

**Precast concrete products - Resin bound concrete
- Requirements and test methods**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15564:2008 sisaldab Euroopa standardi EN 15564:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 10.11.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 22.10.2008.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 15564:2008 consists of the English text of the European standard EN 15564:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 10.11.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 22.10.2008.

The standard is available from Estonian standardisation organisation.

ICS 91.100.30

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

ICS 91.100.30

English Version

Precast concrete products - Resin bound concrete - Requirements and test methods

Produits préfabriqués en béton - Béton de résine -
Prescriptions et méthodes d'essai

Betonfertigteile - Kunstharzbeton - Anforderungen und
Prüfverfahren

This European Standard was approved by CEN on 13 September 2008.

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 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 Management Centre has the same status as the official versions.

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



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Requirements	7
4.1 General.....	7
4.2 Constituent materials	7
4.2.1 Aggregates	7
4.2.2 Filler	7
4.2.3 Resin	7
4.3 Other materials.....	8
4.4 Properties of resin-bound concrete.....	8
4.4.1 General.....	8
4.4.2 Apparent density, water absorption and water permeability	8
4.4.3 Strength	8
4.4.4 Surface hardness.....	8
4.4.5 Slipperiness behaviour	8
4.4.6 Abrasion resistance	8
4.4.7 Thermal shock resistance.....	8
4.4.8 Impact resistance.....	8
4.4.9 Linear thermal expansion coefficient.....	9
4.4.10 Chemical resistance	9
4.4.11 Freeze and thaw resistance	9
4.4.12 Thermal conductivity.....	9
4.4.13 Reaction to fire.....	9
5 Tests.....	9
5.1 Constituent materials	9
5.1.1 Aggregates	9
5.1.2 Filler	9
5.1.3 Resin	9
5.2 Test specimens	10
5.2.1 General.....	10
5.2.2 Cast test specimens	10
5.3 Apparent density, water absorption and water permeability	10
5.4 Strength	10
5.5 Surface hardness.....	11
5.6 Slipperiness behaviour	11
5.7 Abrasion resistance	11
5.8 Thermal shock resistance.....	11
5.9 Impact resistance.....	11
5.10 Linear thermal expansion coefficient.....	11
5.11 Chemical resistance	11
5.12 Freeze and thaw resistance	11
5.13 Thermal conductivity.....	11
5.14 Reaction to fire.....	11
6 Evaluation of conformity.....	12
6.1 General.....	12
6.2 Initial type tests.....	12
6.3 Factory production control.....	12

6.3.1	General	12
6.3.2	Organisation	12
6.3.3	Control system	13
6.3.4	Document control	13
6.3.5	Process control	13
6.3.6	Inspection and testing	13
6.3.7	Non-conforming products	18
6.3.8	Indirect or alternative test method	19
Annex A	(normative) Determination of the viscosity of the resin.....	20
A.1	Aim	20
A.2	Method	20
A.3	Apparatus	20
A.4	Procedure	21
A.4.1	Preliminary operations.....	21
A.4.2	Test procedure.....	21
A.5	Results	22
Annex B	(normative) Determination of the reactivity of the resin	23
B.1	Aim	23
B.2	Method	23
B.3	Apparatus	23
B.4	Procedure	23
B.5	Results	24
Annex C	(normative) Determination of the surface hardness.....	25
C.1	Aim	25
C.2	Method	25
C.3	Apparatus	25
C.4	Procedure	25
C.4.1	Calibration of the hardness tester	25
C.4.2	Test procedure.....	26
C.5	Results	26
Bibliography		27

Foreword

This document (EN 15564:2008) 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 April 2009, and conflicting national standards shall be withdrawn at the latest by April 2009.

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.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies common requirements for resin-bound concrete used in the fabrication of precast concrete products. It is intended to be used when preparing documents for resin-bound concrete products.

Resin-bound 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 resin-bound concrete are: street furniture and garden products, decorative elements, window sills, machine tool structures, elements for fence, animal troughs and slats, etc.

This standard is not applicable to polymer-modified or impregnated mortar and concrete (only PC not PCC or SPCC).

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 933-1, *Tests for geometrical properties of aggregates — Part 1: Determination of particle size distribution — Sieving method*

EN 933-10, *Tests for geometrical properties of aggregates — Part 10: Assessment of fines — Grading of fillers (air jet sieving)*

EN 1097-5, *Test for mechanical and physical properties of aggregates — Part 5: Determination of the water content by drying in a ventilated oven*

EN 12620, *Aggregates for concrete*

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 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using 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 14231, *Natural stone test methods — Determination of the slip resistance by means of the pendulum tester*

EN 14617-1, *Agglomerated stone — Test methods — Part 1: Determination of apparent density and water absorption*

EN 14617-2, *Agglomerated stone — Test methods — Part 2: Determination of flexural strength (bending)*

EN 14617-4, *Agglomerated stone — Test methods — Part 4: Determination of the abrasion resistance*

EN 14617-5, *Agglomerated stone — Test methods — Part 5: Determination of freeze and thaw resistance*

EN 14617-6, *Agglomerated stone — Test methods — Part 6: Determination of thermal shock resistance*

- EN 14617-9, *Agglomerated stone — Test methods — Part 9: Determination of impact resistance*
- EN 14617-10, *Agglomerated stone — Test methods — Part 10: Determination of chemical resistance*
- EN 14617-11, *Agglomerated stone — Test methods — Part 11: Determination of linear thermal expansion coefficient*
- EN 14617-15, *Agglomerated stone — Test methods — Part 15: Determination of compressive strength*
- EN 14618:2005, *Agglomerated stone — Terminology and classification*
- EN 14889-1, *Fibres for concrete — Part 1: Steel fibres — Definitions, specifications and conformity*
- EN 14889-2, *Fibres for concrete — Part 2: Polymer fibres — Definitions, specifications and conformity*
- EN ISO 178, *Plastics — Determination of flexural properties (ISO 178:2001)*
- EN ISO 584, *Plastics — Unsaturated polyester resins — Determination of reactivity at 80 °C (conventional method) (ISO 584:1982)*
- EN ISO 2555, *Plastics — Resins in the liquid state or as emulsions or dispersions — Determination of apparent viscosity by the Brookfield Test method. (ISO 2555:1989)*
- EN ISO 3219, *Plastics — Polymers/resins in the liquid state or as emulsions or dispersions — Determination of viscosity using a rotational viscometer with defined shear rate (ISO 3219:1993)*
- EN ISO 9371, *Plastics — Phenolic resins in the liquid state or in solution — Determination of viscosity (ISO 9371:1990)*
- EN ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456:2007)*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 14618:2005 and the following apply.

3.1 additive

material used to impart specific properties to the resin

3.2 binder

organic chemical product used to bind via an irreversible process the aggregates and the filler

3.3 characteristic value

value of a property below which 5 % of the population of all possible property determinations of the volume of resin-bound concrete under consideration are expected to fall

3.4 resin

liquid cross-linkable chemical product, generally constituted by a solution of a polymer in a monomer, used to form the organic binding paste

NOTE 1 Examples of most commonly used resins in polymer concrete are unsaturated polyester (i.e., polyester-styrene system), epoxy, and acrylic (i.e., methyl methacrylate monomer).