



DPC: 25/30439041 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 08 July 2025

Origin: International

Latest date for receipt of comments: 30 July 2025

Project No. 2021/01483

Responsible committee: RHE/25 Solar Heating

Interested committees:

Title: Draft BS IEC 62862-3-5 Ed.1.0 BS EN 62862-3-5 Laboratory reflectance measurement of concentrating solar thermal reflectors.

Please notify admin.start@bsigroup.com if you are aware of any keywords that might assist in clarifying or identifying the standard or of the content of this standard:

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 30 July 2025

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



117/228/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 62862-3-5 ED1

DATE OF CIRCULATION:

2025-07-04

CLOSING DATE FOR COMMENTS:

2025-08-29

SUPERSEDES DOCUMENTS:

117/137/NP, 117/143/RVN

IEC TC 117 : SOLAR THERMAL ELECTRIC PLANTS

SECRETARIAT:

Spain

SECRETARY:

Ms Lourdes González Martínez

OF INTEREST TO THE FOLLOWING COMMITTEES:

HORIZONTAL FUNCTION(S):

ASPECTS CONCERNED:

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

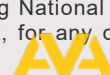
Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Solar thermal electric plants - Part 3-5: Laboratory reflectance measurement of solar reflectors

NOTE FROM TC/SC OFFICERS:

Copyright © 2025 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.



Documents

Document Sharing Hub

Link to Committee Draft (CD) online document:

<https://osd.iec.ch/#/editor/archive/2e68e82e-a007-7cc0-e063-5b10000a26f2/en/CD/1>

How to access

This link leads you to the Online Standards Development (OSD) platform for National Mirror Committee's (NMC) comments. The project draft may be found further down this document.

Resource materials

We recommend NCs to review the available materials to better understand the member commenting on the OSD platform. This includes the:

- [OSD NC roles overview](#)
- [How to add and submit comments to the IEC](#)

Contact

Should you require any assistance, please contact the [IEC IT Helpdesk](#).

CONTENTS

CONTENTS	1
FOREWORD	2
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
3.1 Solar definitions	4
3.2 Collector components	5
3.3 Angle definitions	5
3.4 Optical properties	6
3.5 Figures and tables	9
4 Preparation of measurement	10
4.1 Sampling	10
4.2 Sample preparation	11
4.3 Reference coupons	11
4.4 Instrumentation	11
5 Measurement method	12
5.1 Spectral near-normal sun-conic near-specular reflectance	12
5.2 Spectral near-normal hemispherical reflectance	13
6 Weighting calculation	13
6.1 Solar-weighted reflectance	13
6.2 UV-weighted reflectance (3.4.5)	13
6.3 Calculation equation	14
7 Uncertainty of the measurement	14
8 Reporting	15
8.1 General information	15
8.2 Methodology	15
8.3 Results	16
8.3.1 Standard method	16
8.3.2 Simplified method	16
8.3.3 Indirect method	17
8.4 Conclusions	17
Annex A (informative) Simplified procedure for reflectors with high specularity	18
Annex B (informative) Indirect method	19
Bibliography	20
Figure 1 – Angles of incidence, divergence, reflection and acceptance	9
Table 1 – Different cases related to reflectance nomenclature.	9
Table 2 – Range and weight of the different UV classes, calculated with the full data set from IEC 60904-3	14
Table 3 – Wavelength range, depending on the type of the desired average	14

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Solar thermal electric plants -
Part 3-5: Laboratory reflectance measurement of solar reflectors**

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) 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/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.

IEC 62862-3-5 has been prepared by subcommittee PT 62862-3-5, Laboratory reflectance measurement of concentrating solar thermal reflectors, of IEC technical committee TC 117: Solar thermal electric plants. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document 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.

1 Scope

This document specifies laboratory methods to measure reflectance of all types of reflectors to be used in solar technologies.

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 60904-3, *Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

IEC TS 62862-1-1, *Solar thermal electric plants - Part 1-1: Terminology*

ISO 4628-2:2016, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering*

ISO 9488:2022, *Solar energy — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9488:2022, IEC TS 62862-1-1 and the following apply.

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

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

3.1 Solar definitions

3.1.1 wavelength

λ

spatial period of a monochromatic electro-magnetic wave in vacuum, defined as the distance over which the wave's phase repeats

Note 1 to entry: λ is related to the wave's frequency f and the speed of light in vacuum c by $\lambda=c/f$.

[SOURCE: inspired to Principles of Optics, Born M. and Wolf E.]

3.1.2 direct solar irradiance

G_b

portion of the incident solar radiation directly coming from the apparent solar disk, without reflection from other objects

[SOURCE: Solar Energy Technology Handbook, Part A - Engineering Fundamentals, Edited by W. C. Dickinson and P.N. Cheremisinoff]