



SLOVENSKI STANDARD
SIST EN 13230-3:2004

01-marec-2004

**Železniške naprave – Zgornji ustroj – Betonski pragi in kretniški betonski pragi – 3.
del: Dvodelni armiranobetonski pragi**

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

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

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

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ICS:

45.080	Tračnice in železniški deli	Rails and railway components
91.100.30	Beton in betonski izdelki	Concrete and concrete products

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EUROPEAN STANDARD
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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 9 October 2002.

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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 Management Centre has the same status as the official versions.

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

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Contents

Page

Foreword.....	4
Introduction.....	5
1 Scope.....	5
2 Normative references.....	5
3 Definitions.....	5
4 Product testing.....	5
4.1 Test arrangements.....	5
4.1.1 Symbols.....	6
4.1.2 Rail seat section.....	7
4.2 Test procedures.....	9
4.2.1 Test loads.....	9
4.2.2 Static test.....	10
4.2.3 Dynamic test.....	13
4.3 Acceptance criteria.....	15
4.3.1 Static test.....	15
4.3.2 Dynamic test.....	15
4.3.3 Value of coefficients.....	15
4.4 Design approval tests.....	15
4.4.1 Bending moment evaluation.....	15
4.4.2 Concrete.....	16
4.4.3 Product inspection.....	16
4.4.4 Fastening system.....	16
4.5 Routine tests.....	16
4.5.1 Static rail seat positive load test.....	16
4.5.2 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.....	17
5.3 Geometry.....	17
5.4 Appearance of the steel connecting bar.....	17
6 Design criteria for incorporating the steel connecting bar.....	18
6.1 Length of the connecting bar.....	18
6.2 Orientation of the connecting bar.....	18
6.3 Position of the connecting bar.....	18
7 Manufacturing.....	18
7.1 Manufacturing rules.....	18
7.2 Other manufacturing rules.....	19
Annex A (normative) Steel connecting bar defects.....	20
A.1 Surface burn.....	20
A.2 Tear at the end.....	21
A.3 Unclean cut.....	21
A.4 Seam.....	22
A.5 Split.....	23
A.6 Deformation of ends.....	23
A.7 Scale.....	24

Annex B (normative) Details of the test arrangement components.....	25
B.1 Articulated support.....	25
B.2 Resilient pad.....	26
B.3 Tapered packing.....	27
Bibliography.....	28

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[SIST EN 13230-3:2004](https://standards.iteh.ai/catalog/standards/sist/2112dc13-2775-4073-9e4d-f8bb327e412b/sist-en-13230-3-2004)

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EN 13230-3:2002 (E)**Foreword**

This document EN 13230-3:2002 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 June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

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 monobloc sleepers*;
- Part 3: *Twin-block reinforced sleepers*;
- Part 4: *Prestressed bearers for switches and crossings*;
- Part 5: *Special elements*.

Annexes A and B are normative.

This document contains bibliographical references.

No other European Standard is superseded or replaced by this European Standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This part of this European Standard defines the specific requirements relating to twin-block reinforced sleepers.

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

1 Scope

This part of this European Standard defines technical criteria and control procedures relating to the design and manufacture of twin-block reinforced concrete sleepers.

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 (including amendments).

EN 206-1, *Concrete – Part 1: Performance, production and conformity.*

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

EN 13230-1:2002, *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 Definitions

For the purpose of this standard, the following definitions apply.

steel connecting bar

steel profile which connects two reinforced concrete blocks.

