



**International
Standard**

ISO 22578-2

**Graphical symbols — Safety colours
and safety signs —**

Part 2:

**Measurement of photopic
luminance of phosphorescent
components used in a natural
disaster safety way guidance system**

**First edition
2024-02**

[ISO 22578-2:2024](https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024)

<https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024>

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 22578-2:2024](https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024)

<https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Test specification	1
4.1 Test specimens.....	1
4.2 Conditioning.....	2
4.3 Ambient conditions.....	2
4.4 Irradiance, illuminance and luminance instrumentation.....	2
4.4.1 Irradiance instrumentation.....	2
4.4.2 Illuminance instrumentation.....	2
4.4.3 Luminance instrumentation.....	3
4.5 Excitation light conditions.....	3
4.6 Luminance measurements.....	3
4.6.1 General.....	3
4.6.2 Telephotometer method.....	3
4.6.3 Contact method.....	3
4.6.4 Luminance recordings.....	4
4.7 Test report.....	4
4.8 Marking of phosphorescent materials.....	5
Bibliography	6

iTech Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 22578-2:2024](https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024)

<https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO 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, ISO 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 www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 145, *Graphical symbols*, Subcommittee SC 2, *Safety identification, signs, shapes, symbols and colours*.

A list of all parts in the ISO 22578 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

<https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024>

Graphical symbols — Safety colours and safety signs —

Part 2:

Measurement of photopic luminance of phosphorescent components used in a natural disaster safety way guidance system

1 Scope

This document specifies the laboratory test method for the measurement of photopic luminance of phosphorescent materials classified in accordance with ISO 22578.

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.

ISO 16069, *Graphical symbols — Safety signs — Safety way guidance systems (SWGS)*

ISO/CIE 19476, *Characterization of the performance of illuminance meters and luminance meters*

ISO 22578:2022, *Graphical symbols — Safety colours and safety signs — Part 2: Measurement of photopic luminance of phosphorescent components used in a natural disaster safety way guidance system*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

phosphorescent material

material incorporating phosphors that, if excited by UV or visible radiation, store energy, which is emitted as light over a period of time

Note 1 to entry: A phosphorescent sign is the same as “photoluminescent”, commonly used in the literature of the photoluminescent safety sign industry.

[SOURCE: ISO 16069:2017, 3.15]

4 Test specification

4.1 Test specimens

Three specimens shall be tested. Each test specimen shall have an area of phosphorescent material at least 35 mm in diameter, sufficient for the proper operation of the luminance meter used.

The test specimens shall be final products complete with UV protection and moisture protection where applicable and specified.

Either:

- a) the graphical symbols shall be sufficiently large to provide the minimum test diameter; or
- b) a test specimen shall be taken from a production batch without printing of the graphical symbols but with any UV protection applied.

Samples shall be representative of the production batch. They shall be coded and identified to correspond to manufacturers' production batch codes, and shall be numbered consecutively. Paints shall be applied in accordance to the manufacturer's application instructions.

4.2 Conditioning

All test specimens shall be pre-conditioned by being placed in a completely dark enclosure for at least 48 h. The specimens shall not be removed from the dark enclosure until immediately prior to the tests.

4.3 Ambient conditions

The ambient temperature during preconditioning of test specimens, excitation and luminance testing shall be $23\text{ °C} \pm 2\text{ °C}$ and the relative humidity shall be $(50 \pm 10)\%$ in accordance with ISO 16069. All luminance testing shall be performed in a room or chamber whose ambient light level is at least one order of magnitude lower than the lowest luminance measurement to be made.

4.4 Irradiance, illuminance and luminance instrumentation

4.4.1 Irradiance instrumentation

An irradiance meter shall be provided, calibrated to measure irradiance. Calibration shall be confirmed by a certificate, traceable to a certified reference measure. The irradiance meter shall have the following features:

- wavelength range: 360 nm to 490 nm; [ISO 22578-2:2024](https://standards.iteh.ai/catalog/standards/iso/1e6eacc7-8a86-44e8-8a85-8a68e67d26e2/iso-22578-2-2024)
- linearity error: $f_3 \leq 5\%$ (where f_3 shall be as defined in ISO/CIE 19476);
- measuring range: $1\text{ mW/cm}^2 \leq \text{range} \leq 5\,000\text{ mW/cm}^2$;
- light entry diameter of the irradiance measurement head: $\leq 5\text{ cm}$.

4.4.2 Illuminance instrumentation

A cosine photopic $V(\lambda)$ corrected illuminance meter shall be provided, calibrated to measure illuminance in lux (lx). Calibration shall be confirmed by a certificate, traceable to a certified reference measure. The illuminance meter shall have the following features:

- spectral error: $f_1' \leq 5\%$ (where f_1' shall be as defined in ISO/CIE 19476);
- UV response: $u \leq 0,5\%$ (where u shall be as defined in ISO/CIE 19476);
- resolution: 1,0 lx;
- linearity error: $f_3 \leq 0,5\%$ (where f_3 shall be as defined in ISO/CIE 19476);
- measuring range: $10\text{ lx} \leq \text{range} \leq 10\text{ klx}$;
- light entry diameter of the photometer-head: $\leq 1\text{ cm}$.