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English Version

Railway applications - Wheel/Rail Friction Management - Part 1-3: Equipment and Application - Adhesion Materials

Applications ferroviaires - Gestion du frottement roue/rail - Partie 1-3 : Équipement et application - Matériau d'adhésion

Bahnanwendungen - Reibungsmanagement zwischen Rad und Schiene - Teil 1-3: Vorrichtungen und Anwendung - Kraftschlusserhöhende Materialien

This Technical Specification (CEN/TS) was approved by CEN on 30 August 2023 for provisional application.

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Ref. No. CEN/TS 15427-1-3:2023 E

Contents

Page

European foreword

This document (CEN/TS 15427-1-3:2023) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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 CEN/TS 15427-1-3:2021.

CEN/TS 15427-1-3:2023 includes the following significant technical changes with respect to CEN/TS 15427-1-3:2021:

— document has been editorially updated based on the feedback received on the previous edition;

— corrections and clarifications have been introduced based on the feedback received on the previous edition;

— consistency with the other parts of the series has been improved.

This document is part of the following series:

— *EN 15427-1-1, Railway applications - Wheel/Rail friction management - Part 1-1: Equipment and Application – Flange lubrication;*

— *CEN/TS 15427-1-2, Railway applications - Wheel/rail friction management - Part 1-2: Equipment and application – Top of rail materials;*

— *CEN/TS 15427-1-3, Railway applications - Wheel/rail friction management - Part 1-3: Equipment and application – Adhesion materials;*

— *EN 15427-2-1, Railway applications - Wheel/Rail friction management - Part 2-1: Properties and Characteristics – Flange lubricants;*

— *CEN/TS 15427-2-2, Railway applications - Wheel/rail friction management - Part 2-2: Properties and characteristics – Top of rail materials;*

— *CEN/TS 15427-2-3, Railway applications - Wheel/Rail friction management - Part 2-3: Properties and Characteristics – Adhesion materials;*

— *CEN/prTR 15427-3, Railway applications – Wheel/Rail friction management – Part 3: Rationale for requirements and further background information.*

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 announce this Technical Specification: 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

Friction management using solid or fluid (oil, grease, etc.) substances at the wheel-rail interface is a complex subject and includes:

— lubrication of the wheel flange/ rail gauge corner interface, commonly referred to as “flange or rail lubrication”;

— lubrication of the back of flange/ check rail interface; commonly referred to as “check rail lubrication”;

— controlling the level of friction at the interface between the top of rail and the wheel tread, commonly referred to as “top of rail friction management”;

— applying materials to the wheel rail contact to increase (improve/ enhance/ recover) adhesion.

This document sets out requirements for the application for the adhesion materials. It describes systems fitted on board trains and on the track, as both systems may need to be employed to achieve effective adhesion.

Managing the wheel-rail interface effectively will reduce wheel slide and ensure reliable braking performance. When friction is managed effectively, noise levels, wear levels and the risk of flange climbing are reduced. Conversely, where not managed effectively, assets may require replacement prematurely before reaching their full economic potential.

There needs to be control in the application of adhesion materials such that there is:

— no loss of traction or braking performance;

— no adverse effect on signalling systems or track circuits;

— no harmful environmental effect;

— compatibility between the different adhesion materials in use should be carefully considered, particularly, between materials applied from on-board systems and trackside systems;

— no effect on the performance of the infrastructure.

1 Scope

This document is limited to specifying the requirements when applying adhesion material to the interface between the wheel tread and the crown of the rail and includes both trainborne and trackside solutions.

This document only covers the equipment and application of adhesion material to the active interface.

This document defines:

— the characteristics that systems for the application of adhesion materials of the wheel-rail interface shall achieve, together with applicable inspection and test methods to be carried out for verification;

— all relevant terminology which is specific to the adhesion materials of the wheel-rail interface.

This document applies to the mainline railway.

NOTE 1 This document can also be used for other railways, e.g. urban rail.

NOTE 2 Where technologies are used to influence the wheel/rail interface, other than the application of an adhesion material, this document is out of scope but can be used as guidance.

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 13749, *Railway applications — Wheelsets and bogies — Method of specifying the structural requirements of bogie frames*

CEN/TS 15427-2-3:2023, *Railway application — Wheel/Rail friction management — Part 2-3: Properties and Characteristics — Adhesion materials*

EN 15595:2018,[1] *Railway applications — Braking — Wheel slide protection*

EN 16834:2019, *Railway applications — Braking — Brake performance*

EN 50238-1, *Railway applications — Compatibility between rolling stock and train detection systems — Part 1: General*

EN 61373, *Railway applications — Rolling stock equipment — Shock and vibration tests (IEC 61373)*

[1] As impacted by EN 15595:2018/AC:2021.