

STN	Železnice Koľaj Požiadavky na vlastnosti systémov upevnenia Časť 7: Systémy upevnenia výhybiek, križovatiek, pridržníc, izolačných spojov koľajníc a dilatačných zariadení koľajníc	STN EN 13481-7 73 6370
------------	--	--

Railway applications - Track - Performance requirements for fastening systems - Part 7: Fastening systems for switches and crossings, check rails, insulated rail joints and rail expansion devices

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/22

Obsahuje: EN 13481-7:2022

Oznámením tejto normy sa ruší
STN EN 13481-7 (73 6370) z novembra 2012

135632

EUROPEAN STANDARD

EN 13481-7

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2022

ICS 93.100

Supersedes EN 13481-7:2012

English Version

Railway applications - Track - Performance requirements for fastening systems - Part 7: Fastening systems for switches and crossings, check rails, insulated rail joints and rail expansion devices

Applications ferroviaires - Voie - Exigences de
performance pour les systèmes de fixation - Partie 7 :
Systèmes de fixation pour appareils de voie, contre-
rails, dispositifs de dilatation des rails et joints isolés

Bahnwendungen - Oberbau -
Leistungsanforderungen für Befestigungssysteme - Teil
7: Spezielle Befestigungssysteme für Weichen und
Kreuzungen und Radlenker

This European Standard was approved by CEN on 8 May 2022.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

EN 13481-7:2022 (E)

Contents	Page
European foreword.....	4
Introduction	4
1 Scope	7
2 Normative references.....	7
3 Terms and definitions	8
4 Symbols.....	10
5 Requirements to be determined by laboratory testing	10
5.1 Special fastenings for slide baseplates.....	10
5.1.1 General.....	10
5.1.2 Specimens for laboratory testing	10
5.1.3 Longitudinal rail restraint.....	10
5.1.4 Clamping force	11
5.1.5 Assembly and pad stiffness.....	11
5.1.6 Effect of repeated loading	11
5.1.7 Electrical resistance of fastening system and bearer	12
5.1.8 Effect of exposure to severe environmental conditions	13
5.1.9 Cast-in and glued-in fastening components	13
5.2 Check rail supports.....	13
5.2.1 General.....	13
5.2.2 Specimens for laboratory testing	13
5.2.3 Longitudinal rail restraint.....	14
5.2.4 Clamping force	14
5.2.5 Assembly and pad stiffness.....	14
5.2.6 Effect of repeated loading	14
5.2.7 Electrical resistance of fastening system and bearer	16
5.2.8 Effect of exposure to severe environmental conditions	16
5.2.9 Cast-in and glued-in fastening components	16
6 Laboratory testing for related applications	17
7 Other requirements	17
7.1 Effect of fastening system tolerances on track gauge	17
7.2 In-service testing.....	17
7.3 Attenuation of noise and vibration.....	18
8 Fitness for purpose.....	18
9 Marking, labelling and packaging	18
Annex A (informative) Summary of requirements	19
Annex B (informative) Assessment by calculation or supplementary testing.....	20
B.1 General.....	20
B.2 Identification of a Reference Configuration	20
B.3 Modified fastening systems	20
B.4 Special loading cases.....	21
Annex C (informative) Fastenings for related applications.....	23

C.1	Fastenings for closure rails	23
C.2	Fastenings in the crossing panel and at switch heels	23
C.3	Fastening systems for rail expansion devices and insulated rail joints	24
	Bibliography	25

EN 13481-7:2022 (E)

European foreword

This document (EN 13481-7:2022) 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 January 2023, and conflicting national standards shall be withdrawn at the latest by January 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13481-7:2012.

The main changes compared to the previous edition are as follows:

- a) addition of requirements for fastenings for insulated joints and rail expansion devices;
- b) clarification that the full range of tests does not have to be carried out on every configuration of fastening within S&C;
- c) inclusion of details of in-service testing, replacing the reference to EN 13146-8, which is to be withdrawn;
- d) removal of Annex ZA.

