

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

**BS EN 13230-3:2016**



**BSI Standards Publication**

# **Railway applications — Track — Concrete sleepers and bearers**

Part 3: Twin-block reinforced sleepers

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 13230-3:2016. It supersedes BS EN 13230-3:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RAE/2, Railway Applications - Track.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016. Published by BSI Standards Limited 2016

ISBN 978 0 580 84807 0

ICS 91.100.30; 93.100

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2016.

#### **Amendments issued since publication**

Date	Text affected
------	---------------

---

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

May 2016

ICS 91.100.30; 93.100

Supersedes EN 13230-3:2009

English Version

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

Applications ferroviaires - Voie - Traverses et supports 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 4 March 2016.

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction .....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms, definitions and symbols.....	6
3.1 Terms and definitions .....	6
3.2 Symbols.....	7
4 Product testing.....	8
4.1 Test arrangements.....	8
4.1.1 General.....	8
4.1.2 Rail seat section .....	8
4.2 Test procedures.....	10
4.2.1 Test loads .....	10
4.2.2 Static test.....	10
4.2.3 Dynamic test .....	13
4.3 Acceptance criteria.....	14
4.3.1 General.....	14
4.3.2 Static test.....	14
4.3.3 Dynamic test .....	14
4.3.4 Value of coefficients .....	15
4.4 Design approval tests .....	15
4.4.1 General.....	15
4.4.2 Bending moment evaluation.....	15
4.4.3 Concrete.....	15
4.4.4 Product inspection.....	15
4.4.5 Fastening system.....	15
4.5 Routine tests .....	15
4.5.1 General.....	15
4.5.2 Static rail seat positive load test.....	16
4.5.3 Concrete.....	16
5 Steel connecting bar .....	16
5.1 General.....	16
5.2 Steel.....	16
5.2.1 Chemical composition .....	16
5.2.2 Mechanical properties.....	16
5.3 Geometry.....	17
5.4 Appearance of the steel connecting bar .....	17
6 Design criteria for incorporating the steel connecting bar .....	17
6.1 Length of the connecting bar.....	17
6.2 Orientation of the connecting bar .....	17
6.3 Position of the connecting bar.....	17
7 Manufacturing.....	18
7.1 Manufacturing rules.....	18

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

<b>7.2</b>	<b>Other manufacturing rules.....</b>	<b>18</b>
	<b>Annex A (normative) Details of the test arrangement components.....</b>	<b>19</b>
<b>A.1</b>	<b>Articulated support.....</b>	<b>19</b>
<b>A.2</b>	<b>Resilient pad.....</b>	<b>20</b>
<b>A.3</b>	<b>Tapered packing .....</b>	<b>21</b>
	<b>Annex B (normative) Steel connecting bar defects.....</b>	<b>22</b>
<b>B.1</b>	<b>Superficial burn.....</b>	<b>22</b>
<b>B.2</b>	<b>Tear at the end.....</b>	<b>23</b>
<b>B.3</b>	<b>Cut that is not sharp.....</b>	<b>23</b>
<b>B.4</b>	<b>Surface defect.....</b>	<b>24</b>
<b>B.5</b>	<b>Splitting .....</b>	<b>24</b>
<b>B.6</b>	<b>Deformation of extremities.....</b>	<b>25</b>
<b>B.7</b>	<b>Surface scaling .....</b>	<b>25</b>
	<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC.....</b>	<b>26</b>
	<b>Bibliography .....</b>	<b>28</b>

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

## European foreword

This document (EN 13230-3:2016) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

This document supersedes EN 13230-3:2009.

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 November 2016, and conflicting national standards shall be withdrawn at the latest by November 2016.

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 EU Directive 2008/57/EC.

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

This European Standard is one of the EN 13230 series "*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
- Part 6: Design

There is a change in the wording of the documents of EN 13230 (series) "design bending moment" is replaced by "characteristic bending moment" and "test bending moment".

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.

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

## **Introduction**

This part of the EN 13230 series defines the specific requirements dedicated to twin-block reinforced sleepers.

These are additional requirements to EN 13230-1:2016 that 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.

This is a preview of "BS EN 13230-3:2016". [Click here to purchase the full version from the ANSI store.](#)

## 1 Scope

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

## 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, *Concrete - Specification, performance, production and conformity*

EN 13230-1:2016, *Railway applications – Track – Concrete sleepers and bearers – Part 1: General requirements*

prEN 13230-6:2015, *Railway applications – Track – Concrete sleepers and bearers – Part 6: Design*

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

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

## 3 Terms, definitions and symbols

### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13230-1:2016 and the following apply.

#### 3.1.1

##### **steel connecting bar**

steel profile which connects reinforced concrete blocks