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NSAI Standards

Irish Standard
I.S. EN 13146-1:2012+A1:2014

Railway applications - Track - Test methods for fastening systems - Part 1: Determination of longitudinal rail restraint

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English Version

Railway applications - Track - Test methods for fastening systems - Part 1: Determination of longitudinal rail restraint

Applications ferroviaires - Voie - Méthodes d'essai pour les systèmes de fixation - Partie 1: Détermination de la résistance longitudinale au glissement

Bahnanwendungen - Oberbau - Prüfverfahren für Schienenbefestigungssysteme - Teil 1: Ermittlung des Durchschubwiderstandes in Längsrichtung

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Foreword

This document (EN 13146-1:2012+A1:2014) 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of an identical text or by endorsement, at the latest by May 2015, and conflicting national standards shall be withdrawn at the latest by May 2015.

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

This document supersedes ▌A1⟩ EN 13146-1:2012 ⟨A1▌.

This document includes Amendment 1 approved by CEN on 2014-09-25.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

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

In this European Standard, the test procedure has been adapted to be applicable to embedded rail as well as surface mounted rail. For embedded rail with an adhesive fastening system the test result is expressed as longitudinal stiffness.

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;*

— *Part 8: In service testing;*

— *Part 9: Determination of stiffness.*

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 organizations 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,

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Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

For fastening systems that clamp the rail at discrete intervals the test procedure measures the longitudinal rail restraint. For an embedded rail with an adhesive fastening system the test procedure measures the longitudinal stiffness.

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1 Scope

This European Standard specifies a laboratory test procedure to determine:

a) the maximum longitudinal force that can be applied to a rail, secured to a sleeper, bearer or element of slab track by a rail fastening assembly, without non-elastic displacement of the rail occurring, or

b) the longitudinal stiffness at a specified longitudinal displacement of a specimen of embedded rail with an adhesive fastening system.

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

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

EN ISO 7500-1:2004, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1:2004)*

EN ISO 9513:2002, *Metallic materials — Calibration of extensometers used in uniaxial testing (ISO 9513:1999)*

3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

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

3.2 Symbols and abbreviations

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

D_1 maximum longitudinal displacement of rail during each cycle of loading, in mm;

D_2 residual longitudinal displacement of rail after removal of load, in mm;

D_3 elastic longitudinal displacement of rail prior to slip, in mm;

D_r maximum longitudinal displacement of embedded rail with adhesive fastening system, in mm;

F maximum axial load on the rail without non-elastic displacement occurring, in kN;

F_{max} axial load at which gross slip occurs, in kN;

k_L longitudinal stiffness of embedded rail with adhesive fastening system, in kN/mm per m;

L_T sample length of embedded rail, in m.

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