



SLOVENSKI STANDARD

SIST EN 1264-4:2002

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Talno ogrevanje - Sistemi in sestavni deli - 4. del: Vgradnja

Floor heating - Systems and components - Part 4: Installation

Fußboden-Heizung - Systeme und Komponenten - Teil 4: Installation

Chauffage par le sol - Systemes et composants - Partie 4: Installation

Ta slovenski standard je istoveten z: EN 1264-4:2001

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ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems
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EUROPEAN STANDARD
NORME EUROPÉENNE
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English version

Floor heating - Systems and components - Part 4: Installation

Chauffage par le sol - Systèmes et composants - Partie 4:
Installation

Fußboden-Heizung - Systeme und Komponenten - Teil 4:
Installation

This European Standard was approved by CEN on 4 July 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by February 2002, and conflicting national standards shall be withdrawn at the latest by February 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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EN 1264-4:2001 (E)**Introduction**

This European Standard for floor heating systems consists of the following parts :

- Part 1 : Definitions and Symbols
- Part 2 : Determination of the thermal output
- Part 3 : Dimensioning
- Part 4 : Installation

1 Scope

This European Standard is applicable to hot water floor heating systems as defined in EN 1264-1:1997.

This European Standard specifies uniform requirements for the design and the construction of heated floor structures to ensure that the underfloor heating system is suited to the particular application.

This European Standard specifies only the particular requirements which are dependent on the floor heating. This European Standard is not applicable to the other elements which are part of all floor structures (heated or not).

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

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EN 1057:1996	<i>Copper and copper alloys - Seamless round copper tubes for water and gas in sanitary and heating applications.</i>
EN 1254	<i>Plumbing fittings.</i>
EN 1264-1:1997	<i>Floor heating – Systems and components - Part 1: Definitions and Symbols.</i>
prEN ISO 15874-1:2001	<i>Plastics piping systems for hot and cold water - Polypropylene (PP) – Part 1: General.</i>
prEN ISO 15875-1:2001	<i>Plastics piping systems for hot and cold water - Crosslinked polyethylene (PEX) - Part 1: General.</i>
prEN ISO 15876-1:2001	<i>Plastics piping systems for hot and cold water - Polybutylene (PB) - Part 1: General.</i>

3 Terms, definitions and symbols

For the purposes of this European Standard, the terms, definitions and symbols given in EN 1264-1:1997 apply.

4 Requirements**4.1 General structural preconditions**

Preconditions for the construction of a hot water floor heating system are the completion of internal plasterwork and the draught-free closure of all building openings e.g. windows and outer doors.

4.2 Building layers, building components

4.2.1 Supporting base

The supporting base shall be prepared in accordance with relevant standards.

Any pipework or conduits shall be fixed and encased to provide a level base upon which thermal insulation and/or acoustic insulation is added before laying the heating pipes. In this respect, the necessary structural height shall be taken into account.

4.2.2 Insulating layers, perimeter insulating strip

4.2.2.1 Insulating layers

The insulating layers shall have the minimum following thermal resistance depending on the thermal conditions under the floor heating structure

Table 1 - Minimum thermal resistance of insulating layers (m²K/W) below the floor heating system

	heated room below	Unheated or intermittent heated room below or directly on the ground *)	external air temperature below		
			external design temperature $T_d \geq 0^\circ\text{C}$	external design temperature $0^\circ\text{C} > T_d \geq -5^\circ\text{C}$	external design temperature $-5^\circ\text{C} > T_d \geq -15^\circ\text{C}$
thermal resistance (m ² ·KW)	0,75	1,25	1,25	1,50	2,00
*) with ground water level $\leq 5\text{m}$, the value should be increased.					

When installing the insulating layer, the insulating panels shall be butted tightly together. Multiple insulating layers shall be staggered or placed in such a way that the joints between panels of one layer are out of line with the next layer.

4.2.2.2 Perimeter strip

Prior to the laying of the screed, a perimeter expansion strip (edge joint) shall be placed along the walls and other building components penetrating the screed and firmly secured to the supporting base, e.g. door frames, pillars and risers.

The perimeter strip shall rise from the supporting base up to the surface of the finished floor and permit a movement of the screed of at least 5 mm.

In the case of multiple insulating layers, the perimeter strip shall be placed prior to application of the upper insulating layer. When laying the screed, the peripheral insulating strip shall be secured against any change in position. The top part of the peripheral insulating strip which rise over the finished floor shall not be cut off until completion of the floor covering and, in the case of textile and plastic coverings, hardening of the filler.

