTING – SAFETY –

Part 1: General requirements and tests

1 Scope

~~This part of IEC 62868 specifies general safety requirements of OLED products for use on DC supplies up to 1000 V or AC supplies up to 1000 V at 50 Hz or 60 Hz for indoors and similar general lighting purposes.~~

~~This document applies to any OLED light sources which are not covered by IEC 62868-2 (all parts).~~

~~NOTE 1—Only test methods for DC operated OLED light sources are provided in this document. Provisions for AC operated OLED products are under consideration.~~

~~NOTE 2—The construction of OLED tiles and panels is illustrated in Figure A.1 to Figure A.4 in Annex A.~~

~~NOTE 3—The OLED lighting system consisting of OLED panels or modules is illustrated in Annex D.~~

~~NOTE 4—This document applies to OLED light sources (tiles, panels, modules) which are composed of OLED luminaires or OLED lamps, and it is intended so that the OLED light source in accordance with this document fits in IEC 60598 (all parts) as a component of lighting equipment, in combination with other components.~~

~~NOTE 5—Where an appropriate Part 2 of IEC 62868 for an OLED light source does not exist, the nearest applicable Part 2 of IEC 62868 can be used as a guide to the requirements and tests.~~

This part of IEC 62868 specifies general safety requirements of organic light emitting diode (OLED) light sources (tiles, panels and modules and OLED lamps) for use on DC supplies up to 1 000 V or AC supplies up to 1 000 V at 50 Hz or 60 Hz for indoors and similar general lighting purposes.

Where an appropriate part of the IEC 62868-2 series for an OLED light source does not exist, the applicable part with the nearest configuration of the IEC 62868-2 series can be used as a guide to the requirements and tests in conjunction with this document.

NOTE 1 The OLED lighting system consisting of OLED panels or modules is illustrated in Annex D.

NOTE 2 This document applies to OLED light sources (tiles, panels, modules and lamps), and it is intended so that the OLED light source in accordance with this document fits in the IEC 60598 series as a component of lighting equipment, in combination with other components.

2 Normative references

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.

IEC 60598-1:2014/2020, *Luminaires – Part 1: General requirements and tests*
~~IEC 60598-1:2014/AMD1:2017~~

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*