



# SLOVENSKI STANDARD

## SIST EN 13877-1:2013

01-maj-2013

Nadomešča:

SIST EN 13877-1:2005

---

### Betonska vozišča - 1. del: Materiali

Concrete pavements - Part 1: Materials

Fahrbahnbefestigungen aus Beton - Teil 1: Baustoffe

Chaussées en béton - Partie 1: Matériaux

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

**Ta slovenski standard je istoveten z: EN 13877-1:2013**

<https://standards.iteh.ai/catalog/standards/sist/24303f79-262d-46a2-a870-ca206db4aab1/sist-en-13877-1-2013>

### **ICS:**

91.100.30	Beton in betonski izdelki	Concrete and concrete products
93.080.20	Materiali za gradnjo cest	Road construction materials

**SIST EN 13877-1:2013**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 13877-1:2013

<https://standards.iteh.ai/catalog/standards/sist/24303f79-262d-46a2-a870-ca206db4aab1/sist-en-13877-1-2013>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 13877-1**

March 2013

ICS 93.080.20

Supersedes EN 13877-1:2004

English Version

## Concrete pavements - Part 1: Materials

Chaussées en béton - Partie 1: Matériaux

Fahrbahnbefestigungen aus Beton - Teil 1: Baustoffe

This European Standard was approved by CEN on 10 February 2013.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

(standards.iteh.ai)

SIST EN 13877-1:2013

<https://standards.iteh.ai/catalog/standards/sist/24303f79-262d-46a2-a870-ca206db4aab1/sist-en-13877-1-2013>



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

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

<b>Contents</b>	<b>Page</b>
Foreword.....	3
<b>1 Scope .....</b>	<b>4</b>
<b>2 Normative references .....</b>	<b>4</b>
<b>3 Terms and definitions .....</b>	<b>5</b>
<b>4 Requirements for constituent materials of concrete .....</b>	<b>5</b>
4.1 General.....	5
4.2 Type of cement.....	6
4.3 Aggregates .....	6
4.3.1 General.....	6
4.3.2 Maximum size of aggregates.....	6
4.4 Mixing water .....	6
4.5 Other constituent materials .....	6
<b>5 Basic requirements for concrete.....</b>	<b>6</b>
5.1 General.....	6
5.2 Fresh concrete .....	6
5.2.1 Consistence.....	6
5.2.2 Density of fresh concrete.....	6
5.2.3 Air content .....	7
5.2.4 Cement content.....	7
5.2.5 Content or particles smaller than 0,25 mm for pavement quality concrete and lean concrete .....	7
5.2.6 Chloride content .....	7
5.3 Hardened concrete.....	7
5.3.1 Resistance to the effects of freeze/thaw and de-icing agents .....	7
5.3.2 Mechanical strength .....	7
<b>6 Basic requirements for other materials for concrete pavements.....</b>	<b>9</b>
6.1 General.....	9
6.2 Curing materials.....	9
6.3 Surface retarders .....	9
6.4 Joint sealants .....	10
6.5 Tie bars .....	10
6.6 Dowels .....	10
6.7 Reinforcing bars .....	10
<b>Bibliography .....</b>	<b>11</b>

## Foreword

This document (EN 13877-1:2013) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

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 September 2013 and conflicting national standards shall be withdrawn at the latest by September 2013.

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 13877-1:2004.

The following modifications have been made:

- The normative references have been reviewed.
- The units have been updated from N/mm<sup>2</sup> to MPa.
- The steel meshes have been included in the definition of reinforcement.
- Table 1 has been modified to include more strength classes, and the notes included in the table have been updated.
- Notes in Table 2 have been updated.
- Notes to Table 3 have been added.
- References EN 197-1 and EN 934-2 have been added to the Bibliography.

This European Standard is one of a series of standards as listed below:

- EN 13877-1, *Concrete pavements — Part 1: Materials*
- EN 13877-2, *Concrete pavements — Part 2: Functional requirements for concrete pavements*
- EN 13877-3, *Concrete pavements — Part 3: Specifications for dowels to be used in concrete pavements*

This European Standard refers to EN 206-1. In accordance with the scope of EN 206-1 some additional or different requirements are necessary for pavements, particularly to comply with safety of users, durability, environment and health.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

**EN 13877-1:2013 (E)****1 Scope**

This European Standard specifies requirements for:

- the constituents (concrete and other materials) of concrete pavements;
- the properties of fresh and hardened concrete.

This European Standard is applicable to concrete pavements cast in situ. Concrete compacted by rollers is not covered by this European Standard.

This European Standard covers concrete pavements for roads, motorways and airports, pedestrian footpaths, cycle tracks, storage areas, and in general all traffic-bearing structures.

**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 206-1, *Concrete — Part 1: Specification, performance, production and conformity*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 10080, *Steel for the reinforcement of concrete — Weldable reinforcing steel — General*

EN 12350-7, *Testing fresh concrete — Part 7: Air content — Pressure methods*

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 12390-6, *Testing hardened concrete — Part 6: Tensile splitting strength of test specimens*

CEN/TS 12390-9, *Testing hardened concrete — Part 9: Freeze-thaw resistance — Scaling*

EN 12620, *Aggregates for concrete*

EN 13877-2:2013, *Concrete pavements — Part 2: Functional requirements for concrete pavements*

EN 13877-3, *Concrete pavements — Part 3: Specifications for dowels to be used in concrete pavements*

EN 14188-1, *Joint fillers and sealants — Part 1: Specifications for hot applied sealants*

EN 14188-2, *Joint fillers and sealants — Part 2: Specifications for cold applied sealants*

EN 14188-3, *Joint fillers and sealants — Part 3: Specification for preformed joint seals*

CEN/TS 14754-1, *Curing compounds — Test methods — Part 1: Determination of water retention efficiency of common curing compounds*

### 3 Terms and definitions

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

#### 3.1

##### **concrete pavement**

concrete layer capable of withstanding direct passage of traffic and environmental effects

Note 1 to entry: Several types exist: jointed unreinforced, jointed reinforced, continuously reinforced.

