SVENSK STANDARD
SS-EN 13230-3:2009

Fastställd/Approved: 2009-06-22
Publicerad/Published: 2009-08-26
Utgåva/Edition: 2
Språk/Language: engelska/English
ICS: 91.100.30; 93.100; 45.080

Järnvägar – Spår – Betongsliprar – Del 3: Armerad tvåblockssliper

Railway applications – Track – Concrete sleepers and bearers – Part 3: Twin-block reinforced sleepers

SWEDISH STANDARDS INSTITUTE

Hitta rätt produkt och ett leveranssätt som passar dig

Standarder
Genom att följa gällande standard både effektiviserar och säkrar du ditt arbete. Många standarder ingår dessutom ofta i paket.

Tjänster
Abonnemang är tjänsten där vi uppdaterar dig med aktuella standarder när förändringar sker på dem du valt att abonnera på. På så sätt är du säker på att du alltid arbetar efter rätt utgåva.
e-nav är vår online-tjänst som ger dig och dina kollegor tillgång till standarder ni valt att abonnera på dygnet runt. Med e-nav kan samma standard användas av flera personer samtidigt.

Leveranssätt
Du väljer hur du vill ha dina standarder levererade. Vi kan erbjuda dig dem på papper och som pdf.

Andra produkter
Vi har böcker som underlättar arbetet att följa en standard. Med våra böcker får du ökad förståelse för hur standarder ska följas och vilka fördelar den ger dig i ditt arbete. Vi tar fram många egna publikationer och fungerar även som återförsäljare. Det gör att du hos oss kan hitta över 500 unika titlar. Vi har även tekniska rapporter, specifikationer och "workshop agreement".
Matriser är en översikt på standarder och handböcker som bör läsas tillsammans. De finns på sis.se och ger dig en bra bild över hur olika produkter hör ihop.

Standardiseringsprojekt
Du kan påverka innehållet i framtida standarder genom att delta i någon av SIS ca 400 Tekniska Kommittéer.

Find the right product and the type of delivery that suits you

Standards
By complying with current standards, you can make your work more efficient and ensure reliability. Also, several of the standards are often supplied in packages.

Services
Subscription is the service that keeps you up to date with current standards when changes occur in the ones you have chosen to subscribe to. This ensures that you are always working with the right edition.
e-nav is our online service that gives you and your colleagues access to the standards you subscribe to 24 hours a day. With e-nav, the same standards can be used by several people at once.

Type of delivery
You choose how you want your standards delivered. We can supply them both on paper and as PDF files.

Other products
We have books that facilitate standards compliance. They make it easier to understand how compliance works and how this benefits you in your operation. We produce many publications of our own, and also act as retailers. This means that we have more than 500 unique titles for you to choose from. We also have technical reports, specifications and workshop agreements.
Matrices, listed at sis.se, provide an overview of which publications belong together.

Standardisation project
You can influence the content of future standards by taking part in one or other of SIS's 400 or so Technical Committees.

Europastandarden EN 13230-3:2009 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13230-3:2009.

Denna standard ersätter SS-EN 13230-3, utgåva 1.

The European Standard EN 13230-3:2009 has the status of a Swedish Standard. This document contains the official English version of EN 13230-3:2009.

This standard supersedes the Swedish Standard SS-EN 13230-3, edition 1.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00.
Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), tel +46 8 555 520 00.
Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

SIS Förlag AB, SE 118 80 Stockholm, Sweden. Tel: +46 8 555 523 10. Fax: +46 8 555 523 11.
E-mail: sis.sales@sis.se Internet: www.sis.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13230-3

June 2009

ICS 91.100.30; 93.100

Supersedes EN 13230-3:2002

English Version

Railway applications - Track - Concrete sleepers and bearers - Part 3: Twin-block reinforced sleepers

Applications ferroviaires - Voie - Traverses et support en béton - Partie 3 : Traverses biblocs en béton armé

Bahnanwendungen - Oberbau - Gleis- und Weichenschwellen aus Beton - Teil 3: Bewehrte Zweiblockschwellen

This European Standard was approved by CEN on 14 May 2009.