4.2.3 Protection layer

Prior to laying the screed, the insulation layer shall be covered with a polyethylene film of at least 0,15 mm thickness or with another product equivalent function unless the insulating layer is a comparable protective composit. The individual sections shall overlap at the joints by at least 80 mm.

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In accordance with 4.2.2.2 the protection layer shall be turned up above the upper edge of the perimeter strip if the strip itself does not fulfill the function of protection.

When using liquid screeds, the protection of the insulating layer shall be watertight so that the function of the insulating layer is not affected.

Protection layers are not humidity barriers.

4.2.4 Equipment**4.2.4.1 Safety**

A safety device, independent of the control unit, and which operates even in the absence of electric power, shall cut off the heat supply in the floor heating circuit in such a way that the temperature around the heating elements does not exceed the figures given in 4.2.8.1.

4.2.4.2 Stop valves and balancing devices

Each loop shall have two stopvalves and a balancing device. The shut-off and balancing functions shall be independent. At least one loop per heated room shall be installed in order to permit temperature control either manual or automatic.

4.2.5 Piping (pipes and couplings)**4.2.5.1 Plastic piping**

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Dimensions of plastic pipes shall comply with the requirements of the following European Standards:

- PE-X prEN ISO 15875-1:2001
- PB prEN ISO 15876-1:2001
- PP prEN ISO 15874-1:2001

The minimum wall thickness of the pipes is calculated in the following manner:

1) Calculate the minimum wall thickness in accordance with these European Standards for the following conditions :

- Service conditions: class 4 in accordance respectively with prEN ISO 15875-1:2001, clause 4, prEN ISO 15876-1:2001, clause 4, prEN ISO 15874-1:2001, clause 4;
- Operating pressure: ≥ 4 bar;
- Life time ≥ 50 years.

2) A separate requirement for the minimum wall thickness is :

$D \leq 12$ mm	$s_{R,min} = 1,1$ mm
12 mm $< D \leq 16$ mm	$s_{R,min} = 1,5$ mm
$D > 16$ mm	$s_{R,min} = 1,9$ mm

The above dimensions are valid for the basic-pipes in conformity with prEN ISO 15875:2001, prEN ISO 15876:2001 and prEN ISO 15874:2001 without barrier layers.

It is recommended to use pipes with an oxygen-barrier layer in conformity with annex A. Precautions shall be taken to protect the system against corrosion.

4.2.5.2 Copper piping

Copper piping shall comply with the requirements of EN 1057:1996 (pipes) and EN 1254 (fittings).

The preferred temper is annealed R220 (see EN 1057:1996, clause 4).

4.2.6 Installation of piping

4.2.6.1 Storage and transport.

After arriving on the worksite, the pipes shall be transported, stored and handled in such a way as to be :

- protected from anything which could damage them
- for plastic pipes stored out of direct sunlight

4.2.6.2 Clearance area

The pipes are placed more than:

- 50 mm distance from vertical structures;
- 200 mm distance from smoke ducts and open fireplaces, open or walled shafts, lift wells;

4.2.6.3 Bending radius

The bending radius shall not be less than the minimum bending radius as defined in the relevant product standards (see EN 1057:1996, prEN ISO 15874:2001, prEN ISO 15875:2001, prEN ISO 15876:2001).

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4.2.6.4 Couplings

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All couplings within the floorconstruction shall be exactly located and designated on the record drawing.

4.2.7 Attachment of pipes

The pipes and their attachment systems shall be secured such that their horizontal and vertical positions are maintained as planned. The vertical deviation upwards of the pipes before and after application of the screed shall not exceed 5 mm at any point. The horizontal deviation of the specified pipe spacing in the heating circuit shall not exceed ± 10 mm at the attachment points. These requirements are not applicable in the area of bends and deflections. The attachment spacings necessary to comply with these requirements are dependent on the tube materials, dimensions, and systems.

The manufacturer shall specify the maximum permissible distance between attachments.

NOTE More frequent attachments provide greater security concerning pipe positioning. Spacing of the attachments depends on the system applied. Experience has shown that systems with individual attachments necessitate spacings of approximately 500 mm in order to comply with the above mentioned requirements.

4.2.8 Screeds (Load distribution layer)

4.2.8.1 Types of screeds

For heating screeds, the following types are distinguished (see EN 1264-1:1997, 3.11):

- Type A - Systems with pipes inside screed
- Type B - System with pipes under the screed