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STN	**Železnice Aerodynamika Časť 4: Požiadavky a postupy posudzovania na aerodynamiku na otvorenej trati**	**STN EN 14067-4 28 0340**

Railway applications - Aerodynamics - Part 4: Requirements and assessment procedures for aerodynamics on open track

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Railway applications - Aerodynamics - Part 4: Requirements and assessment procedures for aerodynamics on open track

Applications ferroviaires - Aérodynamique - Partie 4: Exigences et procédures d'évaluation pour l'aérodynamique à l'air libre

Bahnanwendungen - Aerodynamik - Teil 4: Anforderungen und Bewertungsverfahren für Aerodynamik auf offener Strecke

This European Standard was approved by CEN on 27 February 2024.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 14067-4:2024) 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of an identical text or by endorsement, at the latest by October 2024, and conflicting national standards shall be withdrawn at the latest by October 2024.

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 14067-4:2013+A1:2018.

Results of the EU-funded research project “AeroTRAIN” (Grant Agreement No. 233985) are contained in this document.

In comparison with the previous edition, the following technical modifications have been made:

— The scope was amended to cover track gauges other than 1 435 mm. Minor modifications and improvements were made throughout the whole document. The methods and test procedures for running resistance and train-induced aerodynamic loads in the track bed were updated.

This document has been prepared under a standardization request addressed to CEN by the European Commission.

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

— Part 4: Requirements and assessment procedures for aerodynamics on open track;

— Part 5: Requirements and assessment procedures for aerodynamics in tunnels;

— Part 6: Requirements and assessment procedures for cross wind assessment;

— Part 7 (TR): Fundamentals for test procedures for train-induced ballast projection.

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, Türkiye and the United Kingdom.

Introduction

Trains running on open track generate aerodynamic loads on objects and persons they pass. If trains are being passed by other trains, trains are also subject to aerodynamic loading themselves. The aerodynamic loading caused by a train passing an object or a person near the track, or when two trains pass each other, is an important interface parameter between the subsystems of rolling stock, infrastructure and operation. It is thus subject to regulation when specifying the trans-European railway system.

Trains running on open track must overcome a running resistance which has a strong effect on the required engine power, achievable speed, travel time and energy consumption. Thus, running resistance is often subject to contractual agreements and requires standardized test and assessment methods. The test set-up for ballast projection was also updated.

1 Scope

This document establishes requirements, test procedures, assessment methods and acceptance criteria for operating rolling stock in open track. For pressure variations and slipstream effects beside the track, requirements and assessment methods are provided. For running resistance, assessment methods are addressed in this document. Load cases on infrastructure components due to train-induced pressure variations and slipstream effects are addressed in this document. For ballasted track test set-ups for ballast projection assessment are proposed.

The requirements only apply to rolling stock of the heavy rail system with maximum train speeds above 160 km/h and not to other rail systems. The document is applicable to all rolling stock and infrastructure in open air with nominal track gauges of 1 435 mm to 1 668 mm inclusive.

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 1991-2:2003,[1] *Eurocode 1: Actions on structures — Part 2: Traffic loads on bridges*

EN 16727-2-2:2016, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Non-acoustic performance - Part 2-2: Mechanical performance under dynamic loadings caused by passing trains - Calculation method*

EN 17343, *Railway applications - General terms and definitions*

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

[1] Document impacted by AC:2010.