

# SVENSK STANDARD

## SS-EN 442-1:2014

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### **Radiatorer och konvektorer – Del 1: Tekniska specifikationer och krav**

### **Radiators and convectors – Part 1: Technical specifications and requirements**

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Denna standard ersätter SS-EN 442-1, utgåva 1; SS-EN 442-1/A1, utgåva 1 och SS-EN 442-3, utgåva 2.

The European Standard EN 442-1:2014 has the status of a Swedish Standard. This document contains the official version of EN 442-1:2014.

This standard supersedes the Swedish Standard SS-EN 442-1, edition 1; SS-EN 442-1/A1, edition 1 and SS-EN 442-3, edition 2.

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EUROPEAN STANDARD

**EN 442-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2014

ICS 91.140.10

Supersedes EN 442-1:1995, EN 442-3:2003

English Version

## Radiators and convectors - Part 1: Technical specifications and requirements

Radiateurs et convecteurs - Partie 1 : Spécifications et exigences techniques

Radiatoren und Konvektoren - Teil 1: Technische Spezifikationen und Anforderungen

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

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

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## SS-EN 442-1:2014 (E)

### Foreword

This document (EN 442-1:2014) 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of an identical text or by endorsement, at the latest by June 2015, and conflicting national standards shall be withdrawn at the latest by September 2016.

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 442-1:1995 and EN 442-3:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports basic works requirements of EU Regulation No 305/2011, of the European Parliament and the Council of 8 March 2011.

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

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

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

The most significant changes that have been made in this new edition of EN 442-1 are the following ones:

- the standard has been revised to be in line with EU Regulation N° 305/2011;
- tubular radiators, finned tube convectors and skirting convectors have been included;
- the declaration of the standard low temperature thermal output at  $\Delta T$  30 K has been added.

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.



## 1 Scope

This European Standard defines the technical specifications and requirements of radiators and convectors to be installed in heating systems in buildings including assessment and verification of constancy of performance.

This European Standard deals with 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 does not apply to independent heating appliances.

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.

## 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 442-2:2014, *Radiators and convectors — Part 2: Test methods and rating*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition and form of products*

EN 10130, *Cold rolled low carbon steel flat products for cold forming — Technical delivery conditions*

EN 10131, *Cold rolled uncoated and zinc or zinc-nickel electrolytically coated low carbon and high yield strength steel flat products for cold forming — Tolerances on dimensions and shape*

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

EN ISO 2409:2013, *Paints and varnishes — Cross-cut test (ISO 2409:2013)*

ISO 185, *Grey cast irons — Classification*

## 3 Terms and definitions

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

NOTE For symbols and units refer to EN 442-2.

### 3.1

#### **heating appliance**

device which has 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 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)

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**3.3 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

**3.4 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

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

**3.6 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.

**3.7 skirting convector**  
convector of limited height running along the base of an interior wall

**3.8 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.

**3.9 wet heating surface; primary heating surface**  
portion of the heat emitting surface which is always in contact with the primary fluid (water or steam)

**3.10 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)

**3.11 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

**3.12 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 EN 442-2:2014, Annex D, at least three models are required.

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

### 3.14

#### **range of heights**

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

### 3.15

#### **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;
- a finned length of 1 m, in the case of finned tube convectors.

### 3.16

#### **sample**

representative heating appliance used for the determination of one or more of the performance characteristics

### 3.17

#### **inlet water temperature**

bulk temperature of the water entering the heating appliance

### 3.18

#### **outlet water temperature**

bulk temperature of the water leaving the heating appliance

### 3.19

#### **temperature drop**

difference between inlet and outlet water temperature

### 3.20

#### **mean water temperature**

arithmetical mean of inlet and outlet water temperature

### 3.21

#### **reference air temperature**

air temperature measured on the vertical line at the centre of the test booth, 0,75 m above the floor level

### 3.22

#### **excess temperature**

difference between mean water temperature and reference air temperature

### 3.23

#### **standard excess temperature**

excess temperature of 50 K as determined in the standard conditions

Note 1 to entry: Inlet water temperature of 75 °C, outlet water temperature of 65 °C and reference air temperature of 20 °C.

### 3.24

#### **standard excess low temperature**

excess temperature of 30 K at standard flow rate

### 3.25

#### **air pressure**

air pressure measured at the test place