



NSAI
Standards

Irish Standard
I.S. EN 16431:2014

Railway applications - Track - Hollow sleepers and bearers

I.S. EN 16431:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 16431:2014

Published:

2014-07-16

This document was published under the authority of the NSAI and comes into effect on:

2014-08-02

ICS number:

93.100

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

EN 16431

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2014

ICS 93.100

English Version

Railway applications - Track - Hollow sleepers and bearers

Applications ferroviaires - Voie - Traverses et supports
creux

Bahnanwendungen - Oberbau - Hohlschwellen für Gleise
und Weichen

This European Standard was approved by CEN on 30 April 2014.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, 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: Avenue Marnix 17, B-1000 Brussels

Contents	Page
Foreword.....	4
1 Scope	5
2 Normative references	5
3 Terms, definitions and abbreviations.....	5
3.1 Terms and definitions	5
3.2 Abbreviations	6
4 Requirements	6
4.1 General.....	6
4.2 General requirements.....	7
4.3 Functional requirements.....	7
4.4 Design requirements	8
4.5 Materials	8
4.6 Environmental requirements	9
4.6.1 Environmental test standards	9
4.6.2 Hot and cold temperature	9
4.6.3 Flammability	9
4.6.4 Effect of exposure to severe environmental conditions (optional)	9
4.7 Requirements for interfaces with mechanical equipments in case of integrated system (optional).....	9
5 Test methods.....	9
5.1 General.....	9
5.2 Tests for fastening system and interface.....	9
5.2.1 Effect of repeated loading.....	9
5.2.2 Fixation of the fastening system on body.....	10
5.2.3 Attenuation of impact loads (Optional test)	10
5.2.4 Pad and assembly stiffness (Optional test)	10
5.3 Bending test for the body	10
5.4 Electrical resistance	11
5.5 Field test	11
6 Acceptance criteria for homologation	11
6.1 Fastening system and interface acceptance criteria	11
6.1.1 Effect of repeated loading.....	11
6.1.2 Fixation of the fastening system on body (optional test)	11
6.1.3 Attenuation of impact loads (optional test)	12
6.1.4 Pad and assembly stiffness (optional test)	12
6.2 Body acceptance criteria	12
6.2.1 Bending test acceptance criteria	12
6.2.2 Other acceptance criteria checked by FEM calculation	12
6.3 Electrical acceptance criteria	12
6.4 Field test acceptance criteria	13
7 Tests and tolerance for quality control	13
7.1 Dimension tolerances	13
7.2 Electrical resistance	13
8 Quality.....	14
8.1 General.....	14
8.2 Quality control during homologation tests	14

8.3	Quality control during manufacturing (Routine tests)	14
9	Traceability.....	15
Annex A (normative) Effect on repeated loading on fastening system and interface		16
A.1	General	16
A.2	Symbols.....	16
A.3	Principle	17
A.4	Apparatus.....	17
A.4.1	Rail	17
A.4.2	Load application head.....	18
A.4.3	Verification of calibration	18
A.5	Test specimens.....	18
A.5.1	Sleeper or other rail support	18
A.5.2	Fastening.....	19
A.6	Test procedure.....	19
A.6.1	General	19
A.6.2	Preparation for test	19
A.6.3	Cyclic loading	19
A.6.4	Visual inspection	20
A.6.5	Rail foot lateral displacement	20
A.7	Test report.....	21
Annex B (normative) Bending test for body only		22
B.1	Scope.....	22
B.2	Apparatus.....	22
B.2.1	Load application devices.....	22
B.3	Test specimens.....	24
B.3.1	Hollow sleeper or bearer body.....	24
B.4	Procedure.....	24
B.4.1	General	24
B.4.2	Test arrangement	24
B.4.3	Resilient pad	25
B.4.4	Procedure.....	26
B.5	Test report.....	27
Bibliography.....		28

EN 16431:2014 (E)

Foreword

This document (EN 16431:2014) 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 January 2015 and conflicting national standards shall be withdrawn at the latest by January 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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

1 Scope

This European Standard defines technical criteria and control procedures which are satisfied by hollow sleepers and bearers used in ballasted track with Vignole rails. The hollow sleepers and bearers designed for ballasted track can also be used in ballastless track. In this case, the requirements are defined by the customer.

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 13481 (all parts), *Railway applications - Track - Performance requirements for fastening systems*

EN 13146-3, *Railway applications - Track - Test methods for fastening systems - Part 3: Determination of attenuation of impact loads*

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

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

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

EN 50125-3, *Railway applications - Environmental conditions for equipment – Part 3: Equipment for signalling and telecommunications*

EN ISO 7500-1, *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)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

hollow sleepers

sleepers and bearers with hollow structure, with support for Vignole rails on ballasted or ballastless track, including the fastenings systems and all components, with a minimum of 50 % of the cross sectional-area hollow throughout its length

3.1.2

body

hollow structure which is in contact with the ballast/slab and supports the fastening system and other components



This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- Looking for additional Standards? Visit Intertek Inform Infostore
- Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation