

**Thermal solar systems and components - Solar  
collectors - Part 1: General requirements  
CONSOLIDATED TEXT**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 12975-1:2006+A1:2010 sisaldab Euroopa standardi EN 12975-1:2006+A1:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.12.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 20.10.2010.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 12975-1:2006+A1:2010 consists of the English text of the European standard EN 12975-1:2006+A1:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 20.10.2010.

The standard is available from Estonian standardisation organisation.

ICS 27.160

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

English Version

## Thermal solar systems and components - Solar collectors - Part 1: General requirements

Installations solaires thermiques et leurs composants -  
Capteurs solaires - Partie 1 : Exigences générales

Thermische Solaranlagen und ihre Bauteile - Kollektoren -  
Teil 1: Allgemeine Anforderungen

This European Standard was approved by CEN on 6 February 2006 and includes Amendment 1 approved by CEN on 7 September 2010.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

# Contents

Page

Foreword.....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Symbols and units .....	5
5 Durability and reliability .....	5
5.1 Materials and design .....	5
5.2 Required tests .....	6
5.3 Pass criteria.....	6
5.3.1 General.....	6
5.3.2 Internal pressure for absorber .....	7
5.3.3 High temperature resistance .....	7
5.3.4 Exposure.....	7
5.3.5 External thermal shock .....	7
5.3.6 Internal thermal shock .....	7
5.3.7 Rain penetration.....	7
5.3.8 Mechanical load test.....	7
5.3.9 Thermal performance .....	8
5.3.10 Freeze resistance test .....	8
5.4 Procedure .....	8
6 Safety .....	8
7 Collector identification .....	8
7.1 Drawings and data sheet .....	8
7.2 Labelling .....	9
7.3 Installer instruction manual.....	9
Annex A (informative) Description of solar collectors materials and manufacture .....	10
A.1 General.....	10
A.2 Absorbers .....	10
A.3 Transparent covers.....	11
A.4 Insulation materials .....	11
A.5 Reflectors .....	11
A.6 Diffusion barriers .....	11
Annex B (informative) Environmental protection .....	12
B.1 Heat transfer fluid .....	12
B.2 Insulation materials .....	12
B.3 Recycling of the collector materials .....	12
Annex C (informative) Tests to be repeated in collector design modifications .....	13
Bibliography .....	14

## Foreword

This document (EN 12975-1:2006+A1:2010) has been prepared by 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 April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes A1 EN 12975-1:2006 A1.

This document includes Amendment 1 approved by CEN on 2010-09-07.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard, it is pointed out that:

- a) This standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- b) It should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

## 1 Scope

This European Standard specifies requirements on durability (including mechanical strength), reliability and safety for liquid heating solar collectors. It also includes provisions for evaluation of conformity to these requirements.

It is not applicable to those collectors in which the thermal storage unit is an integral part of the collector to such an extent, that the collection process cannot be separated from the storage process for the purpose of making measurements of these two processes. <sup>A1</sup> It is basically applicable to concentrating collectors; thermal performance testing as given in EN 12975-2:2006, 6.3. (quasi dynamic testing) is also applicable to most concentrating collector designs, from stationary non-imaging concentrators as CPCs to high concentrating tracking designs. <sup>A1</sup>

Collectors that are custom-built (built in, roof integrated collectors that do not comprise factory made modules and are assembled directly on the place of installation) cannot be tested in their actual form for durability, reliability and thermal performance according to this standard. Instead, a module with the same structure as the ready collector is tested. The module gross area in the case of custom built collectors should be at least 2 m<sup>2</sup>. The test is valid only for larger collectors, than the tested module.

For collectors the national and European Guidelines for Structural Planning and overhead glazing are not valid. Therefore this standard should be applied for the design of the static of the collector.

## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12975-2:2006, *Thermal solar systems and components – Solar collectors – Part 2: Test methods*  
EN ISO 9488, *Solar energy – Vocabulary (ISO 9488:1999)*

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN ISO 9488 apply.

## 4 Symbols and units

For the purposes of this European Standard, the symbols and units given in EN ISO 9488 and EN 12975-2:2006 apply.

## 5 Durability and reliability

### 5.1 Materials and design

Information about the materials and manufacture of solar collectors, including the materials they are manufactured of and their resistance to all influences which they might meet in service, retaining their operational ability are given in Annex A.