4 Product testing

4.1 Test arrangements

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

EN 13230-3:2002 (E)**4.1.1 Symbols**

The following symbols are used:

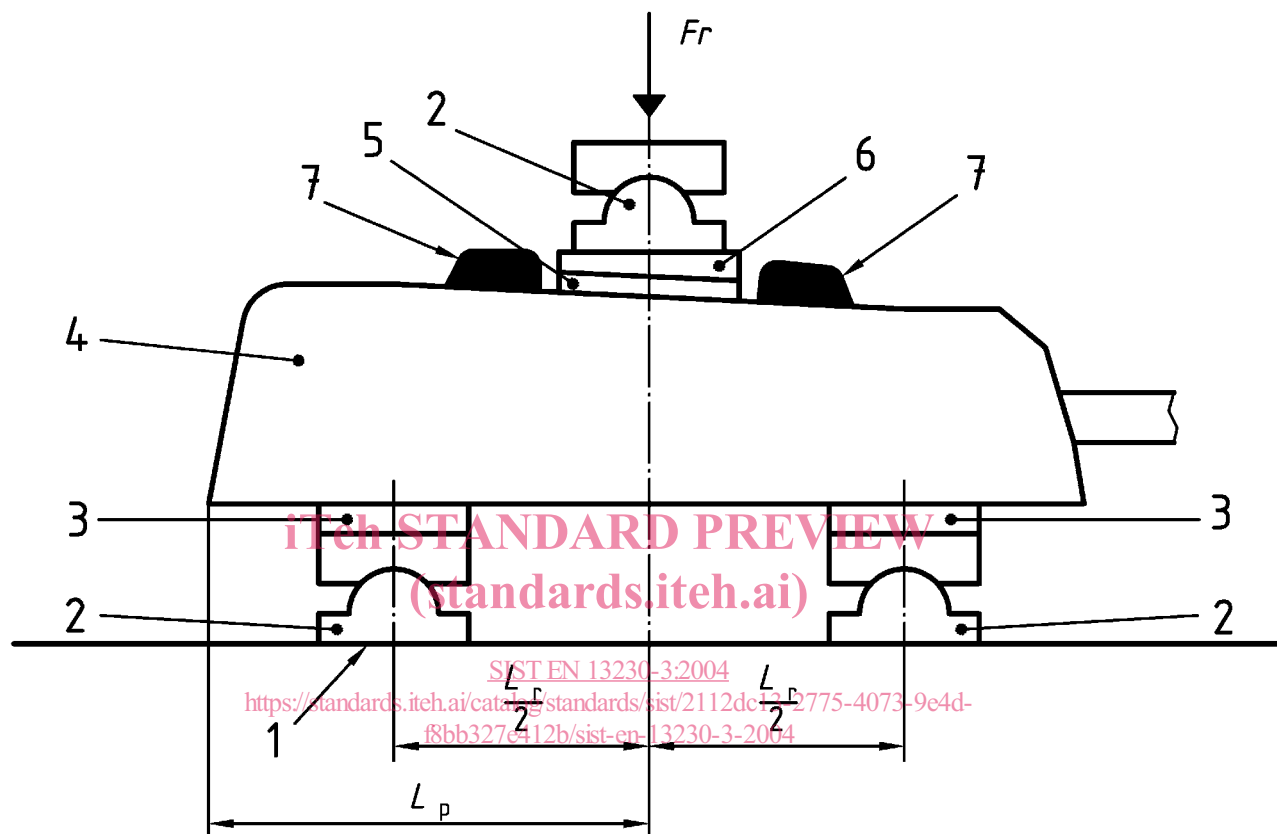
F_{r0}	initial reference test load for the rail seat section, in kN ;
F_{r0n}	negative initial reference test load at rail seat section, in kN; $F_{r0n} = \frac{1}{2} F_{r0}$;
F_{r1}	test load which produces first crack formation at the bottom of the rail seat section, in kN ;
F_{r1n}	negative test load which produces first crack formation at the top of rail seat, in kN ;
$F_{r0,05}$	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 ;
$F_{r0,05n}$	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 ;
$F_{r0,5}$	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 ;
F_{rB}	test load at the rail seat section which cannot be increased, in kN ;
F_{rBn}	test load on the top of rail seat section which cannot be increased, in kN ;
F_{ru}	lower test load for the rail seat section dynamic test $F_{ru} = 50$ kN;
L_p	design distance between the centre line of the rail seat to the edge of the sleeper at the bottom SIST EN 13230-3:2004
L_r	design distance between the articulated support centre lines for the test arrangement at the rail seat section. https://standards.iteh.ai/catalog/standards/sist/2112dc13-2775-4073-9e4d-311111111111/sist-en-13230-3-2004

4.1.2 Rail seat section

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

The position of the articulated support (L_r) is defined in Table 1.

