



NSAI
Standards

Irish Standard
I.S. EN 12977-1:2012

Thermal solar systems and components - Custom built systems - Part 1: General requirements for solar water heaters and combisystems

I.S. EN 12977-1:2012

Incorporating amendments/corrigenda/National Annexes issued since publication:

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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This document replaces:
CEN/TS 12977-1:2010

This document is based on: EN 12977-1:2012
Published: 12 April, 2012

This document was published under the authority of the NSAI and comes into effect on:
12 April, 2012

ICS number:

27.160

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

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English Version

Thermal solar systems and components - Custom built systems
- Part 1: General requirements for solar water heaters and
combisystems

Installations solaires thermiques et leurs composants -
Installations assemblées à façon - Partie 1: Exigences
générales pour chauffe-eau solaires et installations solaires
combinées

Thermische Solaranlagen und ihre Bauteile -
Kundenspezifisch gefertigte Anlagen - Teil 1: Allgemeine
Anforderungen an Solaranlagen zur Trinkwassererwärmung
und solare Kombianlagen

This European Standard was approved by CEN on 19 February 2012.

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Foreword

This document (EN 12977-1:2012) 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of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

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

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Introduction

a) Drinking water quality

In respect of potential adverse effects on the quality of drinking water intended for human consumption caused by the product covered by this document, it should be noted that

- 1) this document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA,
- 2) while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

b) Factory made and custom built solar heating systems

EN 12976-1, EN 12976-2, EN 12977-1, EN 12977-2, EN 12977-3, EN 12977-4 and EN 12977-5 distinguish two categories of solar heating systems:

- 1) factory made solar heating systems; and
- 2) custom built solar heating systems.

The classification of a system as factory made or custom built is a choice of the final supplier, in accordance with the following definitions.

- 1) Factory made solar heating systems are batch products with one trade name, sold as complete and ready to install kits, with fixed configurations. Systems of this category are considered as a single product and assessed as a whole.

If a factory made solar heating system is modified by changing its configuration or by changing one or more of its components, the modified system is considered as a new system. Requirements and test methods for factory made solar heating systems are given in EN 12976-1 and EN 12976-2.

- 2) Custom built solar heating systems are either uniquely built or assembled by choosing from an assortment of components. Systems of this category are regarded as a set of components. The components are separately tested and test results are integrated to an assessment of the whole system. Requirements for custom built solar heating systems are given in EN 12977-1, test methods are specified in EN 12977-1, EN 12977-2, EN 12977-3, EN 12977-4 and EN 12977-5. Custom built solar heating systems are subdivided into two categories:

- i) large custom built systems are uniquely designed for a specific situation. In general, they are designed by HVAC engineers, manufacturers or other experts;
- ii) small custom built systems offered by a company are described in a so-called assortment file, in which all components and possible system configurations, marketed by the company, are specified. Each possible combination of a system configuration with components from the assortment is considered as one custom built system.

Table 1 shows the division for different system types.

Table 1 — Division for factory made and custom built solar heating systems

Factory made solar heating systems (EN 12976-1 and EN 12976-2)	Custom built solar heating systems (EN 12977-1, EN 12977-2, EN 12977-3, EN 12977-4 and EN 12977-5)
Integral collector-storage systems for domestic hot water preparation	Forced circulation systems for hot water preparation and/or space heating/cooling, assembled using components and configurations described in a documentation file (mostly small systems)
Thermosiphon systems for domestic hot water preparation	
Forced circulation systems as batch product with fixed configuration for domestic hot water preparation	Uniquely designed and assembled systems for hot water preparation and/or space heating/cooling (mostly large systems)

NOTE 1 Forced circulation systems can be classified either as factory made or as custom built, depending on the market approach chosen by the final supplier.

NOTE 2 Both factory made and custom built systems for domestic hot water preparation are performance tested under the same set of basic reference conditions as specified in EN 12976-2:2006, Annex B and in EN 12977-2:2012, Annex A. In practice, the installation conditions may differ from these reference conditions.

NOTE 3 Solar heating systems for both heating and cooling can so far not be performance tested; if the cooling option is not considered then the solar heating can be performance tested as a space heating system.

1 Scope

This European Standard specifies requirements on durability, reliability and safety of small and large custom built solar heating and cooling systems with liquid heat transfer medium in the collector loop for residential buildings and similar applications.

This document also contains requirements on the design process of large custom built systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 253, *District heating pipes — Preinsulated bonded pipe systems for directly buried hot water networks — Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene*

EN 307, *Heat exchangers — Guidelines to prepare installation, operating and maintenance instructions required to maintain the performance of each type of heat exchangers*

EN 806-1, *Specifications for installations inside buildings conveying water for human consumption — Part 1: General*

EN 806-2, *Specification for installations inside buildings conveying water for human consumption — Part 2: Design*

EN 809, *Pumps and pump units for liquids — Common safety requirements*

EN 1151-1, *Pumps — Rotodynamic pumps — Circulation pumps having a rated power input not exceeding 200 W for heating installations and domestic hot water installations — Part 1: Non-automatic circulation pumps, requirements, testing, marking*

EN 1489, *Building valves — Pressure safety valves — Tests and requirements*

EN 1490, *Building valves — Combined temperature and pressure relief valves — Tests and requirements*

EN 1991-1-3, *Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads*

EN 1991-1-4, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 1993-1-1, *Eurocode 3: Design of steel structures — Part 1-1: General rules and rules for buildings*

EN 1999-1-1, *Eurocode 9: Design of aluminium structures — Part 1-1: General structural rules*

EN 12828, *Heating systems in buildings — Design for water-based heating systems*

EN 12975-1:2006, *Thermal solar systems and components — Solar collectors — Part 1: General Requirements*

EN 12975-2, *Thermal solar systems and components — Solar collectors — Part 2: Test methods*

EN 12976-1:2006, *Thermal solar systems and components — Factory made systems — Part 1: General requirements*

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