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Railway applications – Braking – Brake performance

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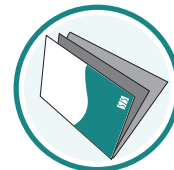
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EUROPEAN STANDARD

EN 16834

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2019

ICS 45.040

English Version

Railway applications - Braking - Brake performance

Applications ferroviaires - Freins - Performance de freinage

Bahnanwendungen - Bremse - Bremsvermögen

This European Standard was approved by CEN on 12 November 2018.

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European foreword

This document (EN 16834:2019) 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of an identical text or by endorsement, at the latest by October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.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 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.

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SS-EN 16834:2019 (E)

1 Scope

This document defines a harmonized way to assess the braking performance by test of locomotives, passenger coaches, freight wagons and self-propelled passenger trains (EMU/DMU).

The document sets out the standardized method for undertaking brake performance tests and the correction factors to be applied to the data obtained for all types of rolling stock.

This document also defines the methods to assess the brake performance in terms of stopping distance, and from this the process to determine vehicle(s) deceleration and braked weight.

It then deals with conversion of the braked weight to the braked weight percentage of a vehicle or train for operating purposes. It also sets out additional factors when determining the braked weight percentage of a train calculated from specified braked weight, depending on the formation of the train.

In Annex D there is a method for determining brake performance of freight wagons fitted with P10 cast iron or LL-blocks using limited testing (force measurement).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

EN 14531-1, *Railway applications — Methods for calculation of stopping and slowing distances and immobilization braking — Part 1: General algorithms utilizing mean value calculation for train sets or single vehicles*

EN 14531-2:2015, *Railway applications — Methods for calculation of stopping and slowing distances and immobilization braking — Part 2: Step by step calculations for train sets or single vehicles*

EN 15355, *Railway applications — Braking — Distributor valves and distributor-isolating devices*

EN 15595, *Railway applications — Braking — Wheel slide protection*

EN 15663, *Railway applications — Vehicle reference masses*

EN 15877-1, *Railway applications — Marking on railway vehicles — Part 1: Freight wagons*

EN 15877-2, *Railway applications — Markings of railway vehicles — Part 2: External markings on coaches, motive power units, locomotives and on track machines*

EN 16207, *Railway applications — Braking — Functional and performance criteria of Magnetic Track Brake systems for use in railway rolling stock*

EN 16452, *Railway applications — Braking — Brake blocks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478, EN 14198 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

brake assessment speed

brake initiation speed which is decisive for determination of brake performance

Note 1 to entry: In general the initiation speed leading to the lowest braked weight.

3.2

braked weight

representative quantity for the mean braking capacity of the vehicle or train, expressed in tons, which is always expressed as a whole number

Note 1 to entry: It is displayed on the vehicle (in accordance with EN 15877-1 and EN 15877-2). Braked weight corresponds to the retardation effort and is currently expressed and designated as "B".

3.3

braked weight percentage

quotient of braked weight and vehicle mass $\times 100$

Note 1 to entry: Also known as λ (lambda).

3.4

maximum braking load

load condition lower or equal to "design mass under exceptional payload" as defined in EN 15663 in accordance with the related vehicle standard (e.g. EN 16185-1, EN 14198)

3.5

minimum load

load condition "design mass in working order" (as defined in EN 15663)

3.6

normal load

load condition "design mass under normal payload" (as defined in EN 15663)

3.7

fully certified and exchangeable LL-block

LL-block, which fulfils all UIC requirements including exchangeability with P10 (as listed in ERA document ERA/TD/2009-02/INT)

3.8

K-block

brake block with "K"-friction materials as defined in EN 16452