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NSAI Standards

Standard Recommendation
S.R. CEN/TS 1992-4-4:2009

Design of fastenings for use in concrete - Part 4-4: Post-installed fasteners - Mechanical systems

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S.R. CEN/TS 1992-4-4:2009

Incorporating amendments/corrigenda issued since publication:

This document replaces:	*This document is based on:* CEN/TS 1992-4-4:2009	*Published:* 27 May, 2009

This document was published under the authority of the NSAI and comes into effect on: 26 August, 2009	ICS number: 21.060.99 91.080.40

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 1992-4-4

May 2009

ICS 21.060.99; 91.080.40

English Version

Design of fastenings for use in concrete - Part 4-4: Post-installed fasteners - Mechanical systems

Conception-calcul des éléments de fixation pour béton - Partie 4-4 : Chevilles de fixation - Systèmes mécaniques

Bemessung von Befestigungen in Beton - Teil 4-4: Dübel - mechanische Systeme

This Technical Specification (CEN/TS) was approved by CEN on 20 October 2008 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Contents

Page

Foreword 3

1 Scope 4
1.1 General 4

2 Normative references 4

3 Definitions and symbols 5

4 Basis of design 5

5 Determination of action effects 5

6 Verification of ultimate limit state by elastic analysis 6
6.1 General 6
6.2 Design method A 7
6.2.1 Tension load 7
6.2.2 Shear load 14
6.2.3 Combined tension and shear load 23
6.3 Design method B 24
6.4 Design method C 25

7 Fatigue 25

8 Seismic 25

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Foreword

This Technical Specification (CEN/TS 1992-4-4:2009) has been prepared by Technical Committee CEN/TC 250 “Structural Eurocodes”, the secretariat of which is held by BSI.

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 Technical Specification CEN/TS 1992-4-4 — Post-installed fasteners — Mechanical systems, describes the principles and requirements for safety, serviceability and durability of post-installed fasteners with mechanical anchorage systems for use in concrete. Furthermore bonded expansion anchors and bonded undercut anchors are covered.

This Technical Specification does not provide information about the use of National Determined Parameters (NDP).

CEN/TS 1992-4-4 is based on the limit state concept used in conjunction with a partial factor method.

CEN/TS 1992-4 'Design of fastenings for use in concrete' is subdivided into the following parts:

— *Part 1: General*

— *Part 2: Headed fasteners*

— *Part 3: Anchor channels*

— *Part 4: Post-installed fasteners — Mechanical systems*

— *Part 5: Post-installed fasteners — Chemical systems*

Connection to Part 1 of this Technical Specification TS

The principles and requirements of Part 4 of this CEN/TS are additional to those in Part 1, all the clauses and sub-clauses of which also apply to Part 4 unless varied in this Part. Additional information is presented under the relevant clauses/sub-clauses of Part 1 of the CEN/TS. The numbers for the clauses/sub-clauses of Part 4 continue from the number of the last relevant clauses/subclauses of Part 1.

The above principles also apply to Figures and Tables in Part 4.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: 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.

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1 Scope

1.1 General

1.1.6 This document relies on characteristic resistances and distances which are stated in a European Technical Specification. The characteristic values shown in Table 1 should be obtained from the relevant European Technical Specification as base for the design methods of this CEN/TS.

Table 1 — Characteristics used for the design of fasteners given in the European Technical Specification

Characteristic	Design method		
	A	B	C
$N_{Rk,p}$, $N_{Rk,s}$, $V_{Rk,s}$	x		
$M^0_{Rk,s}$	x	x	x
F_{Rd}, uncracked concrete		x	x
F_{Rd}, cracked concrete[a)]		x	x
$c_{cr,N}$, $s_{cr,N}$	x		
$c_{cr,sp}$, $s_{cr,sp}$	x		
c_{cr}, s_{cr}		x	x
c_{min}, s_{min}	x	x	
h_{min}	x	x	x
limitations on concrete strength classes of base material	x	x	x
k_{cr}, k_{ucr}, k_2, k_3, k_4	x		
d_{nom}, h_{ef}, l_f	x		
γ_{Mi}[b)]	x	x	x

a) only for products suitable to applications in cracked and non-cracked concrete

b) recommended partial factors for material see also CEN/TS 1992-4-1:2009, clause 4

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE The following references to Eurocodes are references to European Standards and European Prestandards. These are the only European documents available at the time of publication of this TS. National documents take precedence until Eurocodes are published as European Standards.

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