

RAUDTEEALASED RAKENDUSED. RAUDTEEEVEEREMI
PIDURIKETTAD. OSA 3: PIDURIKETTAD, KETTA JA
HÕÕRDEPAARI TOIMIMISOMADUSED,
KLASSIFIKATSIOON

Railway applications - Brake discs for railway rolling
stock - Part 3: Brake discs, performance of the disc and
the friction couple, classification

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14535-3:2015 sisaldab Euroopa standardi EN 14535-3:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 14535-3:2015 consists of the English text of the European standard EN 14535-3:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.12.2015.	Date of Availability of the European standard is 16.12.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 45.060.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Railway applications - Brake discs for railway rolling stock
- Part 3: Brake discs, performance of the disc and the
friction couple, classification**

Applications ferroviaires - Disques de frein pour
matériel roulant ferroviaire - Partie 3: Disques de frein,
performances du disque et du couple de friction,
classification

Bahnanwendungen - Bremsscheiben für
Schienenfahrzeuge - Teil 3: Bremsscheiben, Leistung
Bremsscheibe und der Reibpaarung, Klassifikation

This European Standard was approved by CEN on 10 July 2015.

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
European foreword	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Symbols and units	7
5 Classification	8
6 Information to be supplied	8
7 Tested properties for brake disc classification	9
7.1 General requirements	9
7.2 Test specimens.....	9
7.3 Preliminary and final verification sequences.....	9
7.4 Pass and fail criteria.....	9
8 Preconditions	10
8.1 Dynamometers.....	10
8.2 Wheel diameter	10
8.3 Preliminary and final verification sequences.....	10
9 Performance and Endurance Test	11
9.1 Scope	11
9.2 Classification test parameters.....	11
9.3 Test procedure	12
9.4 Pass and fail criteria.....	15
10 Heat Dissipation Test	15
10.1 Scope	15
10.2 Test parameters.....	15
10.3 Test procedure	16
10.4 Pass and fail criteria.....	17
11 Centrifugal test	18
11.1 Scope	18
11.2 Test parameters.....	18
11.3 Test procedure	19
11.4 Pass and fail criteria.....	19
12 Ventilation Test	19
12.1 Scope	19
12.2 Test parameters.....	19
12.3 Test procedure	20
12.4 Pass and fail criteria.....	20
13 Noise generation	20
Annex A (informative) Brake Disc Classification Certificate according to EN 14535-3	21
Annex B (informative) Noise generation test	22

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC	23
Bibliography	25

This document is a preview generated by EVS

European foreword

This document (EN 14535-3:2015) 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 June 2016 and conflicting national standards shall be withdrawn at the latest by June 2016.

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, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 14535, *Railway applications — Brake discs for railway rolling stock*, is currently composed of the following parts:

- *Part 1: Brake discs pressed or shrunk onto the axle or drive shaft, dimensions and quality requirements;*
- *Part 2: Brake discs mounted onto the wheel, dimensions and quality requirements;*
- *Part 3: Brake discs, performance of the disc and the friction couple, classification.*

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.

Introduction

This European Standard gives the requirements and classification to be met for the design, dimensions, performance, and testing of the brake disc and “pad and brake disc friction couple”. These requirements need to be proven in sufficient detail by dynamometer tests. Quality of design, workmanship and construction need to ensure accordance with good engineering practice and manufacture.

The classification according to this standard is the subject of a brake disc classification certificate (Annex A).

1 Scope

This European Standard applies to brake discs designed to be fitted to railway vehicles.

This European Standard comprises a type test of brake disc performance. The brake disc is tested for energy conversion and dissipation, ventilation characteristics as well as mechanical integrity.

The classification qualifies a brake disc in conjunction with the defined brake pad by dynamometer tests which simulates up to one year in service when operating in the defined application class. It does not define the application and the brake performance in specific trains.

NOTE For this purpose, additional tests may be necessary.

For the application of brake discs on railway vehicles it is not mandatory to use classified brake discs.

Classified brake discs can be validated for the use on railway vehicles for higher performance applications with additional tests.

This standard describes the type test procedure for brake disc classification as specified in EN 14535-1 and EN 14535-2.

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 14535-1, *Railway applications - Brake discs for railway rolling stock - Part 1: Brake discs pressed or shrunk onto the axle or drive shaft, dimensions and quality requirements*

EN 14535-2, *Railway applications - Brake discs for railway rolling stock - Part 2: Brake discs mounted onto the wheel, dimensions and quality requirements*

EN 14478, *Railway applications - Braking - Generic vocabulary*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478 and the following apply.

3.1
axle mounted brake disc
component attached to the axle shaft, drive shaft or any shaft directly coupled to the wheel, and rotating with the wheel

Note 1 to entry: See EN 14535-1.

3.2
wheel mounted brake disc
component attached to the wheel rim, wheel web or wheel hub, and rotating with the wheel

Note 1 to entry: See EN 14535-2.