
Železniške naprave - Kolutne zavore za železniška vozila - 2. del: Kolutne zavore, nameščene na kolo, mere in zahteve za kakovost

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

Bahnanwendungen - Bremsscheiben für Schienenfahrzeuge - Teil 2: Bremsscheiben, die an einem Rad befestigt werden, Abmessungen und Qualitätsanforderungen

Applications ferroviaires - Disques de frein pour matériel roulant ferroviaire - Partie 2 : Disques de frein montés sur la roue, dimensions et exigences de qualité

Ta slovenski standard je istoveten z: prEN 14535-2

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ICS:

45.040	Materiali in deli za železniško tehniko	Materials and components for railway engineering
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**Railway applications - Brake discs for railway rolling stock
- Part 2: Brake discs mounted onto the wheel, dimensions
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Schienenfahrzeuge - Teil 2: Bremsscheiben, die an
einem Rad befestigt werden, Abmessungen und
Qualitätsanforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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prEN 14535-2:2016 (E)**European foreword**

This document (prEN 14535-2:2016) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14535-2:2011.

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 2008/57/EC.

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

This series of European Standards EN 14535, *Railway applications — Brake discs for railway rolling stock* consists of:

- *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*

It is recommended that you visit the ITC Standards website at
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Introduction

This draft European standard gives the requirements to be met for the design, dimensions, performance and testing of the brake disc, hereafter called “disc”. These requirements cannot be written in sufficient detail to ensure good workmanship or proper construction. Each manufacturer is therefore responsible for taking every necessary step to make sure that the quality of design, workmanship and construction is such as to ensure accordance with good engineering practice.

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1 Scope

This draft European standard specifies requirements to be met for the design, dimensions of the brake disc.

This draft European standard applies to brake discs mounted onto the wheel, including the wheel web or wheel hub of railway rolling stock.

For each discrete unit so fitted, one or more disc brake rings, each having one friction face, may be deployed.

Any deviation from this standard draft has to be agreed between the contracting parties.

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 14535-3, *Railway applications — Brake discs for railway rolling stock — Part 3: Brake discs, performance of the disc and the friction couple, classification*

prEN 14478:2016, *Railway applications — Braking — Generic vocabulary*

prEN 15328¹, *Railway applications — Braking — Brake pads*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 14478:2016 and the following apply.

3.1

brake disc

arrangement of two brake rings having co-planar, annular friction faces to which brake pads are applied in order to develop a braking torque

3.2

friction face

surface of a disc that provides the friction interface for transferring the brake force

3.3

brake ring

portion of the disc having the friction face

Note 1 to entry: Brake rings having a continuity of material allowing in that volume no flow of air are "non-ventilated". Otherwise they are "ventilated".

Note 2 to entry: Brake rings being of homogenous material construction behind the friction face are "homogenous" or otherwise "non-homogenous".

Note 3 to entry: Brake rings can consist of one or more sectors and can have continuous or non-continuous friction faces.

¹ To be published.

Note 4 to entry: Split brake rings are those which are separated into two halves. Segmented brake rings are those which are separated into more than two parts.

3.4

fastening area

portion of the disc having means for the fastening on the wheel

Note 1 to entry: The fastening area may be constructed integral with the brake ring or connected to it by a separate linking arrangement.

3.5

non ventilated disc

disc having a continuity of material or materials extending from the friction face axially to the rear face so preventing the flow of air through the body of the disc

3.6

ventilated disc

disc in which passages to conduct a flow of cooling air are located between the friction ring and the web of the wheel

Note 1 to entry: The airflow is usually occasioned by the rotation of the disc.

3.7

split disc

disc in which the brake ring is separated in two halves

3.8

segmented disc

disc in which the brake ring is separated in more than two parts

3.9

maximal permissible speed

highest speed applicable to the application

3.10

indirect actuation

brake in which the brake pad normal force is applied via a lever system

3.11

performance class

set of the values of brake energy, braking power and brake torque, related to the outer diameter, width and type of the disc, at which it is type tested to demonstrate its capability to withstand these conditions without exceeding the defined limits of structural degradation

Note 1 to entry: Discs are categorized into the performance classes according to the tests to be covered in EN 14535-3.

3.12

braking energy

energy which is dissipated per disc during the braking process, expressed in Joules (J)

[SOURCE: prEN 14478:2016, definition 4.6.17]

prEN 14535-2:2016 (E)**3.13****braking torque**

resultant torque, which is generated by the brake pad force and coefficient of friction operating at the disc effective radius and which is typically used when assessing the performance of disc brakes during dynamometer testing

[SOURCE: prEN 14478:2016, definition 4.6.21]

3.14**braking power**

power (braking energy per unit time) which is generated during the braking process, expressed in Watt (W)

[SOURCE: prEN 14478:2016, definition 4.6.19]

4 Symbols and abbreviations

For the purpose of this document, the symbols and units given in Table 1 apply.

Table 1 — Symbols and units

Symbol	Description	Unit
d	Diametrical dimension	mm
R_a	Refer to EN ISO 4287:1998	μm
R_z	Refer to EN ISO 4287:1998	μm
U	Imbalance	$\text{g} \cdot \text{m}$
x	Axial dimension	mm

5 Requirements

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5.1 General

The discs are intended to be used as part of a friction brake and shall not suffer damage or degradation other than normal wear, surface cracks and deformations of the friction face within permissible limits.

5.2 Materials, design and manufacture

The materials, design and manufacture of the disc shall, for all specified operating conditions, take into account:

- in the case of discs mounted on the wheel, the disc dimension may follow the main dimensions of Table 2;
- the rotational speed;
- the magnitude of the braking torque;
- the quantity of brake energy to be converted and dissipated and its rate of conversion and dissipation;
- the frictional working conditions, especially with the interaction with the brake pad;