



SLOVENSKI STANDARD
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Železniške naprave - Infrastruktura - Plastični pragi in kretniški plastični pragi - 2.
del: Preskušanje izdelka

Railway applications - Infrastructure - Plastic sleepers and bearers - Part 2: Product testing

Bahnanwendungen - Infrastruktur - Gleis- und Weichenschwellen aus Kunststoff - Teil 2: Produktprüfung

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Applications ferroviaires - Infrastructure - Traverses et supports en plastique - Partie 2 : Essais sur produits

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Ta slovenski standard je istoveten z: prEN 17318-2

ICS:

45.080 Tračnice in železniški deli Rails and railway components

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EUROPEAN STANDARD
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Railway applications - Infrastructure - Plastic sleepers and bearers - Part 2: Product testing

Applications ferroviaires - Infrastructure - Traverses et supports en plastique - Partie 2 : Essais sur produits

Bahnanwendungen - Infrastruktur - Gleis- und Weichenschwellen aus Kunststoff - Teil 2: Produktprüfung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prEN 17318-2:2018 (E)

European foreword

This document (prEN 17318-2:2018) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This European Standard is one of the series EN 17318 “*Railway applications – Infrastructure – Plastic sleepers and bearers*”, which consist of the following parts:

- *Part 1: General requirements;*
- *Part 2: Product testing;*
- Part 3: Material characteristics.

This European Standard is used as the technical basis for transaction between corresponding parties (purchaser – supplier).

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(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

This part of the standard defines the test methods for design approval testing for plastic sleepers and bearers and is used in conjunction with the following parts:

- Part 1: General requirements;
- Part 3: Material characteristics.

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prEN 17318-2:2018 (E)**1 Scope**

This document specifies the test methods applicable to plastic sleepers and bearers with their rail fastening system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13146-5, *Railway applications - Track - Test methods for fastening systems - Part 5: Determination of electrical resistance*

EN 13146-10, *Railway applications - Track - Test methods for fastening systems - Part 10: Proof load test for pull-out resistance*

EN 13230-2:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 2: Prestressed monoblock sleepers*

EN 13230-4:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 4: Prestressed bearers for switches and crossings*

EN 13481-3, *Railway applications - Track - Performance requirements for fastening systems - Part 3: Fastening systems for wood sleepers*

EN 13481-5, *Railway applications - Track - Performance requirements for fastening systems - Part 5: Fastening systems for slab track*

EN 13481-7, *Railway applications - Track - Performance requirements for fastening systems - Part 7: Special fastening systems for switches and crossings and check rails*

EN 16730:2016, *Railway applications - Track - Concrete sleepers and bearers with under sleeper pads*

prEN 17318-1:2018, *Railway applications - Infrastructure - Plastic sleepers and bearers - Part 1: General requirements*

EN ISO 7500-1:2018, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1:2018)*

EN ISO 9513:2012, *Metallic materials - Calibration of extensometer systems used in uniaxial testing (ISO 9513:2012)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 17318-1:2018 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Product characteristics

4.1 General

This clause defines the testing regime and rules for the acceptance of plastic sleepers and bearers.

The bending tests are defined for ballasted track. For ballastless steel bridge, the test arrangement shall be reviewed in order to adapt to the real configuration of the bridge.

4.2 Bending resistance

4.2.1 Test arrangements

4.2.1.1 Rail seat section for the positive load test

The arrangement for the rail seat positive load test is shown in Figure 1, the value of L_r in relation to L_p is detailed in Table 2.