#### 3.2

##### **lean concrete**

concrete having a lower cement content than pavement quality concrete

#### 3.3

##### **exposed aggregate concrete surface**

surface finish for concrete pavements achieved by removing the surface mortar, in order to expose the coarse aggregate

#### 3.4

##### **curing compound**

product that can be applied on the surface of newly placed concrete to minimize the loss of moisture and in the case of pigmented compounds to reflect heat minimizing heating up of the concrete

#### 3.5

##### **dowel**

coated smooth steel bar which extends into adjoining slabs at a joint in a concrete pavement, to improve load transfer and to avoid faulting

#### 3.6

##### **tie bar**

steel bar used to keep joints closed, normally longitudinal joints, in a concrete pavement

#### 3.7

##### **reinforcement**

steel bars or steel meshes embedded in concrete to control cracking and/or to provide tensile capacity

#### 3.8

##### **calculated density of fresh concrete**

density calculated from mass of all materials batched and the total absolute volume of the constituent materials

### 4 Requirements for constituent materials of concrete

#### 4.1 General

Only constituent materials permitted in EN 206-1 shall be used.

The constituent materials for concrete shall be selected to satisfy the specified requirements of this document for fresh and hardened concrete including consistence, density, strength, durability, and protection of embedded steel against corrosion.

Where there is no European Standard for a particular constituent material which refers specifically to the use of this constituent material in concrete conforming to EN 206-1, the establishment of suitability may result from:

- a European Technical Approval which refers specifically to the use of the constituent material in concrete conforming to EN 206-1; or

**EN 13877-1:2013 (E)**

— the relevant national standards or provisions valid in the place of use of the concrete which refers specifically to the use of the components material in concrete conforming to EN 206-1.

Characteristics of constituent materials and properties of concrete shall be measured in accordance with EN 206-1 except where otherwise given in the following clauses.

**4.2 Type of cement**

The type of cement shall be selected in accordance with EN 206-1 for the specified class. Additional requirements may be specified by relevant national standard or provisions in the place of use.

**4.3 Aggregates****4.3.1 General**

Aggregates shall comply with EN 12620. The permitted types and classes of aggregates shall be specified by relevant national standard or specifications in place of use.

**4.3.2 Maximum size of aggregates**

The maximum nominal size of aggregate shall not exceed one third (1/3) of the layer thickness.

For jointed reinforced concrete and continuously reinforced concrete pavements, the maximum aggregate size shall not exceed one third (1/3) of the spacing between the longitudinal reinforcing bars.

**4.4 Mixing water**

Mixing water for concrete shall conform to EN 1008.

**4.5 Other constituent materials**

Admixtures, additions and other constituent materials, when used, shall conform to the requirements of EN 206-1.

**5 Basic requirements for concrete****5.1 General**

The specified properties of the concrete shall be measured as prescribed in EN 206-1 and in this document. In specifying the concrete, account shall be taken of the environmental, traffic and site conditions, and the effect these may have on the concrete.

**5.2 Fresh concrete****5.2.1 Consistence**

The consistence of concrete shall be in accordance with the requirements of EN 206-1.

The consistence of concrete may be specified by consistence class or by target value in accordance with EN 206-1, which should be suitable for the construction plant used to construct the pavement.

**5.2.2 Density of fresh concrete**

When the density of fresh concrete is specified as a target value, a tolerance of 1,5 % shall apply. The target value shall be the calculated density of a cubic metre of approved concrete, as defined in 3.8, but including an allowance for the volume of any entrained air. Conformity shall be assessed in accordance with EN 206-1.



### 5.2.3 Air content

When the air content of concrete is to be determined, it shall be measured in situ in accordance with EN 12350-7.

Air content may be specified by relevant national standards or provisions in the place of use.

### 5.2.4 Cement content

The cement content of concrete may be specified by relevant national standards or provisions in the place of use.

### 5.2.5 Content of particles smaller than 0,25 mm for pavement quality concrete and lean concrete

The content of particles smaller than 0,25 mm shall conform to national standards or provisions in the place of use.

### 5.2.6 Chloride content

When concrete contains embedded steel not protected against corrosion (tie bars, reinforcement bars, steel meshes and dowel bars) the total chloride ions content shall not exceed 0,40 % of the mass of cement in accordance with EN 206-1.

## 5.3 Hardened concrete

### 5.3.1 Resistance to the effects of freeze-thaw and de-icing agents

Where concrete is exposed to significant attack by freeze-thaw cycles, the exposures shall be classified in accordance with EN 206-1. The freeze-thaw resistance shall be selected and specified in accordance with CEN/TS 12390-9.

SIST EN 13877-1:2013

Other test methods may be specified by relevant national standards or provisions in the place of use.

### 5.3.2 Mechanical strength

Specimens shall be evaluated for mechanical strength by one (or more) of the following methods:

- compressive strength in accordance with EN 12390-3;
- tensile splitting strength in accordance with EN 12390-6;
- flexural strength in accordance with EN 12390-5.

Where required

- a class of compressive strength shall be selected and specified in accordance with EN 206-1;
- a class of tensile splitting strength shall be selected and specified in accordance with Table 1;
- a class of flexural strength shall be selected and specified in accordance with Table 2.