

SVENSK STANDARD

SS-EN 13230-1:2009

Fastställt/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 1: Allmänna krav

Railway applications – Track – Concrete sleepers and bearers – Part 1: General requirements

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

The European Standard EN 13230-1:2009 has the status of a Swedish Standard. This document contains the official English version of EN 13230-1:2009.

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13230-1

June 2009

ICS 91.100.30; 93.100

Supersedes EN 13230-1:2002

English Version

Railway applications - Track - Concrete sleepers and bearers - Part 1: General requirements

Applications ferroviaires - Voie - Traverses et supports en
béton - Partie 1 : Prescriptions générales

Bahnanwendungen - Oberbau - Gleis- und
Weichenschwellen aus Beton - Teil 1: Allgemeine
Anforderungen

This European Standard was approved by CEN on 13 May 2009.

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Foreword

This document (EN 13230-1:2009) 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of an identical text or by endorsement, at the latest by December 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.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 13230-1:2002.

This European Standard is one of the series EN 13230 "Railway applications – Track – Concrete sleepers and bearers", which consist 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 EN is used as the technical basis for transaction between corresponding parties (purchaser – supplier).

Annexes A to G are informative; they can be used as normative requirements by completion of a contract, if agreed by the contractors.

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 covers the general requirements for concrete sleepers and bearers and is used in conjunction with the following parts:

- Part 2: Prestressed monoblock sleepers
- Part 3: Twin-block reinforced sleepers
- Part 4: Prestressed concrete bearers for switches and crossings
- Part 5: Special elements

Concrete sleepers and bearers are safety critical components for railway applications. They are not covered by any other standards.

As safety critical components, an agreement is needed between purchaser and supplier to operate a factory Quality System.

This position has always been highlighted by resolutions from CEN/TC 256/SC 1 "Railway applications / Track".

1 Scope

This part of EN 13230 defines technical criteria and control procedures which have to be satisfied by the constituent materials and the finished concrete sleepers and bearers, i.e.: precast concrete sleepers, bearers for switches and crossings, and special elements for railway tracks.

The main requirement of concrete sleepers and bearers is the transmission of vertical, lateral and longitudinal loads from the rails to the ballast or other support. In use they are also exposed to frost damage and to moisture, which can result in detrimental chemical reactions within the sleeper.

In this standard mechanical tests are defined which provide assurance of the capability of sleepers or bearers to resist repetitive loading and provide sufficient durability. In addition controls are placed on manufacturing processes and tests to ensure that the concrete will not suffer degradation in service through chemical reaction and frost damage.

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 197-1, *Cement – Part 1: Composition, specifications and conformity criteria for common cements*

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

EN 934-2, *Admixtures for concrete, mortar and grout – Part 2: Concrete admixtures – Definitions, requirements, conformity, marking and labelling*

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*

prEN 10138 (all parts), *Prestressing steels*

EN 12620, *Aggregates for concrete*

EN 13146-5, *Railway applications – Track – Test methods for fastening systems – Part 5: Determination of electrical resistance*

EN 13230-2:2009, *Railway applications – Track – Concrete sleepers and bearers – Part 2: Prestressed monobloc sleepers*

EN 13230-3:2009, *Railway applications – Track – Concrete sleepers and bearers – Part 3: Twin-block reinforced sleepers*

EN 13230-4:2009, *Railway applications – Track – Concrete sleepers and bearers – Part 4: Prestressed bearers for switches and crossings*

EN 13481-2, *Railway applications – Track – Performance requirements for fastening systems – Part 2: Fastening systems for concrete sleepers*

3 Terms and definitions

For the purposes of this European standard, the following terms and definitions apply:

3.1

purchaser

body responsible for purchasing the product on the user's behalf

3.2

supplier

body responsible for the use of the EN in response to the purchaser's requirement. The supplier is also responsible for requirements, which apply to the producer or manufacturer

3.3

sleepers

transverse components of the track which control the gauge and transmits loads from the rail to the ballast or other sleeper support

3.4

concrete bearers for switches and crossings

transverse components of switches and crossings which control the relative geometry of two or more stretches of running rails and different pieces of special track work, and transmits loads from the rails to the ballast or other bearer support

3.5

bending moment

moment applied on the concrete sleeper or bearer which produces tension and compression in the element

3.6

positive bending moment

moment which produces tension or reduces compression at the bottom of the concrete sleeper or bearer

3.7

negative bending moment

moment which produces tension or reduces compression at the top of the concrete sleeper or bearer

3.8

rail seat

area on which a running rail rests

3.9

rail seat area

rail seat and the immediate area around the fastening system

3.10

rail seat bending moment

moment under the centre line of the rail

3.11

centre bending moment

moment at the centre part of a monoblock sleeper

3.12

prestressed monoblock sleeper

monoblock sleeper using pre-tensioned or post-tensioned tendons for prestressing the concrete