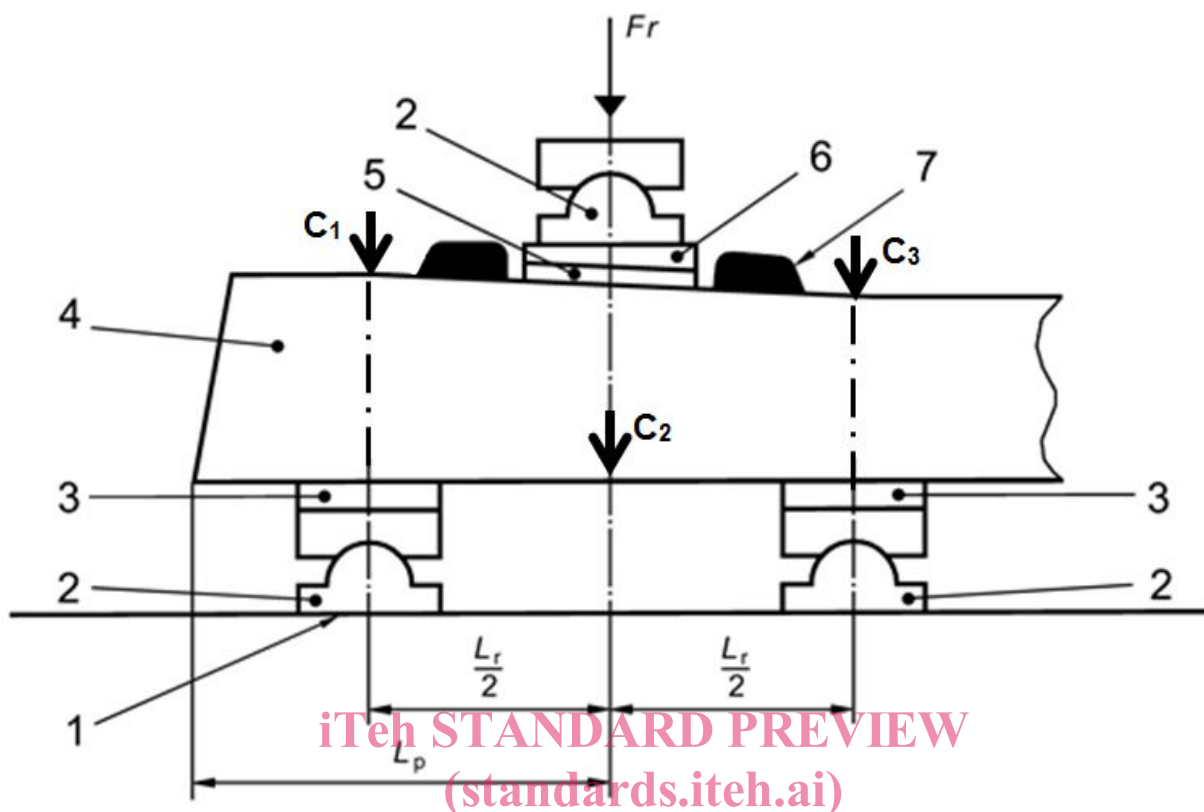
The load Fr is applied perpendicularly to the base of the sleeper.

The end of the sleeper opposite to the end being tested shall not be fixed.

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**Key**

- 1 rigid support <https://standards.iteh.ai/catalog/standards/sist/5746ad44-d3ee-4055-98ed-66c753d1ef93/osist-pren-17318-2-2019>
- 2 articulated support (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 3 resilient pad (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 4 plastic sleeper
- 5 standard rail pad as defined by the purchaser
- 6 tapered packing (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 7 lateral stop and base plate (if the fastening system consists of a baseplate)
- C₁, C₂ and C₃ locations of the vertical displacement measurement on the axis of the articulated support

Figure 1 — Test arrangement at the rail seat section for the positive load test

The deformation “d” measured during the tests on the rail seat is calculated with the Formula (1):

$$d = C_2 - \frac{C_1 + C_3}{2} \quad (1)$$

Table 1 — Value of L_r in relation to L_p

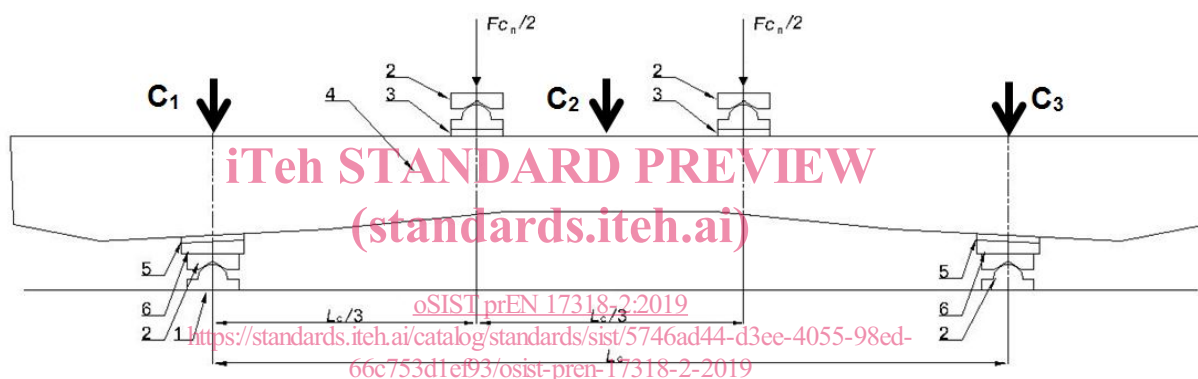
L_p in m	L_r in m
$L_p < 0,349$	0,3
$0,350 \leq L_p < 0,399$	0,4
$0,400 \leq L_p < 0,449$	0,5
$L_p \geq 0,450$	0,6

The displacement measuring instruments shall be capable of measuring the displacement within $\pm 0,02$ mm.

