SLOVENSKI STANDARD
SIST EN 15258:2009

01-februar-2009

Montažni betonski izdelki - Elementi za oporne zidove

Precast Concrete Products - Retaining wall elements

Betonfertigteile - Stützwandelemente

Produits préfabriqués en béton - Éléments de murs de soutènement

Ta slovenski standard je istoveten z: **EN 15258:2008**

ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products

SIST EN 15258:2009 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15258

October 2008

ICS 91.100.30

English Version

Precast concrete products - Retaining wall elements

Produits préfabriqués en béton - Éléments de murs de soutènement

Betonfertigteile - Stützwandelemente

This European Standard was approved by CEN on 25 July 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

Ref. No. EN 15258:2008: E

Contents

Page

The numbering of clauses is strictly related to EN 13369:2004, *Common rules for precast concrete products*, at least for the first three digits. When a clause of EN 13369:2004 is not relevant or included in a more general reference of this standard, its number is omitted and this may result in a gap on numbering.

Foreword

This document (EN 15258:2008) has been prepared by Technical Committee CEN/TC 229 “Precast concrete products”, the secretariat of which is held by AFNOR, and was examined by and agreed with a joint working party appointed by the Liaison Group CEN/TC 229-CEN/TC 250, particularly for its compatibility with structural Eurocodes.

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 July 2010.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA, which is an integral part of this document.

This standard is one of a series of product standards for precast concrete products.

For common aspects reference is made to EN 13369:2004: *Common rules for precast products*, from which also the relevant requirements of the EN 206-1: *Concrete — Part 1: Specification, performances, production and conformity* are taken.

The references to EN 13369:2004 by CEN/TC 229 product standards are intended to make them homogeneous and to avoid repetitions of similar requirements.

Eurocodes are taken as a common reference for design aspects. The installation of some structural precast concrete products is dealt with by ENV 13670-1 *Execution of concrete structures — Part 1: Common rules*, which has at the moment the status of an European prestandard. In all countries it can be accompanied by alternatives for national application and it shall not be treated as a European standard.

The programme of standards for structural precast concrete products comprises the following standards, in some cases consisting on several parts:

— EN 1168, *Precast concrete products — Hollow core slabs*

— EN 12794, *Precast concrete products — Foundation piles*

— EN 12843, *Precast concrete products — Masts and poles*

— EN 13224, *Precast concrete products — Ribbed floor elements*

— EN 13225, *Precast concrete products — Linear structural elements*

— EN 13693, *Precast concrete products — Special roof elements*

— EN 13747, *Precast concrete products — Floor plates for floor systems*

— EN 13978-1, *Precast concrete products — Precast concrete garages — Part 1: Requirements for reinforced garages monolithic or consisting of single sections with room dimensions*

— EN 14843, *Precast concrete products — Stairs*

— EN 14844, *Precast concrete products — Box culverts*

— EN 14991, *Precast concrete products — Foundation elements*

— EN 14992, *Precast concrete products — Wall elements*

— EN 15037-1, *Precast concrete products — Beam-and-block floor systems — Part 1: Beams*

— prEN 15037-2, *Precast concrete products — Beam-and-block floor systems — Part 2: Concrete blocks*

— prEN 15037-3, *Precast concrete products — Beam-and-block floor systems — Part 3: Clay blocks*

— prEN 15037-4, *Precast concrete products — Beam-and-block floor systems — Part 4: Polystyrene blocks*

— prEN 15037-5, *Precast concrete products — Beam-and-block floor systems — Part 5: Lightweight blocks*

— EN 15050, *Precast concrete products — Bridge elements*

— EN 15258, *Precast concrete products — Retaining wall elements*

This standard defines in Annex ZA the application methods of CE marking to products designed using the relevant EN Eurocodes (EN 1992-1-1:2004 and EN 1992-1-2:2004). Where, in default of applicability conditions of EN Eurocodes to the works of destination, design Provisions other than EN Eurocodes are used for mechanical strength, the conditions to affix CE marking to the product are described in ZA.3.4 and Z.A 3.5.

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.

Introduction

The evaluation of conformity given in this standard refers to the precast elements which are supplied to the market and covers all the production operations carried out in the factory.

For design rules reference is made to EN 1992-1-1:2004. Additional complementary rules are provided where necessary.

1 Scope

This European Standard deals with the requirements, the basic performance criteria and evaluation of conformity for precast elements made of plain, reinforced or prestressed normal weight concrete, used for the construction of retaining walls.

