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de l'accréditation, de la sécurité et qualité
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ILNAS-EN 442-2:2014

Radiators and convectors - Part 2: Test methods and rating

Radiateurs et convecteurs - Partie 2 :
Méthodes d'essai et d'évaluation

Radiatoren und Konvektoren - Teil 2:
Prüfverfahren und Leistungsangabe

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National Foreword

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d'évaluation

Radiatoren und Konvektoren - Teil 2: Prüfverfahren und
Leistungsangabe

This European Standard was approved by CEN on 11 October 2014.

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Foreword

This document (EN 442-2:2014) 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 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of an identical text or by endorsement, at the latest by June 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

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 EN 442-2:1996.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The most significant changes that have been made in this new edition of EN 442-2 are the following ones:

- some new definitions have been added;
- the straight or curved towel or bathroom radiator have been included;
- different surface treatments have been included;
- a new normative Annex J "Calibration Procedure" has been added;
- a new normative Annex K "Pretreatment and paint testing method" has been added.

This European Standard comes from an output of the project SMT4 - CT97 - 2127 funded by the European Commission DGXII-RDT.

This European Standard, *Radiators and convectors*, consists of the following parts:

- *Part 1: Technical specifications and requirements*;
- *Part 2: Test methods and rating* [the present document].

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, 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 the heating appliances falling into the field of application hereinafter stated are traded on the basis of their thermal output.

To evaluate and compare different appliances it is therefore necessary to refer to a single stipulated value, hereinafter called the standard rated thermal output.

In addition, for low temperature systems a standard low temperature thermal output is given.

The standard thermal outputs (standard rated thermal output and standard low temperature thermal output) are defined value taken from the characteristic equation.

The pre-requisites of the standard thermal outputs, as defined by this European Standard, are the following:

- to be representative of the actual output of the appliance in different operating conditions;
- to be reproducible within the tolerances defined by this European Standard, taking into account the state of measuring techniques;
- to be representative of the thermal outputs, obtainable under the same test conditions, of any identical sample taken out of the current production (within the tolerances defined by this European Standard taking into account the state of measuring techniques and methods of manufacture).

1 Scope

This European Standard defines procedures for determining the standard thermal outputs and other characteristics of radiators and convectors installed in a permanent manner in construction works, fed with water or steam at temperatures below 120 °C, supplied by a remote energy source.

This European Standard specifies the laboratory arrangements and testing methods to be adopted, the admissible tolerances, the criteria for selecting the samples to be tested and for verifying the conformity of the current production with the samples tested at the initial test.

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

This European Standard does not apply to fan assisted radiators, fan assisted convectors and trench convectors and to independent heating appliances.

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 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

ISO 16269-7, *Statistical interpretation of data — Part 7: Median — Estimation and confidence intervals*

3 Terms, definitions, symbols and units

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

heating appliance

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

3.1.2

independent heating appliance

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

3.1.3

radiator

heating appliance produced with different materials (e.g. steel, aluminium, cast-iron) and with different designs (e.g. plate type, column type, tube type, finned tube type), which emits heat by free convection and radiation

3.1.4

sectional heating appliances (mainly applied to radiators)

heating appliance manufactured in sections of identical design and traded in this form which can be joined together into modular assemblies so that the desired output can be obtained

3.1.5**free convection heating appliance**

heating appliance which does not contain a fan or similar device to activate the air flow over heat emitter

3.1.6**convector**

heating appliance which emits heat almost entirely by free convection

Note 1 to entry: A convector comprising at least a heat emitter and a casing which provides an unheated convective chimney of defined height.

3.1.7**skirting convector**

convector of limited height running along the base of an interior wall

3.1.8**height of the unheated convective chimney**

vertical distance between the lowest edge of the convector and the bottom of the air outlet section

Note 1 to entry: It applies to convectors only, being a main factor influencing their thermal output.

3.1.9**wet heating surface; primary heating surface**

portion of the heat emitting surface which is always in contact with the primary fluid (water or steam)

3.1.10**dry heating surface; secondary heating surface**

portion of the heat emitting surface which is in contact with air only (e.g. fins projecting from the wet surface)

3.1.11**family of heating appliances**

group of heating appliances of similar design and construction and of identical material, positions of primary fluid connections and other related variables that particularly affect the conditions of flow of the primary fluid within the heating appliance

3.1.12**type of radiators/convectors**

group of heating appliances of similar design whose cross-section remains unchanged while the height or length varies or which have a systematic variation of only one characteristic dimension of the dry heating surfaces providing that this does not affect the water side (e.g. the height of convector fins on panel radiator)

Note 1 to entry: For the calculation in conformity to Annex D, at least three models are required.

3.1.13**model**

heating appliance of defined height, length and depth within a type

3.1.14**range of heights**

difference between the maximum and minimum height of the models in a type

3.1.15**module of heating appliances**

reference length of the useful portion of a heating appliance

Note 1 to entry: The module coincides with:

- the section, in the case of sectional heating appliances;
- a length of 1 m, in the case of non-sectional heating appliances;