



BSI Standards Publication

Railway applications – Track – Test methods for fastening systems

Part 5: Determination of electrical resistance

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National foreword

This British Standard is the UK implementation of EN 13146-5:2012, incorporating corrigendum May 2017.

The UK participation in its preparation was entrusted to Technical Committee RAE/2, Railway Applications - Track.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
31 October 2017	Incorporating CEN corrigendum May 2017: Sub-clause 5.6 added and corrections made to the first paragraph of Clause 7 and Key 4 to Figure 1.

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EUROPÄISCHE NORM

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Bahnanwendungen - Oberbau - Prüfverfahren für Schienenbefestigungssysteme - Teil 5: Bestimmung des elektrischen Widerstands

This European Standard was approved by CEN on 26 November 2011.

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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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This document consolidates EN 13146-5:2012 and the corrigendum EN 13146-5:2012 /AC:2017.



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

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Foreword

This document (EN 13146-5:2012) 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of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

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 EN 13146-5:2002.

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

The main changes in this revision are as follows:

- a) reference and alternative methods are now included;
- b) the conductivity of the water used in the test is limited;
- c) conditioning of the test specimens;
- d) the correction factor for water conductivity is deleted.

In consequence of these changes, the measured resistance may be significantly different from that obtained by the previous method.

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.*

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These support the requirements in the series EN 13481 *Railway applications — Track — Performance requirements for fastening systems*".

This document includes the corrigendum EN 13146-5:2012/AC:2017 which adds a new sub-clause 5.6 and corrects the first paragraph of Clause 7 and Key 4 to Figure 1.

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

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1 Scope

This European Standard specifies a laboratory test procedure for determining the electrical resistance, in wet conditions, between the running rails provided by a fastening system fitted to a steel or concrete sleeper, bearer or element of slab track.

It is also applicable to embedded rail.

This test procedure applies to a complete fastening assembly. It is relevant to signalling currents, not to traction currents.

A reference procedure and an alternative procedure are included.

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 27888, *Water quality — Determination of electrical conductivity (ISO 7888)*

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

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.

R_{γ}	measured resistance for each test, in Ω ;
R	arithmetic mean of test results, in Ω ;
γ	conductivity of water used, in mS/m.

4 Principle

The electrical resistance between two short lengths of rail fastened to the support is measured whilst the whole support and fastenings are sprayed with water at a controlled rate.

5 Apparatus

5.1 Rail

For surface mounted rail systems, two short lengths (approximately 0,5 m) of the section for which the fastening assembly under test is designed. For embedded rail systems the rail is