

Solar energy - Solar thermal collectors - Test methods  
(ISO 9806:2017)

## EESTI STANDARDI EESSÕNA

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## European foreword

This document (EN ISO 9806:2017) has been prepared by Technical Committee ISO/TC 180 "Solar energy" in collaboration with Technical Committee CEN/TC 312 "Thermal solar systems and components" the secretariat of which is held by ELOT.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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The text of ISO 9806:2017 has been approved by CEN as EN ISO 9806:2017 without any modification.

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## 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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 312, *Thermal solar systems and components*, in collaboration with ISO Technical Committee TC 180, *Solar energy*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition ISO 9806:2013, which has been technically revised.

## Introduction

This document defines procedures for testing fluid heating solar collectors for thermal performance, reliability, durability and safety under well-defined and repeatable conditions. It contains performance test methods for conducting tests outdoors under natural solar irradiance and natural and simulated wind and for conducting tests indoors under simulated solar irradiance and wind. Outdoor tests can be performed either steady-state or as all-day measurements, under changing weather conditions.

Collectors tested according to this document represent a wide range of applications, e.g. glazed flat plate collectors and evacuated tube collectors for domestic water and space heating, collectors for heating swimming pools or for other low temperature systems or tracking concentrating collectors for thermal power generation and process heat applications. This document is applicable to collectors using liquids, as well as air as heat transfer fluid. Similarly, collectors using external power sources for normal operation and/or safety purposes (overheating protection, environmental hazards, etc.), as well as hybrid devices generating thermal power and electrical power are also considered.

# Solar energy — Solar thermal collectors — Test methods

## 1 Scope

This document specifies test methods for assessing the durability, reliability, safety and thermal performance of fluid heating solar collectors. The test methods are applicable for laboratory testing and for *in situ* testing.

This document is applicable to all types of fluid heating solar collectors, air heating solar collectors, hybrid solar collectors co-generating heat and electric power, as well as to solar collectors using external power sources for normal operation and/or safety purposes. It does not cover electrical safety aspects or other specific properties directly related to electric power generation.

This document is not applicable to those devices in which a thermal storage unit is an integral part to such an extent that the collection process cannot be separated from the storage process for making the collector thermal performance measurements.

## 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 9060, *Solar energy — Specification and classification of instruments for measuring hemispherical solar and direct solar radiation*

ISO 9488, *Solar energy — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9488 and the following apply.

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

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

### 3.1

#### **longitudinal plane**

plane defined by the normal to the plane of the collector and the concentrator axis, or the largest symmetry line for flat biaxial geometries

### 3.2

#### **maximum operating temperature**

maximum temperature allowed during collector or system normal operation specified by the manufacturer

### 3.3

#### **outgassing**

process in which any material releases gases when it is exposed to elevated temperatures and/or reduced pressure