SLOVENSKI STANDARD
oSIST prEN 14535-1:2016

01-december-2016

Železniške naprave - Kolutne zavore za železniška vozila - 1. del: Kolutne zavore (diski), nameščene na osi s hladnim ali vročim postopkom, mere in zahteve za kakovost

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

Bahnanwendungen - Bremsscheiben für Schienenfahrzeuge - Teil 1: Wellenbremsscheiben, aufgepresst oder geschrumpft, Abmessungen und Qualitätsanforderungen

Applications ferroviaires - Disques de frein pour matériel roulant ferroviaire - Partie 1 : Disques de frein calés ou frettés sur essieu ou sur arbre moteur, dimensions et exigences de qualité

Ta slovenski standard je istoveten z: **prEN 14535-1**

ICS:

45.040	Materiali in deli za železniško tehniko	Materials and components for railway engineering

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EUROPEAN STANDARD

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English Version

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

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Bahnanwendungen - Bremsscheiben für Schienenfahrzeuge - Teil 1: Bremsscheiben, die auf einen Radsatz oder eine Antriebswelle gepresst oder geschrumpft 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.

This draft European Standard was established by CEN 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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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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (prEN 14535-1:2016) 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 14535-1:2005+A1:2011.

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 EN 14535 consists 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.*

Introduction

The requirements given in this draft European standard 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.

1 Scope

This draft European standard specifies requirements for the design and dimensions of the brake disc.

This draft European standard applies to discs mounted at the axle or drive-shaft of railway rolling stock by a cylindrical or conic tapered interference fit.

For each discrete unit so fitted, one or more disc brake rings, each having two axially separated friction faces, may be deployed.

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 14535-3:2015, *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 15328[1], *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
rotor having co-planar annular friction faces to which brake pads are applied in order to develop a braking torque

Note 1 to entry: The brake disc dissipates braking energy resulting from vehicle or train deceleration

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 friction faces

Note 1 to entry: Brake rings constructed from homogenous material between the friction faces are ”homogenous” or otherwise ”non-homogenous”.

Note 2 to entry: Brake rings can consist of one or more sectors and can have continuous or non-continuous friction faces.

[1] To be published.

3.4
hub
portion of the disc having an internal cylindrical or conical surface, the hub bore, for interference fit engagement with the axle or drive shaft

Note 1 to entry: The hub can be constructed integrally with the brake ring (monobloc disc) or connected to it by a separate linking arrangement.

3.5
non ventilated disc
disc having a continuity of material or materials allowing in that volume no flow of air between the friction faces

3.6
ventilated disc
disc in which passages to conduct a flow of cooling air are located between the friction faces of the brake ring

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

3.7
single disc
disc in which one brake ring is associated with one hub

3.8
double disc
disc in which one hub supports two axially spaced brake rings

3.9
brake disc temperature
arithmetic average value of the measured temperatures of the disc friction face

Note 1 to entry: The temperatures are measured by six sensors as described in EN 14535–3, 8.1.

3.10
maximum permissible disc temperature
highest operation temperature applied to the disc

Note 1 to entry: This may be expressed as an absolute peak value or as a nominal value over a defined period of time.

3.11
maximum permissible rotational speed
highest rotational speed applied to the disc

3.12
indirect actuation
brake in which the brake pad normal force is applied via a lever system

3.13
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 performance classes according to the tests stated in EN 14535–3: brake discs, performance of the disc and of the pad and disc friction couple, classification.

3.14
braking energy
energy which is dissipated during the braking process, expressed in Joules (J)

[SOURCE: prEN 14478:2016, definition 4.6.17]

3.15
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]

3.16
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 purposes 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
R, r	Radial dimension	mm
U	Imbalance	g·m
x	Axial dimension	mm

5 Requirements

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.