



SLOVENSKI STANDARD

SIST EN 14474:2005

01-februar-2005

Montažni betonski izdelki – Beton z lesnimi drobci kot agregatom – Zahteve in preskusne metode

Precast concrete products - Concrete with wood-chips as aggregate - Requirements and test methods

Betonfertigteile - Holzspanbeton - Anforderungen und Prüfverfahren

Produits préfabriqués en béton - Béton utilisant des copeaux de bois comme granulats - Exigences et méthodes d'essai

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ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products
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EUROPEAN STANDARD

EN 14474

NORME EUROPÉENNE

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December 2004

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English version

Precast concrete products - Concrete with wood-chips as aggregate - Requirements and test methods

Produits préfabriqués en béton - Béton utilisant des copeaux de bois comme granulat - Exigences et méthodes d'essai

Betonfertigteile - Holzspanbeton - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 15 November 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 14474:2004) has been prepared by Technical Committee CEN/TC 229 "Precast concrete products", the secretariat of which is held by AFNOR.

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 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

NOTE The term: "**Concrete with wood-chips as aggregate**" is hereinafter referred to as: "**wood-chip concrete**".

This document gives general requirements for wood-chip concrete products. Product standards may adopt these requirements, when appropriate to the product or the application.

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

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EN 14474:2004 (E)**1 Scope**

This document specifies common requirements for wood-chip concrete, used in precast wood-chip concrete products. It is intended to be used when preparing documents for wood-chip concrete products. Wood-chip concrete product standards will define specific requirements, which may be additional to those given in this document. Product standards will give any limiting values.

Examples for the use of wood-chip concrete are: hollow blocks for flooring systems, shuttering blocks, slabs, facing elements, acoustic and/or thermal facing elements, partitioning elements, wine racks, etc.

It is not applicable to concrete for structural masonry units covered by EN 771-3 and their ancillary components.

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 772-11, *Methods of test for masonry units - Part 11: Determination of water absorption of aggregate concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units*

EN 772-14, *Methods of test for masonry units - Part 14: Determination of moisture movement of aggregate concrete and manufactured stone masonry units*

EN 12390-3, *Testing hardened concrete – Part 3: Compressive strength of test specimens*

EN 12390-5, *Testing hardened concrete – Part 5: Flexural strength of test specimens*

EN 12664, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance*

EN 12779:2004, *Safety of woodworking machines – Chip and dust extraction systems with fixed installation – Safety related performances and safety requirements*

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

EN 13823, *Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 354, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 10456, *Building materials and products - Procedures for determining declared and design thermal values (ISO 10456:1999)*

3 Terms and definitions

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

3.1 wood-chip concrete
open structure concrete with 50% to 90% by volume (according to use) of the aggregate being wood-chips

3.2

wood-chip

aggregates as defined in EN 12779:2004, 3.1.3

4 Requirements

4.1 Materials

The specifications of the materials to be used shall be included in the production control documentation (see 6.3). If appropriate documents are available, they shall be used except that aggregates need not comply with grading requirements. If not available, the manufacturer shall specify the materials and have data on their suitability.

4.2 Properties of wood-chip concrete

4.2.1 General

The main properties of wood-chip concrete are defined below.

Product standards may identify additional properties.

4.2.2 Density

The oven-dry density shall be between 450 kg/m³ and 1 200 kg/m³ according to use.

The design value of dry density shall be given and determined according to 5.2. The mean oven-dry density of wood-chip concrete shall not deviate by more than $\pm 10\%$ from the declared value. Individual values of oven-dry density shall not deviate by more than $\pm 15\%$ from the declared value.

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4.2.3 Strength

When required, flexural and/or compressive strength shall be determined according to 5.3.

4.2.4 Thermal conductivity

When required, thermal conductivity (λ) shall be given as a design value and determined according to 5.4.

4.2.5 Sound absorption

When required, the sound-absorption coefficient shall be given and determined according to 5.5.

4.2.6 Frost-resistance

When required, the frost-resistance or the frost-resistance in the presence of de-icing salts of unprotected wood-chip concrete shall be declared on the basis of long-term experience or testing.

Tests shall be carried out according to 5.6.

Loss of mass shall be not more than 10 % and shall not affect more than 5 mm depth.

4.2.7 Reaction to fire

When required, reaction to fire shall be given and determined according to 5.7.

EN 14474:2004 (E)**4.2.8 Shrinkage and expansion**

When required, shrinkage and expansion of wood-chip concrete shall be given and determined according to 5.8.

4.2.9 Water absorption

When required, water absorption by capillarity shall be given and determined according to 5.9.