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: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 13230-3:2009: E

Contents

Page

Foreword

This document (EN 13230-3:2009) has been prepared by Technical Committee CEN/TC 256 "Railway applications", 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 December 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

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 13230-3:2002.

This European Standard is one of the series EN 13230 "Railway applications – Track – Concrete sleepers and bearers", which consists of the following parts:

— Part 1: General requirements

— Part 2: Prestressed monoblock sleepers

— Part 3: Twin-block reinforced sleepers

— Part 4: Prestressed bearers for switches and crossings

— Part 5: Special elements

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 2008/57/EC.

For relationship with EC Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

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

This part of the standard defines the specific requirements dedicated to twin-block reinforced sleepers.

These are additional requirements to EN 13230-1:2009 and are necessary to have a complete standard dealing with twin-block reinforced sleepers.

The document specifies the test arrangements and the test procedures to implement and also the corresponding acceptance criteria just as the design approval tests

It also specifies the steel connecting bar characteristics and the design criteria for incorporating the steel connecting bar within the twin-block reinforced sleepers.

1 Scope

This part of EN 13230 defines technical criteria and control procedures for designing and manufacturing twin-block reinforced concrete sleepers.

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 10002-1, *Metallic materials – Tensile testing – Part 1: Method of test at ambient temperature*

EN 13230-1:2009, *Railway applications – Track – Concrete sleepers and bearers – Part 1: General requirements*

EN ISO 6506-1, *Metallic materials – Brinell hardness test – Part 1: Test method (ISO 6506-1:1999)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13230-1:2009 and the following apply.

3.1
steel connecting bar
steel profile which connects reinforced concrete blocks

4 Product testing

4.1 Test arrangements

This section defines the testing regime and rules for acceptance of twin-block concrete sleepers.

The layout of test arrangements for the rail seat section tests are defined in this section.

4.1.1 Symbols

The following symbols are used as defined in Table 1:

Table 1 — Symbols

Symbol	Designation
Fr_0	Positive initial reference test load for the rail seat section, in kN
Fr_{0n}	Negative initial reference test load at rail seat section, in kN; $Fr_{0n} = ½ \cdot Fr_0$
Fr_r	Positive test load which produces first crack formation at the bottom of the rail seat section, in kN
Fr_{rn}	Negative test load which produces first crack formation at the top of rail seat, in kN
$Fr_{0,05}$	Maximum test load for which a crack width of 0,05 mm at the bottom of the rail seat section persists after removal of the load, in kN
$Fr_{0,05n}$	Maximum test load for which a crack width of 0,05 mm at the top of rail seat section persists after removal of the load, in kN
$Fr_{0,5}$	Maximum test load for which a crack width of 0,5 mm at the bottom of the rail seat section persists after removal of the load, in kN
Fr_B	Maximum positive test load at the rail seat section which cannot be increased, in kN
Fr_{Bn}	Maximum negative test load on the top of rail seat section which cannot be increased, in kN
Fr_u	Lower test load for the rail seat section dynamic test; Fr_u = 50 kN
L_p	Design distance between the centre line of the rail seat to the edge of the sleeper at the bottom, in m
L_r	Design distance between the articulated support centre lines for the test arrangement at the rail seat section, in m
Mdr	Positive design bending moment at rail seat, in kNm
k_{1s}	Static coefficient to be used for calculation of $Fr_{0,05}$ or $Fr_{0,05n}$ test load
k_{2s}	Static coefficient to be used for calculation of $Fr_{0,5}$ or Fr_B test load
k_{1d}	Dynamic coefficient to be used for calculation of $Fr_{0,05}$ test load
k_{2d}	Dynamic coefficient to be used for calculation of $Fr_{0,5}$ or Fr_B test load

4.1.2 Rail seat section

The arrangement for the rail seat positive load test is shown in Figure 1.

The position of articulated supports (L_r) is defined in Table 2.

The load Fr is applied perpendicularly to the base of the sleeper.