The products covered by this European Standard are intended to be used as part of retaining walls in applications such as:

- to retain natural ground excavations and trenches;
- to retain earth fills for roads, platforms, etc.;
- in bridge abutments and their flank walls;
- to retain several kinds of loose materials such as sand, gravel, etc.

Some examples of precast elements considered in this European Standard are shown in the Informative Annex B.

The products may be used in seismic areas on condition that they fulfil the requirements specific to this use.

This European Standard does not cover:

- products for retaining walls of tanks or reservoirs of liquids;
- retaining wall elements up to a height of 1,0 m and those assembled to form retaining walls of up to 1,0 m in height (e.g. stacked flower boxes for dwarf walls) if the corresponding retaining wall is used for secondary loads (max. horizontal earth fill and with light surcharge);
- products for stacked planting boxes, having only façade functions, and therefore not submitted to any loads (such as earth pressure loads, highway load effects, etc.);
- precast diaphragm walls (concrete sheet piling).

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 1990:2002, *Eurocode — Basis of structural design*

EN 1992-1-1, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*

EN 13369:2004, *Common rules for precast concrete products*

EN ISO 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties (ISO 12572:2001)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13369:2004 and the following apply.

3.1
cantilever wall
wall whose stability is obtained by its flexural and shear resistance connected to act compositely with a foundation slab

3.2
gravity resistant wall
wall whose stability is obtained by the weight of its elements

3.3
reinforced soil wall
wall whose stability is obtained by means of reinforcing strips placed in layers inside the fill and anchored to precast concrete plates forming the facing that retains the earth

3.4
tied wall
retaining wall which comprises ties connecting the wall with the foundation

4 Requirements

4.1 Material requirements

4.1 of EN 13369:2004 shall apply.

4.2 Production requirements

4.2.1 Concrete production

4.2.1 of EN 13369:2004 shall apply.

4.2.2 Hardened concrete

4.2.2.1 Strength classes

4.2.2.1 of EN 13369:2004 shall apply.

4.2.2.2 Compressive strength

4.2.2.2 of EN 13369:2004 shall apply. In addition, the minimum concrete compressive strength at the time of delivery shall be declared.

The concrete class shall not be less than C25/30 for retaining wall elements.

4.2.3 Structural reinforcement

4.2.3 of EN 13369:2004 shall apply.

4.3 Finished product requirements

4.3.1 Geometrical properties

4.3.1 of EN 13369:2004 shall apply.

4.3.2 Surface characteristics

4.3.2 of EN 13369:2004 shall apply.

4.3.3 Mechanical resistance

4.3.3.1 General

4.3.3 of EN 13369:2004 shall apply except 4.3.3.4 which is not relevant.

Complementarily to 4.3.3 of EN 13369:2004, 4.3.3.2 and 4.3.3.3 shall apply.

4.3.3.2 Verification by calculation aided by physical testing

In the case physical testing on finished products is required to aid calculation according to 4.3.3.3 of EN 13369:2004, Annex C describes a method for mechanical resistance test of the restraint (stem-base) on full scale specimens of precast elements for retaining cantilever walls. This test may serve to confirm design assumptions and/or substitute calculations if there are no adequate models for some details (e.g. gusset). 5.2(1), 5.2(2)P and 5.2(3) of EN 1990:2002 shall apply.

4.3.3.6 Transient situations

The transient situations covered by this sub-clause relate to storage, handling, transport and installation.

The strength and properties of the concrete retaining wall element to be considered in transient situations are those specified by the manufacturer at the time of delivery.

Main and secondary transverse reinforcements provided in the wall element, as well as those used for lifting, shall be capable to withstand the loadings expected for the transient situations. In these transient situations temporary props or safe mounting racks, suitable for the product shall be used, if necessary, to maintain the precast elements in correct position and shape and to reduce the effects of the loadings.

4.3.3.7 Conditions for installation

Wall elements shall be installed in accordance with technical specifications provided by the manufacturer.

Wall elements shall be erected using temporary props or any device required by technical specifications to achieve their own resistance and their own stability in transitional stage, and safe working conditions.

Where props or other temporary devices are required and specific provisions are necessary, they shall be provided with sufficient strength, thickness and design.

Cast in situ concrete shall be designed, cast and cured according to design specification.

4.3.5 Acoustic properties

4.3.5 of EN 13369:2004 shall apply.

NOTE This clause is relevant only for specific applications.