This European Standard is one of the series EN 13481 “Railway applications — Track — Performance requirements for fastening systems”, which consists of the following parts:

- *Part 1: Definitions*
- *Part 2: Fastening systems for concrete sleepers in ballast*
- *Part 3: Fastening systems for wood and polymeric composite sleepers*
- *Part 4: Fastening systems for steel sleepers*
- *Part 5: Fastening systems for ballastless tracks*
- *Part 7: Fastening systems for switches and crossings, check rails, insulated rail joints and rail expansion devices*

NOTE Part 6 does not exist in this series.

These European Standards are supported by the test methods in the series EN 13146 “Railway applications — Track — Test methods for fastening systems”.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 13481-7:2022 (E)**Introduction**

A series of tests is used to assess the suitability of fastening systems for use in railway track, i.e. for type approval of complete fastening systems. This document only sets requirements considered relevant to ensure the safe, long-term operation of the track system. The test methods are described in other associated standards.

The various Categories of rail fastenings used in this document are defined in EN 13481-1:2012.

Annex A of this document lists the different locations in S&C and plain line which are addressed, together with cross-references to the relevant clauses and annexes for each case.

1 Scope

This document is applicable to fastening systems in Categories A – E as specified in EN 13481-1:2012, 3.1 for use in switches and crossings (S&C). It also provides guidance on evaluating fastening systems for check rails, expansion devices and insulated rail joints whether in switches and crossings or in plain line. The document applies to five categories of fastenings used in tracks with respective maximum axle loads and minimum curve radii as shown in Table 1.

Table 1 — Fastening category criteria

Category	Maximum design axle load kN	Minimum curve radius (plain line) m
A	130	40
B	180	80
C	260	150
D	260	400
E	350	150

NOTE 1 The maximum axle load for Categories A and B does not apply to maintenance vehicles.
NOTE 2 The minimum curve radius is not applicable to applications in switches and crossings.

The requirements apply to fastening systems for rail sections included in the EN 13674 series of standards (excluding 49E4).

This document is not applicable to fastening systems for other rail sections or rigid fastening systems used on running rails.

This document is for type approval of complete fastening systems.

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 13146-1:2019, *Railway applications — Track — Test methods for fastening systems — Part 1: Determination of longitudinal rail restraint*

EN 13146-4:2020, *Railway applications — Track — Test methods for fastening systems — Part 4: Effect of repeated loading*

EN 13146-5:2012¹, *Railway applications — Track — Test methods for fastening systems — Part 5: Determination of electrical resistance*

EN 13146-6:2012, *Railway applications — Track — Test methods for fastening systems — Part 6: Effect of severe environmental conditions*

EN 13146-7:2019, *Railway applications — Track — Test methods for fastening systems — Part 7: Determination of clamping force and uplift stiffness*

¹ As impacted by EN 13146-5:2012/AC:2017.

EN 13481-7:2022 (E)

EN 13146-9:2020, *Railway applications — Track — Test methods for fastening systems — Part 9: Determination of stiffness*

EN 13146-10:2017, *Railway applications — Track — Test methods for fastening systems — Part 10: Proof load test for pull-out resistance*

EN 13232-1:—², *Railway applications — Track — Switches and crossings for Vignole rails — Part 1: Definitions*

EN 13481-1:2012, *Railway applications — Track — Performance requirements for fastening systems — Part 1: Definitions*

EN 13481-2:2022, *Railway applications — Track — Performance requirements for fastening systems — Part 2: Fastening systems for concrete sleepers in ballast*

EN 13481-3:2022, *Railway applications — Track — Performance requirements for fastening systems — Part 3: Fastening systems for wood and polymeric composite sleepers*

EN 13481-4:2022, *Railway applications — Track — Performance requirements for fastening systems — Part 4: Fastening systems for steel sleepers*

EN 13481-5:2022, *Railway applications — Track — Performance requirements for fastening systems — Part 5: Fastening systems for ballastless tracks*

EN 13674-1:2011+A1:2017, *Railway applications — Track — Rail — Part 1: Vignole railway rails 46 kg/m and above*

EN 13674-4:2019, *Railway applications — Track — Rail — Part 4: Vignole railway rails from 27 kg/m to, but excluding 46 kg/m*

EN 17343:2020, *Railway applications — General terms and definitions*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

² Under preparation. Stage at the time of publication: FprEN 13232-1:2022.