The force measuring instrument shall comply with EN ISO 7500-1:2018, class 2 over the required range of force.

4.2.1.2 Centre section for the negative load test

The arrangement for the negative centre load test is shown in Figure 2.



Key

- 1 rigid support
- 2 articulated support (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 3 resilient pad (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 4 plastic monoblock sleeper
- 5 standard rail pad (with baseplate if the fastening system consists of a baseplate)
- 6 tapered packing (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- C₁, C₂ and C₃ locations of the vertical displacement measurement on the axis of the articulated support of the rail seats and the centre of the sleeper

Figure 2 — Test arrangement at the centre section for the negative load test

The deformation “d” measured during the tests on the centre section for the negative load is calculated using Formula (1).

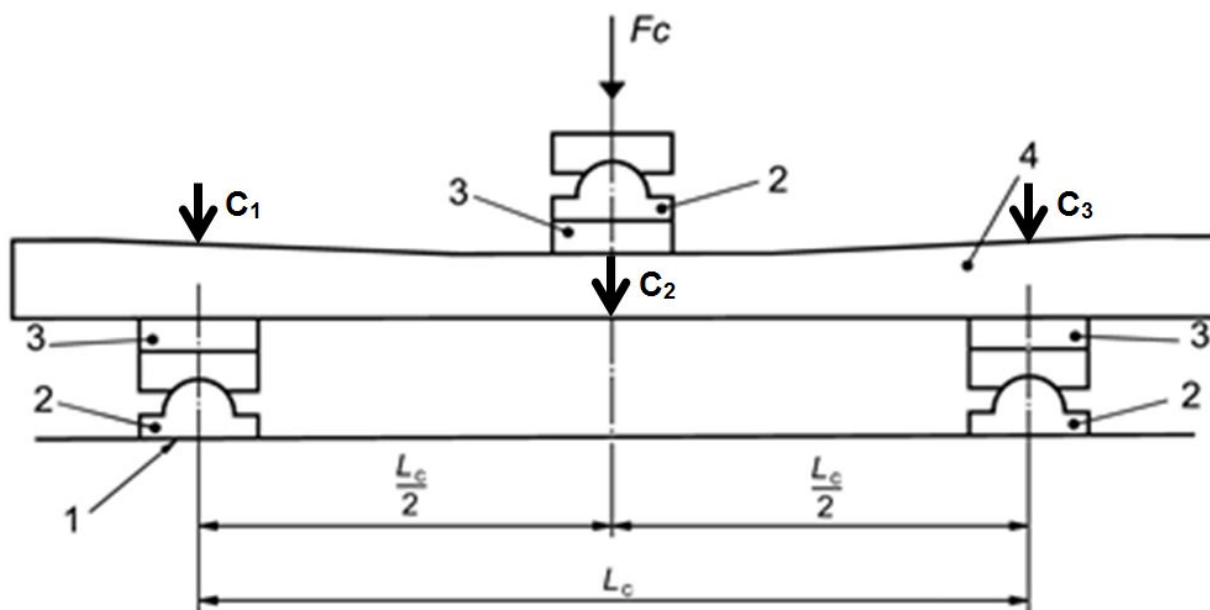
The displacement measuring instruments shall be capable of measuring the displacement within $\pm 0,02$ mm.

The force measuring instrument shall comply with EN ISO 7500-1:2018, class 2 over the required range of force.

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4.2.1.3 Centre section for the positive load test

The test arrangement for the positive centre load test is shown in Figure 3.



Key

- 1 rigid support
- 2 articulated support (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 3 resilient pad (see Annex A for the details of EN 13230-2 for sleepers or EN 13230-4 for bearers)
- 4 plastic monoblock sleeper
- C₁, C₂ and C₃ locations of the vertical displacement measurement on the axis of the articulated support of the rail seats and the centre of the sleeper

Figure 3 — Test arrangement at the centre section for the positive load test

The deformation “d” measured during the tests on the centre section for the negative load is calculated using Formula (1).

The displacement measuring instruments shall be capable of measuring the displacement within $\pm 0,02$ mm.

The force measuring instrument shall comply with EN ISO 7500-1:2018, class 2 over the required range of force.

4.2.2 Initial reference test loads

Fr_0 is calculated from the geometry given in Figure 4 and values from Table 3 using Formula (2):

$$Fr_0 = \frac{4 M_{k,r,pos}}{L_r - 0,1} \text{ in kN} \quad (2)$$