



SLOVENSKI STANDARD

SIST EN 13877-1:2005

01-januar-2005

Betonska vozišča – 1. del: Materiali

Concrete pavements - Part 1: Materials

Fahrbahnbefestigungen aus Beton - Teil 1: Baustoffe

Chaussées en béton - Partie 1: Matériaux

Ta slovenski standard je istoveten z: **EN 13877-1:2004**

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ICS:

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

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EUROPEAN STANDARD
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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 16 January 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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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

	Page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Requirements for constituent materials of concrete	5
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
5 Basic requirements for concrete.....	6
5.1 General.....	6
5.2 Fresh concrete	6
5.2.1 Consistence.....	6
5.2.2 Density of fresh concrete.....	7
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
6 Basic requirements for other materials for concrete pavements.....	9
6.1 General.....	9
6.2 Curing materials.....	9
6.3 Surface retarders	9
6.4 Joint sealants	9
6.5 Tie bars	9
6.6 Dowel	9
6.7 Reinforcing bars	9
Bibliography	11

Foreword

This document (EN 13877-1:2004) 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 February 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

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 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 13877-1:2004 (E)**1 Scope**

This document specifies requirements for:

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

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

This document 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 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 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*

ENV 10080: *Steel for reinforcement of concrete weldable ribbed reinforcing steel B 500 - Technical delivery conditions for bars, coils and welded fabric*

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*

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

EN 12620, *Aggregates for concrete*

EN 13877-2:2004, *Concrete pavements - Part 2: Functional requirements for concrete pavements*

prEN 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*

prEN 14188-2, *Cold applied joint sealants - Part 2: Classification and requirements - Third party quality surveillance system*

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

prEN 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 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 slipping

3.6

tie bar

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

3.7

reinforcement

steel bars 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.

NOTE 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 13877-1:2004 (E)

- From 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 quarter ($1/4$) of the layer thickness.

For jointed reinforced concrete, 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 to 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 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/entrapped 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 the works 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 and dowel bars) the total chloride ions content shall not exceed 0,40 % of the mass of cement in accordance with EN 206-1.

SIST EN 13877-1:2005

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5.3 Hardened concrete

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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 prEN 12390-9.

5.3.2 Mechanical strength

Specimens shall be evaluated for mechanical strength by one of the following methods:

- compressive strength in accordance with EN 12390-3
- tensile splitting 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.