5 Tests**5.1 Test specimens****5.1.1 General**

The properties of wood-chip concrete may be tested on specimens either cast from product mixes or cut from products.

Methods of preparing test specimens cut from products shall be as given in test standards or as specified in product standards.

Test specimens cut from products shall have a minimum volume of $3\,000 \times 10^3 \text{ mm}^3$.

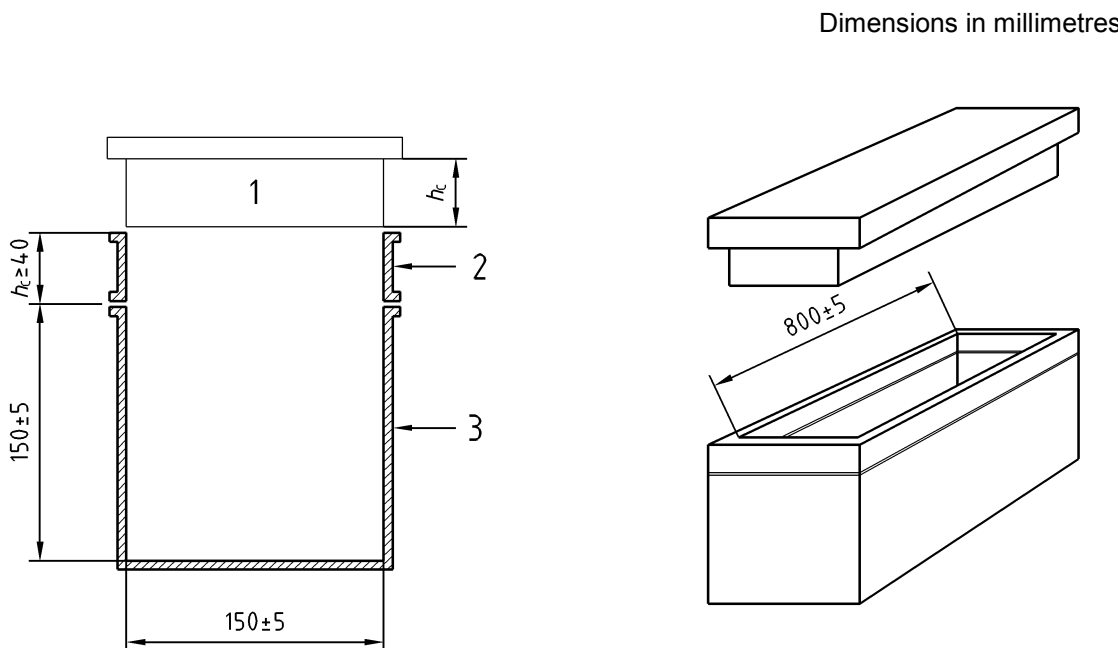
5.1.2 Dimensions of cast test specimens

Test specimens with the dimensions $800 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm}$ shall be produced from the product mix of the current production for tests according to 5.2, 5.3, 5.6 and 5.9. Subsequently, test cubes with the minimum dimensions $150 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm}$ may be cut from the initial test specimens.

Test specimens cut from products may also be used.

5.1.3 Mould for cast test specimens

Steel mould (see Figure 1) with minimum dimensions of $800 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm} \times 150 (\pm 5) \text{ mm}$, equipped with a filling frame of minimum height $h_c \geq 40 \text{ mm}$ and a tamper for compacting the specimens to the required height and density.

**Key**

- 1 Tamper
- 2 Filling frame
- 3 Steel mould

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Figure 1 — Schematic diagram

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5.1.4 Mould filling and compacting

Care shall be taken to ensure consistency of filling and compaction.

The mould shall be filled with fresh product mix and the top struck off with a steel rule to produce a level surface.

The mixture shall then be compacted manually and/or mechanically. The appropriate filling frame height h_c /density relationship shall be established by type tests.

After 24 h the load and the tamper shall be removed, the test specimen demoulded, weighed, labelled with the production date and filling direction and stored for a reference period of 28 days (7 days in humid conditions followed by 21 days dry storage). Storage in ambient conditions may be used, provided a good correlation is established with above conditions. The dry storage period may be reduced if proof of a good correlation can be established between the characteristics measured for the reduced period compared to the characteristics after 28 days.

5.1.5 Preparation and storage of test cubes

If required, the test specimens may be cut into cubes after the storage period. The cubes shall also be labelled with the production date and filling direction and shall be dry stored until the testing date.

5.2 Dry density

The oven-dry density of the wood-chip concrete shall be established using test specimens prepared according to 5.1 dried to constant mass at a temperature of $(+105 \pm 2) ^\circ\text{C}$.