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This standard includes the English version of the European Standard.

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## Railway applications - Braking - Brake blocks

Applications ferroviaires - Freinage - Semelles de frein

Bahnanwendungen - Bremse - Bremsklotzsohlen

This European Standard was approved by CEN on 28 February 2015 and includes Amendment 1 approved by CEN on 21 December 2018.

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**EN 16452:2015+A1:2019 (E)****Foreword**

This document (EN 16452:2015+A1:2019) 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of an identical text or by endorsement, at the latest by September 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 28 October 2018.

This document supersedes **A1** EN 16452:2015 **A1**.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

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 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

Compared to the previous edition, the following changes have been made:

- a) 7.3 "Static friction coefficient" has been modified;
- b) 7.4.2 "Dynamometer test" has been modified;
- c) 7.5.1 "Generic prescriptions" has been modified;
- d) 7.4.3 "Train brake test" has been modified;
- e) Annex A "Summary of Dynamometer test programs and acceptance criteria" has been modified;
- f) Annex J "Dynamometer test program – Generic test program" has been modified;
- g) Annex M "Test run to demonstrate the extreme winter braking properties brake blocks K – LL for freight wagons" has been modified;
- h) Annex Q "Dynamometer test program – Determination of static friction coefficient" has been modified;
- i) Annex T "Brake block shear and flexural strength tests" has been modified;
- j) Annex ZA has been updated.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Introduction**

For environmental reasons (reduction of rolling noise), this European Standard does not cover cast iron brake block requirements, although cast iron brake block technology is still widely used in Europe. Cast iron has already been replaced by composite materials for new rolling stock builds and major steps have been taken by EEC (TSI) and UIC in 2004 to accelerate the change from cast iron to composite materials.

When published this European Standard will replace the current UIC requirements for technical approval of brake blocks. The requirements of this EN are based on the state of art form UIC leaflet and a European project "Euro Rolling Silently".

**EN 16452:2015+A1:2019 (E)****1 Scope**

This European Standard gives the requirements for the design, dimensions, performance, and testing of a brake block (otherwise known as brake shoe insert) that acts on the wheel tread as part of a tread brake system. This European Standard does not cover cast iron brake block requirements.

This European Standard is applicable to brake blocks of either “K”, “L”, or “LL” friction level designed to be fitted to tread braked rail vehicles.

This European Standard contains the requirements for interfacing the brake block with the rail vehicle, the testing procedures in order to confirm that it satisfies the basic safety and technical interchangeability requirements, the material control procedures to ensure product quality, reliability and conformity and considers health and environmental needs.

**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 13452-1, *Railway applications — Braking — Mass transit brake systems — Part 1: Performance requirements*

EN 13452-2, *Railway applications — Braking — Mass transit brake systems — Part 2: Methods of test*

EN 13715, *Railway applications — Wheelsets and bogies — Wheels — Tread profile*

EN 13979-1:2003+A2:2011, *Railway applications — Wheelsets and bogies — Monobloc wheels — Technical approval procedure — Part 1: Forged and rolled wheels*

EN 14033-1, *Railway applications — Track — Railbound construction and maintenance machines — Part 1: Technical requirements for running*

EN 14033-2:2008+A1:2011, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for working*

EN 14198, *Railway applications — Braking — Requirements for the brake system of trains hauled by a locomotive*

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

EN 15179, *Railway applications — Braking — Requirements for the brake system of coaches*

EN 15313, *Railway applications — In-service wheelset operation requirements — In-service and off-vehicle wheelset maintenance*

EN 15663, *Railway applications — Definition of vehicle reference masses*

EN 15734-1, *Railway applications — Braking systems of high speed trains — Part 1: Requirements and definitions*

EN 15734-2, *Railway applications — Braking systems of high speed trains — Part 2: Test methods*

EN 16185-1, *Railway applications — Braking systems of multiple unit trains — Part 1: Requirements and definitions*

EN 16185-2, *Railway applications — Braking systems of multiple unit trains — Part 2: Test methods*

EN 50126-1, *Railway applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS) — Part 1: Basic requirements and generic process*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287)*

EN ISO 4288, *Geometrical product specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture (ISO 4288)*

UIC 544-1, *Brakes — Braking power*

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