SLOVENSKI STANDARD
SIST EN 14037-1:2017

01-april-2017

Nadomešča:
SIST EN 14037-1:2004

Prosto viseče grelne in hladilne površine za vodo s temperaturo do 120 °C - 1. del: Predizdelane stropne sevalne plošče za ogrevanje prostora - Tehnične specifikacije in zahteve

Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 1: Pre-fabricated ceiling mounted radiant panels for space heating - Technical specifications and requirements

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

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à une température inférieure à 120 °C - Partie 1 : Panneaux rayonnants de plafond préfabriqués destinés au chauffage des locaux - Spécifications techniques et exigences

Ta slovenski standard je istoveten z: **EN 14037-1:2016**

ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems

SIST EN 14037-1:2017 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14037-1

September 2016

ICS 91.140.10; 91.140.30

Supersedes EN 14037-1:2003

English Version

Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 1: Pre-fabricated ceiling mounted radiant panels for space heating - Technical specifications and requirements

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à une température inférieure à 120 °C - Partie 1 : Panneaux rayonnants de plafond préfabriqués destinés au chauffage des locaux - Spécifications techniques et exigences

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

This European Standard was approved by CEN on 19 March 2016.

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-CENELEC 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-CENELEC 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 14037-1:2016 E

Contents

European foreword

This document (EN 14037-1:2016) 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 supersedes EN 14037-1:2003.

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 March 2017, and conflicting national standards shall be withdrawn at the latest by June 2018.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports basic work requirements of Regulation (EU) No. 305/2011.

For relationship with Regulation (EU) No. 305/2011, see informative Annex ZA, which is an integral part of this document.

The main changes are:

— the title has been changed,

— the introduction has been changed,

— the scope has been changed,

— new definitions have been added,

— the Annex ZA has been adapted.

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

Introduction

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

As installations with ceiling mounted radiant panels can also be used in practice for space cooling, it is necessary to have a test method for evaluating the cooling capacity. Installations with different free hanging heating and cooling surfaces need, for the use of space heating a test method for evaluating the heating output. The test method differs from the method for ceiling mounted radiant panels.

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: Pre-fabricated ceiling mounted radiant panels for space heating - Technical specifications and requirements;*

— *Part 2: Pre-fabricated ceiling mounted radiant panels for space heating - Test method for thermal output;*

— *Part 3: Pre-fabricated ceiling mounted radiant panels for space heating - Rating method and evaluation of radiant thermal output;*

— *Part 4: Pre-fabricated ceiling mounted radiant panels for space heating - Test method for cooling capacity;*

— *Part 5: Open or closed heated ceiling surfaces - Test method for thermal output.*

1 Scope

This European Standard defines technical specifications and requirements of free hanging pre-fabricated ceiling mounted radiant panels with an air gap between construction and the emitter (not embedded) fed with water at temperatures below 120 °C connected with a centralized heating supply source intended to be installed in buildings.

The panels should be installed with an upper insulation.

The European Standard does not apply to independent heating devices.

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

This European standard does not cover the performance of hanging accessories.

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

EN 14037-2:2016, *Free hanging heating and cooling surfaces for water with a temperature below 120°C – Part 2: Pre-fabricated ceiling mounted radiant panels for space heating - Test method for thermal output*

EN 14037-3:2016, *Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 3: Pre-fabricated ceiling mounted radiant panels for space heating - Rating method and evaluation of radiant thermal output*

EN ISO 2409, *Paints and varnishes - Cross-cut test (ISO 2409)*

3 Terms and definitions

For the purposes of this document, 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
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 or open pipes for in-side-assembling and designed to operate on water flow heating and/or cooling facilities

3.4
model
ceiling mounted radiant panel or heated ceiling surface of defined construction, e.g. width, height, number and diameter of the tubes

3.5
type
group of models with identical modular cross section

3.6
sample
ceiling mounted radiant panel or heated ceiling surface, used for testing

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 pre-fabricated ceiling mounted radiant panel

3.11
mean radiant temperature
temperature in a defined point of the room resulting from the radiation of all surrounding surfaces and of the pre-fabricated ceiling mounted radiant panel respectively heated ceiling surface

3.12
reference room temperature
temperature measured with a globe thermometer

3.13
temperature difference
temperature difference between mean water temperature and reference room temperature

3.14
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
surface temperatures of the inside surfaces of the test room
mean temperatures of the inside surfaces of the test room

3.16
mean surface temperature of the pre-fabricated ceiling mounted radiant panel
mean temperature on the heating or cooling surfaces of the ceiling mounted radiant panel facing the room below

3.17
surface temperature
maximum inlet water temperature

Note 1 to entry: This definition is given for safety requirements only.

3.18
air temperature
indoor air temperature measured by using radiation shields

3.19
active length of the pre-fabricated ceiling mounted radiant panel
length of the usable heating and cooling panels with identical cross section and without connection components and covers, which are bonded together with the water flow components

3.20
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)

3.21
indirect heating surface (dry surface)
portion of the heating surface of the panel which is in contact with air only (e.g. radiant sheet between the tubes)

3.22
direct heating surface (wet surface)
portion of the heating surface of the panel which is in contact with the water

3.23
active surface of the pre-fabricated ceiling mounted radiant panel
lower panel surface, the lateral edges are not included

3.24
air pressure
pressure of air measured by a barometer at the testing place

3.25
standard air pressure
pressure of air which is defined as 101,325 kPa (1,01325 bar)

3.26
water flow rate
amount of water flowing through the ceiling mounted radiant panel resp. heating and cooling surface, per unit of time

3.27
total thermal output
thermal output of the active length and of the connection components

3.28
radiant output
thermal output emitted downwards by radiation of the active length

3.29
standard thermal output
thermal output at standard temperature difference, standard air pressure and upper insulation as defined in EN 14037-2

3.30
characteristic equation
equation that gives the thermal output as a function of the temperature difference at constant water flow rate

3.31
construction dimensions
3.31.1
construction length
length of the ceiling mounted radiant panel including the collectors/ headers but excluding the connecting pieces to the heating pipe work

3.31.2
outside diameter of circular tubes
nominal diameter according to standard tube dimensions

3.31.3
dimensions of non-circular tubes
shape and all dimensions necessary to describe exactly the cross section of the tube

3.31.4
distance between tubes
distance between the centre lines of two tubes in parallel

3.31.5
length of tube
length of tubes between collectors / headers

3.31.6
length of radiant sheet
length of the heat transferring sheets

Note 1 to entry: Generally identical with the active length according to 3.19

3.31.7
width of pre-fabricated ceiling mounted radiant panel
width of ceiling mounted radiant panels measured over the outsides of lateral edges

3.31.8
thickness of sheet
thickness of the radiant sheet

3.31.9
height of lateral edges
height of lateral edges of the radiant sheet to hold the upper insulation

3.32
module
1 m of the active length of a pre-fabricated ceiling mounted radiant panel

3.33
modular thermal output
thermal output of one module calculated from the thermal output of the active length of a pre-fabricated ceiling mounted radiant panel, resp. the active surface of a heated ceiling surface

3.34
standard modular thermal output
thermal output of one module at standard conditions including upper insulation as defined in EN 14037-2

3.35
rated thermal output of a pre-fabricated ceiling mounted radiant panel
thermal output evaluated in accordance to EN 14037-3:2016, Clause 5 and referred to the value of the standard modular output of a ceiling mounted radiant panel

3.36
maximum operating pressure
maximum system pressure, to which the panel may be submitted as stated by the manufacturer

3.37
factory test pressure (leak test)
pressure to which the panel is submitted during the manufacturing process

3.38
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