SLOVENSKI STANDARD
oSIST prEN 14037-1:2012

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Stropne sevalne plošče za ogrevanje in hlajenje površin za vodo s temperaturo pod 120 °C - 1. del: Tehnične specifikacije in zahteve

Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 1: Technical specifications and requirements

An der Decke frei abgehängte Heiz- und Kühlflächen für Wasser mit einer Temperatur unter 120 °C - Teil 1: Technische Spezifikationen und Anforderungen

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à une température inférieure à 120 °C - Partie 1: Spécifications techniques et exigences

Ta slovenski standard je istoveten z: **prEN 14037-1**

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91.140.10	Sistemi centralnega ogrevanja	Central heating systems
91.140.65	Oprema za ogrevanje vode	Water heating equipment

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English Version

Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 1: Technical specifications and requirements

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à une température inférieure à 120 °C - Partie 1: Spécifications techniques et exigences

An der Decke frei abgehängte Heiz- und Kühlflächen für Wasser mit einer Temperatur unter 120 °C - Teil 1: Technische Spezifikationen und Anforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 130.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

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

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

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Contents

Foreword

This document (prEN 14037-1:2011) has been prepared by Technical Committee CEN/TC 130 “Space heating appliances without integral heat sources”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14037-1:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

The main changes are:

- the title has been changed,

- new definitions according to the new parts 4 and 5 of this European Standard have been added,

- the Annex ZA has been adapted.

Introduction

This European Standard results from the recognition that the ceiling mounted heating and cooling surfaces falling into the field of application hereinafter stated are traded of the basis of their thermal and cooling output. For evaluating and comparing different ceiling mounted radiant panels it is therefore necessary to refer to a single stipulated value.

The European Standard EN 14037, Free hanging heating and cooling surfaces for water with a temperature below 120°C consists of the following parts:

- Part 1: Technical specifications and requirements
- Part 2: Test method for thermal output of ceiling mounted radiant panels
- Part 3: Rating method and evaluation of radiant thermal output of ceiling mounted radiant panels
- Part 4: Test method for cooling capacity of ceiling mounted radiant panels
- Part 5: Test method for thermal output of open or closed heated ceiling surfaces

1 Scope

This European Standard defines the technical specifications and requirements of ceiling mounted radiant panels, heating and cooling surfaces fed with water at temperatures below 120 °C connected with a centralized heating and/or cooling supply source.

The European Standard does not apply to independent heating and/or cooling devices.

The European Standard also defines the additional common data that the manufacturer shall provide to the trade in order to ensure the correct application of the products.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

prEN 14037-2, *Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 2: Test method for thermal output of ceiling mounted radiant panels*

prEN 14037-3, *Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 3: Rating method and evaluation of radiant thermal output of ceiling mounted radiant panels*

prEN 14037-4, *Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 4: Test method for cooling capacity of ceiling mounted radiant panels*

prEN 14037-5, *Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 5: Test method for thermal output of open or closed heated ceiling surfaces*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given below apply.

3.1
heating appliance
device having the purpose of transferring heat in order to provide specific temperature conditions inside buildings

3.2
independent heating appliance
self-contained heating appliance which does not need to be connected to a remote heat source (e. g. a boiler) as it contains its own heat source (e. g. gas fired appliances, electric appliances, heat pump appliances)

3.3
heated and chilled ceiling surfaces

3.3.1
pre-fabricated ceiling mounted radiant panel
pre-fabricated heat-transmitting device in the form of a heating or cooling element with width of 0,3 m up to 1,5 m fitted with connection components and designed to operate on water flow heating facilities and/or in cooling systems

3.3.2
open or closed ceiling surface
open or closed active and non active elements of chilled ceilings, which are additionally used for heating, which are part of suspended ceilings and generally constructed modular from industrially prefabricated elements.

3.3.3
Free hanging sails
sails of cooling installations which are additionally used for heating

NOTE Depending on the use of the sails they can be covered with thermal insulation or noise absorption material.

3.3.4
Suspended ceiling with integrated heating elements
single closed elements integrated in closed hanging ceilings and combined with non active elements which are used for heating and are thermally insulated on the upper side

3.4
model
ceiling mounted radiant panel respectively heated ceiling surface of defined construction, width and height

3.5
type
group of models with identical modular cross section

3.6
sample
ceiling mounted radiant panel respectively heated ceiling surface, whose thermal output and cooling capacity shall be determined or has been determined

3.7
inlet water temperature
bulk temperature of the water entering the ceiling mounted radiant panel

3.8
outlet water temperature
bulk temperature of the water leaving the ceiling mounted radiant panel

3.9
mean water temperature
arithmetical mean of inlet and outlet water temperature

3.10
Water temperature drop
Temperature difference between the inlet and outlet water temperature of the heating appliance

3.11
Water temperature rise
Temperature difference between the outlet and inlet water temperature of the cooling appliance

3.12
mean radiant temperature
temperature in a defined point of the room resulting from the radiation of all surrounding surfaces and of the ceiling mounted radiant panel respectively heated ceiling surface