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



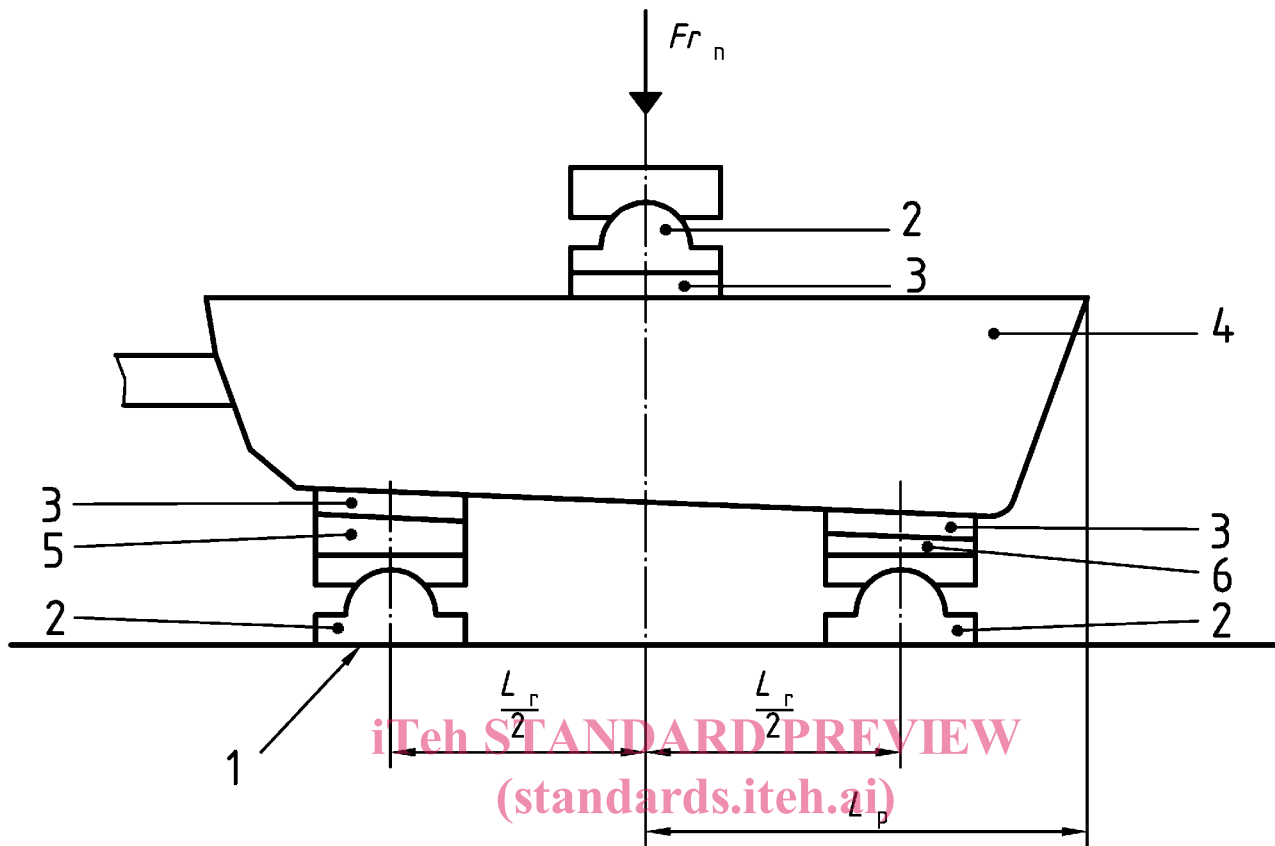
Key

- 1 Rigid support
- 2 Articulated support (see annex B for details)
- 3 Resilient pad (see annex B for details)
- 4 Reinforced concrete block
- 5 Standard rail pad as defined by the purchaser
- 6 Tapered packing (see annex B for details)
- 7 Lateral stop

Figure 1 — Test arrangement at the rail seat section (positive bending moment)

EN 13230-3:2002 (E)

The test arrangement for the rail seat negative load test is shown in figure 2.



