Irish Standard
I.S. EN 13146-7:2019

Railway applications - Track - Test methods for fastening systems - Part 7: Determination of clamping force and uplift stiffness

I.S. EN 13146-7:2019

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN 13146-7:2019 is the adopted Irish version of the European Document EN 13146-7:2019, Railway applications - Track - Test methods for fastening systems - Part 7: Determination of clamping force and uplift stiffness

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Railway applications - Track - Test methods for fastening systems - Part 7: Determination of clamping force and uplift stiffness

Applications ferroviaires - Voie - Méthodes d'essai pour les systèmes de fixation - Partie 7 : Détermination de l'effort d'application au patin et de la raideur de soulèvement

Bahnanwendungen - Oberbau - Prüfverfahren für Schienenbefestigungssysteme - Teil 7: Bestimmung der Spannkraft und Abhebesteifigkeit

This European Standard was approved by CEN on 19 November 2018.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 13146-7:2019) 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of an identical text or by endorsement, at the latest by July 2019, and conflicting national standards shall be withdrawn at the latest by July 2019.

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 13146-7:2012.

Compared with EN 13146-7:2012, the following changes have been made:

a) update of the European foreword;

b) adaptation of normative references;

c) revised Clause 7 and added adjustments to the loading for systems with or without interlayers / intermediate plates;

d) editorially revised.

This European Standard is one of the series EN 13146 “Railway applications – Track – Test methods for fastening systems” which consists of the following parts:

— *Part 1: Determination of longitudinal rail restraint;*

— *Part 2: Determination of torsional resistance;*

— *Part 3: Determination of attenuation of impact loads;*

— *Part 4: Effect of repeated loading;*

— *Part 5: Determination of electrical resistance;*

— *Part 6: Effect of severe environmental conditions;*

— *Part 7: Determination of clamping force and uplift stiffness;*

— *Part 8: In service testing;*

— *Part 9: Determination of stiffness;*

— *Part 10: Proof load test for pull-out resistance.*

These support the requirements in the series EN 13481 “Railway applications – Track – Performance requirements for fastening systems”.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the laboratory test procedure for determining the clamping force exerted by the fastening system on the foot of the rail by measuring the force to separate the rail foot from its immediate support. When required, the procedure is also used to determine the uplift stiffness of the fastening system. It is applicable to systems with and without baseplates on all types of sleepers, bearers or elements of slab track. The test does not determine the security of the fastening components fixed into the sleeper or other fastening system support.

This test procedure applies to a complete fastening assembly. It is not applicable to fastening systems for embedded rail or other fastening systems that do not act on the foot of the rail.

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

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

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13481-1:2012 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

3.2 Symbols

For the purposes of this document, the following symbols apply.

d for direct fastening systems – vertical displacement of the rail relative to the sleeper, in mm; for indirect fastening systems – vertical displacement of the rail relative to the baseplate, in mm;

m_s mass of sleeper or part sleeper and fastening components fixed to it, used in the test, in kg;

m_f mass of loading frame supported by the sleeper, in kg;

P vertical load applied to the rail, in kN;

P_c initial estimate of clamping force, in kN;

P_0 vertical load at zero rail displacement which just counteracts the clamping force, in kN.