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DEFINITSIOONID

Railway applications - Braking systems of high speed  
trains - Part 1: Requirements and definitions

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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| See Eesti standard EVS-EN 15734-1:2010+A1:2021 sisaldab Euroopa standardi EN 15734-1:2010+A1:2021 ingliskeelset teksti. | This Estonian standard EVS-EN 15734-1:2010+A1:2021 consists of the English text of the European standard EN 15734-1:2010+A1:2021.                    |
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English Version

## Railway applications - Braking systems of high speed trains - Part 1: Requirements and definitions

Applications ferroviaires - Systèmes de freinage pour trains à grande vitesse - Partie 1 : Exigences et définitions

Bahnanwendungen - Bremsysteme für Hochgeschwindigkeitszüge - Teil 1: Anforderungen und Definitionen

This European Standard was approved by CEN on 23 October 2010 and includes Corrigendum 1 issued by CEN on 27 February 2013 and Amendment 1 approved by CEN on 1 November 2021.

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## European foreword

This document (EN 15734-1:2010+A1:2021) 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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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 supersedes A1 EN 15734-1:2010 A1.

This document includes Amendment 1, approved by CEN on 2021-11-01.

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

EN 15734, *Railway applications — Brake systems of high speed trains*, consists of the following parts:

- *Part 1: Requirements and definitions*
- *Part 2: Test methods*

A1 This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document. A1

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard describes the functionality, constraints, performance and operation of a brake system for use in high speed trains as described in the TSI High Speed Rolling Stock, operating on routes of the European railways and their infrastructure systems.

The brake system requirements specified in this European Standard apply to trains that may operate at a maximum speed of up to 350 km/h on lines specifically built for high speed and define graduated values for deceleration related to four speed ranges (see Clause 6).

This European Standard covers:

- all new vehicle designs of high speed trains;
- all major overhauls of the above-mentioned vehicles if they involve redesigning or extensive alteration to the brake system of the vehicle concerned.

This European Standard does not cover locomotive hauled trains, which are specified by EN 14198.

**NOTE** This document applies the functional subdivision into subsystems as specified in the TSI High speed. The braking system is part of the function: “Accelerate, maintain speed, brake and stop”.

## 2 Normative references

The following referenced documents are indispensable for the application 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 837-1:1996, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 854, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification*

EN 10220, *Seamless and welded steel tubes — Dimensions and masses per unit length*

EN 10305-4, *Steel tubes for precision applications — Technical delivery conditions — Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems*

EN 10305-6, *Steel tubes for precision applications — Technical delivery conditions — Part 6: Welded cold drawn tubes for hydraulic and pneumatic power systems*

EN 13749:2005, *Railway applications — Wheelsets and bogies — Methods of specifying structural requirements of bogie frames*

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

EN 14478:2005, *Railway applications — Braking — Generic vocabulary*

EN 14531-6, *Railway applications — Methods for calculation of stopping and slowing distances and immobilisation braking — Part 6: Step by step calculations for train sets or single vehicles*

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*

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

EN 14601, *Railway applications — Straight and angled end cocks for brake pipe and main reservoir pipe*

EN 15020, *Railway applications — Rescue coupler — Performance requirements, specific interface geometry and test methods*

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

EN 15220-1, *Railway applications — Brake indicators — Part 1: Pneumatically operated brake indicators*

EN 15273-2, *Railway applications — Gauges — Part 2: Rolling stock gauge*

prEN 15328, *Railway applications — Braking — Brake pads*

prEN 15329, *Railway applications — Braking — Brake block holder and brake shoe key for rail vehicles*

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

EN 15566, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

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

EN 15611, *Railway applications — Braking — Relay valves*

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

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

CEN/TS 45545 (all parts), *Railway applications — Fire protection on railway vehicles*

EN 50121-3, *(all subparts), Railway applications — Electromagnetic compatibility*

EN 50125-1:1999, *Railway applications — Environmental conditions for equipment — Part 1: Equipment on board rolling stock*

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

EN 50163, *Railway applications — Supply voltages of traction systems*

EN 50215, *Railway applications — Rolling stock — Testing of rolling stock on completion of construction and before entry into service*

UIC 541-03:1984, *Brakes; regulations concerning manufacture of the different brake parts; driver's brake valve*

UIC 544-1:2004, *Brakes — Braking power*

UIC 557:1998, *Diagnosis techniques for coaches*

UIC 648:2001, *Connections for electric cables and air pipes on headstocks of locomotives and driving trailers*



UIC 651:2002, *Layout of driver's cabs in locomotives, railcars, multiple unit trains and driving trailers*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478:2005 and the following apply.

#### 3.1

##### **active cab**

single cab in a train consist which is used to control traction and service braking

NOTE It is normally the leading cab.

#### 3.2

##### **brake blending**

controlled merging of brake forces resulting from different brake force generating systems

#### 3.3

##### **brake loop**

electrical hard wire keeping brakes released when energised

#### 3.4

##### **brake weight percentage**

brake performance according to UIC 544-1

#### 3.5

##### **control chamber A**

is called "command reservoir" in EN 14478

#### 3.6

##### **direct brake**

is called "straight brake" according to EN 14478

#### 3.7

##### **driver's vigilance device**

is called "dead man's device" according to EN 14478

#### 3.8

##### **dynamic brake**

brakes in which the brake force is produced by the movement of the vehicle or its functional elements, but not involving friction

#### 3.9

##### **parking brake**

is called "immobilization braking" in the revised TSI

#### 3.10

##### **Ep assist**

electrically commanded assist system to vent and feed the brake pipe