Key

- 1 Rigid support
- 2 Articulated support (see annex B for details)
- 3 Resilient pad (see annex B for details)
- 4 Reinforced concrete block
- 5 Special tapered packing
- 6 Special tapered packing

SIST EN 13230-3:2004

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Figure 2 — Test arrangement at the rail seat section (negative bending moment)

Table 1 — Value of L_r in relation to L_p

L_p in m	L_r in m
$L_p < 0,349$	0,3
$0,350 \leq L_p < 0,399$	0,4
$0,400 \leq L_p < 0,449$	0,5
$L_p \geq 0,450$	0,6

4.2 Test procedures

4.2.1 Test loads

Fr_0 is calculated from the geometry given in Figure 1 and values from Table 2, using the following equation:.

$$Fr_0 = \frac{4Mdr}{L_r - 0,1} \text{ in kN.}$$

Table 2 — Value of Fr_0 in relation to L_r

L_r in m	0,4	0,5	0,6
Fr_0 in kN	13 <i>Mdr</i>	10 <i>Mdr</i>	8 <i>Mdr</i>

For the definition of *Mdr*, see EN 13230-1:2002 - Clause 3.

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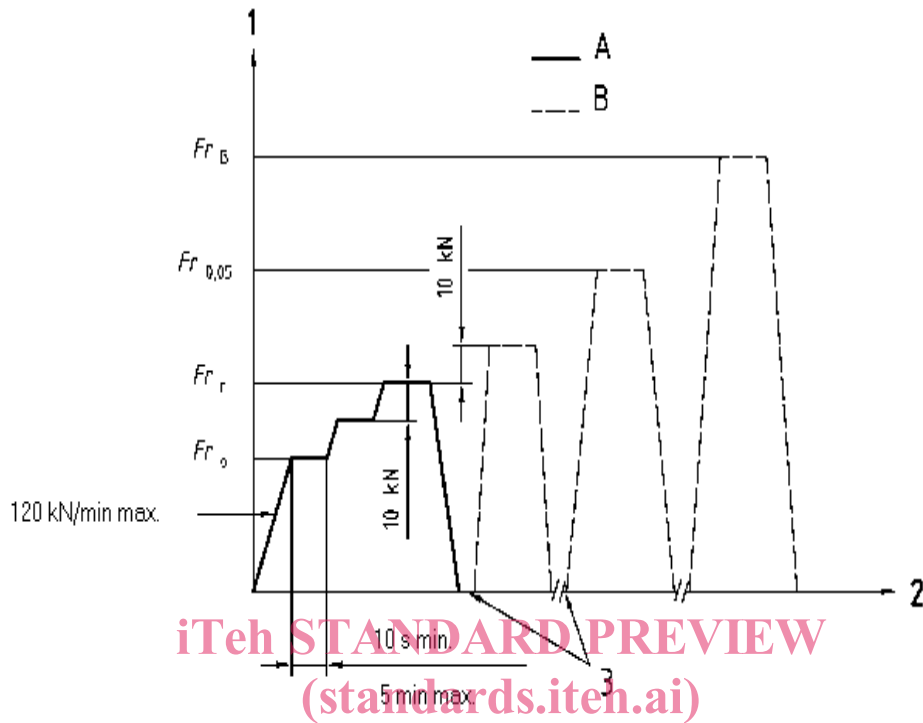
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EN 13230-3:2002 (E)

4.2.2 Static test

The static test procedure at the rail seat section for design approval and routine tests is shown in Figures 3.1, 3.2 and 4.



Key

- 1 Load
- 2 Time
- 3 Crack checking
- A Required part of test
- B Optional part of test

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Figure 3.1 — Static test procedure at the rail seat section for positive design approval test