

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.04.2012.	Date of Availability of the European standard is 04.04.2012.
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ICS 93.100

Võtmesõnad: impact, joint load, laboratory testing, materials handling equipment, permanent ways, rail fastening systems, railway applications, railway construction, railway installations, railways, shock absorbing, sleepers, testing, tracks (materials handling equipment),

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English Version

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

Applications ferroviaires - Voie - Méthodes d'essais pour
les systèmes de fixation - Partie 3: Détermination de
l'atténuation des forces d'impact

Bahnanwendungen - Oberbau - Prüfverfahren für
Schienenbefestigungssysteme - Teil 3: Bestimmung der
Dämpfung von Stoßlasten

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

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Contents

Page

Foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions, symbols and abbreviations	4
3.1 Terms and definitions	4
3.2 Symbols and abbreviations	4
4 Principle	5
5 Apparatus	5
5.1 Concrete sleeper or bearer	5
5.2 Support	5
5.2.1 Reference method	5
5.2.2 Alternative method	6
5.3 Rail	6
5.4 Strain measuring and recording equipment	6
5.5 Drop mass	6
5.6 Preloading equipment	7
6 Test specimens	7
6.1 Concrete sleeper or bearer	7
6.2 Fastening	7
7 Procedure – Reference method	8
7.1 Preparation	8
7.2 Testing	8
7.3 Check on sleeper condition	8
7.4 Calculation	8
8 Procedure – Alternative method	9
8.1 Preparation	9
8.2 Testing and checking	9
8.3 Calculation	9
9 Test report	9
Annex A (informative) Sample calculation	11

Foreword

This document (EN 13146-3:2012) 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of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.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 13146-3:2002.

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

Detailed changes only have been made in this revision of EN 13146-3:2002.

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, 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 specifies laboratory test procedures for applying an impact to a rail fastened to a concrete sleeper or bearer which simulates the impact loading caused by traffic on railway tracks and measuring the strain induced in the sleeper. They are used for comparing the attenuation of impact loads on concrete sleepers or bearers by different rail pads. A reference procedure and alternative procedure are included.

This test is only applicable to ballasted track.

These test procedures apply to a complete fastening assembly.

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 13146-9:2009, *Railway applications — Track — Test methods for fastening systems — Part 9: Determination of stiffness*

EN 13230-1, *Railway applications — Track — Concrete sleepers and bearers — Part 1: General requirements*

EN 13230-2, *Railway applications — Track — Concrete sleepers and bearers — Part 2: Prestressed monoblock sleepers*

EN 13230-3, *Railway applications — Track — Concrete sleepers and bearers — Part 3: Twin-block reinforced sleepers*

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.

a	attenuation expressed as per cent reduction in sleeper strain with test pad compared with reference pad;
a_t	attenuation at the top of the sleeper, in %;
a_b	attenuation at the bottom of the sleeper, in %;
d_a	thickness of aluminium plate used with rail pad, in mm;
d_t	thickness of rail pad for which assembly is designed, in mm;
M_{dr}	positive bending moment at the rail seat of the sleeper, in kNm;