SLOVENSKI STANDARD
SIST EN 13877-2:2013

01-maj-2013

Nadomešča:

SIST EN 13877-2:2005

Betonska vozišča - 2. del: Funkcionalne zahteve za betonska vozišča

Concrete pavements - Part 2: Functional requirements for concrete pavements

Fahrbahnbefestigungen aus Beton - Teil 2: Funktionale Anforderungen an Fahrbahnbefestigungen aus Beton

Chaussées en béton - Partie 2: Exigences fonctionnelles pour les chaussées en béton

Ta slovenski standard je istoveten z: EN 13877-2:2013

ICS:

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

SIST EN 13877-2:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13877-2

March 2013

ICS 93.080.20

Supersedes EN 13877-2:2004

English Version

Concrete pavements - Part 2: Functional requirements for concrete pavements

Chaussées en béton - Partie 2: Exigences fonctionnelles pour les chaussées en béton

Fahrbahnbefestigungen aus Beton - Teil 2: Funktionale Anforderungen an Fahrbahnbefestigungen aus Beton

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.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (EN 13877-2:2013) 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 13877-2:2004.

The following modifications have been made:

— The normative references have been reviewed.

— The definition of continuously reinforced concrete roadbase (CRCR) has been modified to continuously reinforced concrete base (CRCB).

— The units have been updated from N/mm^2 to MPa.

— The limitation for cracks in jointed unreinforced concrete pavements has been improved.

— Alternative methods to EN 12390 for splitting strength might be used, if defined by relevant national standards or provisions in the place of use. A note has been included after Table 3 to explain it.

— Table 3 has been modified to include more splitting strength classes.

— In Table 4, a new category of Tolerance, T6, has been included.

— Alternative methods to CEN/TS 12390-9 for freeze-thaw resistance might be used, if defined by relevant national standards or provisions in the place of use.

— Regarding quality control, allowance has been included for different number of cores, if defined by specifications in the place of use; and the notes after table 7 have been included as normative text.

— Reference to EN 197-1 has 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*

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.

1 Scope

This European Standard specifies requirements for concrete pavements cast in situ and compacted by vibration.

This European Standard also covers concrete sub-bases as well as concrete wearing courses on bridges.

This European Standard covers concrete pavements in motorways, airfields, pedestrian streets, 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 12350-1, *Testing fresh concrete — Part 1: Sampling*

EN 12390-1, *Testing hardened concrete — Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-2, *Testing hardened concrete — Part 2: Making and curing specimens for strength tests*

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

EN 12390-7, *Testing hardened concrete — Part 7: Density of hardened concrete*

EN 12390-8, *Testing hardened concrete — Part 8: Depth of penetration of water under pressure*

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

EN 12504-1, *Testing concrete in structures — Part 1: Cored specimens — Taking, examining and testing in compression*

EN 13863-1, *Concrete pavements — Part 1: Test method for the determination of the thickness of a concrete pavement by survey method*

EN 13863-2, *Concrete pavements — Part 2: Test method for the determination of the bond between two layers*

EN 13863-3, *Concrete pavements — Part 3: Test methods for the determination of the thickness of a concrete pavement from cores*

EN 13863-4, *Concrete pavements — Part 4: Test methods for the determination of wear resistance of concrete pavements to studded tyres*

EN 13877-1, *Concrete pavements — Part 1: Materials*

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

3 Terms and definitions, symbols and abbreviated terms

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

3.1 Terms and definitions

3.1.1
maturity
measure of strength gain of concrete as a function of the product of temperature and length of a specific time interval

3.1.2
characteristic strength
value of strength below which 5 % of the population of all possible strength determinations of the volume of concrete under consideration are expected to fall

3.1.3
functional requirements
properties of a concrete pavement that ensure compliance with the design requirements

3.1.4
jointed unreinforced concrete pavement
concrete pavement with transverse joints at intervals generally from 3,0 m to 7,5 m

Note 1 to entry: The slabs are not reinforced and the load transfer across transverse joints is provided either by round steel dowels (dowelled) or by aggregate interlock only (undowelled).

3.1.5
jointed reinforced concrete pavement
concrete pavement with transverse joints at intervals generally from 8 m to 25 m

Note 1 to entry: These joints may be either contraction or expansion joints. The pavement slabs contain steel reinforcement in both the longitudinal and transverse directions. The longitudinal reinforcement does not cross the transverse joints, which are usually dowelled.

3.1.6
continuously reinforced concrete pavement (CRCP)
concrete pavement with continuous longitudinal steel reinforcement and no intermediate transverse expansion or contraction joints

3.1.7
continuously reinforced concrete base (CRCB)
layer of continuously reinforced concrete, with a percentage of longitudinal crack control steel lower (about two thirds) than that generally used in continuously reinforced concrete pavements, and intended to be surfaced with a relatively thick (about 10 cm) overlay of bituminous mixture

3.1.8
contraction joint
formed, sawn or tooled grooves in a concrete pavement to create a weakened plane and to control the location of cracking resulting from the dimensional change of the structure

Note 1 to entry: It could be transverse or longitudinal.

3.1.9
expansion joint
separation between pavement slabs filled with a compressible material

3.2 Symbols and abbreviated terms

CC8 to CC100	compressive strength classes for concrete
SC1,3 to SC6,0	tensile splitting classes for concrete
$f_{ck,core}$	characteristic compressive strength of concrete determined from cores
$f_{tk,core}$	characteristic tensile splitting strength of concrete determined from cores
T1 to T6	categories for thickness tolerance
D_{MAX}	the nominal maximum size of the coarse aggregate, expressed in millimetres (mm)
FT0 to FT2	categories for freeze/thaw resistance
m_{28} and m_{56}	mass loss after 28 days and 56 days, expressed in kilograms per square metre (kg/m^2)
WR0 to WR4	categories for wear resistance of concrete pavement to studded tyres
RWI	relative wear index value
X_m	mean value of bond strength between two concrete layers, expressed in megapascals (MPa)
x_i	individual result for compressive or tensile splitting strength determined from cores
x_{4m}	mean value of 4 consecutive results of compressive or tensile splitting strength determined from cores
f_v	the required bond strength, expressed in megapascals (MPa)
s_n	the standard deviation; a value of 0,4 shall be used if $s_n < 0,4$

4 Functional requirements for concrete pavements

4.1 General

The appropriate functional requirements shall be specified.

Jointed unreinforced concrete pavements shall not have large cracks impairing their bearing capacity.

4.2 Strength of concrete pavements

4.2.1 General

The strength of a concrete pavement shall be determined from cores, which have been drilled from the full depth of the slab.

The concrete strength shall be determined in accordance with one of the methods given in 4.2.2 and 4.2.3.

The strength class shall be selected from a characteristic value given in 4.2.2 or 4.2.3.

The characteristic strength shall be evaluated in accordance with EN 206-1.

NOTE 1 Classes refer to the 28 day equivalent maturity strength.

The criteria given in Annex A may be used for the evaluation of core strengths throughout the whole of the constructed pavement.

Intermediate strength classes may be selected among those given in 4.2.2 and 4.2.3.

NOTE 2 The different classes given in 4.2.2 and 4.2.3 are not directly correlated.

4.2.2 Core compressive strength

The core compressive strength shall be determined in accordance with EN 12504-1.

The number of cores to be tested shall be as specified in Clause 5.

Where it is not possible to test cores with a length/diameter ratio equal to 1, corrections shall be made in accordance with specifications in the place of use or as recommended in Table 1. Additionally, corrections due to the presence of steel reinforcement may be made in accordance with specifications in the place of use.

Table 1 — Correction factors for compressive strength of cores with different length/diameter ratios

Length/diameter ratio	Correction factor
1,00	1,00
1,25	1,07
1,50	1,12
1,75	1,16
2,00	1,18

The strength class shall be selected from a characteristic value given in Table 2.