

RAUDTEEALASED RAKENDUSED. AERODÜNAAMIKA.
OSA 5: NÕUDED AERODÜNAAMIKALE TUNNELITES
NING SELLE KATSETAMISE PROTSEDUURID

Railway applications - Aerodynamics - Part 5:
Requirements and assessment procedures for
aerodynamics in tunnels

EESTI STANDARDI EESSÕNA

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ICS 45.060.01, 93.060

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English Version

Railway applications - Aerodynamics - Part 5: Requirements and assessment procedures for aerodynamics in tunnels

Applications ferroviaires - Aérodynamique - Partie 5:
Exigences et procédures d'essai pour l'aérodynamique
en tunnel

Bahnanwendungen - Aerodynamik - Teil 5:
Anforderungen und Prüfverfahren für Aerodynamik im
Tunnel

This European Standard was approved by CEN on 22 November 2021.

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European foreword

This document (EN 14067-5:2021) 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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.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 EN 14067-5:2006+A1:2010.

EN 14067, *Railway applications — Aerodynamics*, consists of the following parts:

- *Part 1: Symbols and units;*
- *Part 3: Aerodynamics in tunnels;*
- *Part 4: Requirements and test procedures for aerodynamics on open track;*
- *Part 5: Requirements and test procedures for aerodynamics in tunnels;*
- *Part 6: Requirements and test procedures for cross wind assessment.*

The results of the EU-funded research project “AeroTRAIN” (Grant Agreement No. 233985) have been used.

The contents of the previous edition of EN 14067-5 have been integrated in this document; they have been re-structured and extended to support the Technical Specifications for the Interoperability of the Trans-European rail system. Requirements on conformity assessment for rolling stock were added.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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 document establishes aerodynamic requirements, test procedures, assessment methods and acceptance criteria for operating rolling stock in tunnels. Aerodynamic pressure variations, loads, micro pressure wave generation and further aerodynamic aspects to be expected in tunnel operation are addressed in this document. Requirements for the aerodynamic design of rolling stock and tunnels of the heavy rail system are provided. The requirements apply to heavy rail systems only.

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 14067-4:2013+A1:2018, *Railway applications - Aerodynamics - Part 4: Requirements and test procedures for aerodynamics on open track*

EN 15273 series, *Railway applications — Gauges*

EN 17149-1:—,¹ *Railway applications — Strength assessment of railway vehicle structures — Part 1: General*

ISO 8756, *Air quality — Handling of temperature, pressure and humidity data*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

compression wave

approximate step increase in pressure that travels at the speed of sound

3.2

expansion wave

approximate step decrease in pressure that travels at the speed of sound

3.3

computational fluid dynamics

CFD

numerical methods of approximating and solving the formulae of fluid dynamics

¹ Under preparation. Stage at time of publication: prEN 17149:2021.