3.13
reference room temperature
temperature measured with a globe thermometer

3.14
Temperature difference
temperature difference between mean water temperature and reference room temperature

3.15
Standard temperature difference

3.15.1
Standard temperature difference of ceiling mounted radiant panels (EN 14037-2)
mean water temperature 75°C and reference room temperature 20°C, determined temperature difference 55 K

3.15.2
Standard temperature difference of heated ceiling surfaces (EN 14037-5)
mean water temperature 35°C and reference room temperature 20°C, determined temperature difference 15 K

3.15.3
Standard temperature difference for the cooling capacity of ceiling mounted radiant panels (EN 14037-4)
reference room temperature 32°C and mean water temperature 17 °C, determined temperature difference 15 K

3.16
Nominal temperature difference (EN 14037-4)
determined temperature difference 8 K between room temperature and mean water temperature

3.17
surface temperatures of the inside surfaces of the test room
mean temperatures of the inside surfaces of the test room

3.18
mean surface temperature of the ceiling mounted radiant panel
mean temperature on the heating or cooling surfaces of the ceiling mounted radiant panel facing the room below

3.19
surface temperature
maximum inlet water temperature

NOTE This definition is given for safety requirements only.

3.20
air temperature
indoor air temperature measured by using radiation shields

3.21
active length of the ceiling mounted radiant panel
length of the usable heating respectively cooling panel with identical cross section and without connection components and covers, which are bonded together with the water flow components

3.22
active heated ceiling surface
relating to thermal output of heated ceiling surfaces (prEN 14037-5, chapter 8)

3.23
connection components
all other components attached to the active length of the ceiling mounted radiant panel which are used for connecting to the distribution system or for venting and draining (see figure 1)

3.24
indirect heating respectively cooling surface (dry surface)
portion of the heating respectively cooling surface of the panel which is in contact with air only (e.g. radiant sheet between the tubes)

3.25
direct heating respectively cooling surface (wet surface)
portion of the heating respectively cooling surface of the panel which is in contact with the water

3.26
active surface of the ceiling mounted radiant panel
lower panel surface, the lateral edges are not included

3.27
air pressure
pressure of air measured by a barometer at the testing place

3.28
standard air pressure
pressure of air which is defined as 101,325 kPa (1,01325 bar)

3.29
water flow rate
amount of water flowing through the ceiling mounted radiant panel resp. heating and cooling surface, per unit of time

3.30
total thermal output, total cooling capacity
thermal output respectively cooling capacity of the active length and of the connection components

3.31
radiant output
thermal output emitted downwards by radiation of the active length

3.32
standard thermal output, standard cooling capacity, nominal cooling capacity

3.32.1
standard thermal output
thermal output at standard temperature difference and standard air pressure

3.32.2
standard cooling capacity
cooling capacity at standard temperature difference and standard air pressure

3.32.3
nominal cooling capacity
cooling capacity at nominal temperature difference 8 K

3.33
characteristic equation
equation that gives the thermal output and cooling capacity as a function of the temperature difference at constant water flow rate

3.34
construction dimensions
NOTE The most important dimensions are defined by following terms.

3.34.1
construction length
length of the ceiling mounted radiant panel including the collectors/ headers but excluding the connecting pieces to the heating pipe work

3.34.2
outside diameter of circular tubes
nominal diameter according to standard tube dimensions

3.34.3
dimensions of non circular tubes
shape and all dimensions necessary to describe exactly the cross section of the tube

3.34.4
distance between tubes
distance between the centre lines of two tubes in parallel

3.34.5
length of tube
length of tubes between collectors / headers

3.34.6
length of radiant sheet
length of the heat or cold transferring sheets

NOTE Generally identical with the active length according to 3.18.

3.34.7
width of ceiling mounted radiant panel
width of ceiling mounted radiant panels measured over the outsides of lateral edges

3.34.8
thickness of sheet
thickness of the radiant sheet

3.34.9
Height of lateral edges
height of lateral edges of the radiant sheet to hold the upper insulation

3.35
module
1 m of the active length of a ceiling mounted radiant panel, resp. 1m² active surface of a heated ceiling surface

3.36
modular thermal output, modular cooling capacity

3.36.1
modular thermal output
thermal output of one module calculated from the thermal output of the active length of a ceiling mounted radiant panel, resp. the active surface of a heated ceiling surface

3.36.2
modular cooling capacity
cooling capacity of one module calculated from the cooling capacity of the active length of a ceiling mounted radiant panel.

3.37
standard modular thermal output, standard modular cooling capacity, nominal modular cooling capacity

3.37.1
standard modular thermal output
thermal output of one module at standard conditions

3.37.2
standard modular cooling capacity
cooling capacity of one module at standard conditions

3.37.3
nominal modular cooling capacity
cooling capacity of one module at nominal temperature difference

3.38
rated thermal output of a ceiling mounted radiant panel
thermal output evaluated in accordance to prEN 14037-3, clause 5 and referred to the value of the standard modular output of a ceiling mounted radiant panel

3.39
maximum operating pressure
maximum system pressure, to which the panel may be submitted as stated by the manufacturer

3.40
factory test pressure (leak test)
pressure to which the panel is submitted during the manufacturing process

3.41
emissivity
ratio of emissive power of a surface at a given temperature to that of the black body at the same temperature and with the same surroundings