



BSI Standards Publication

Railway applications — Wheel/ rail friction management

Part 1-2: Equipment and application — Top of rail

National foreword

This Published Document is the UK implementation of CEN/TS 15427-1-2:2023. It supersedes PD CEN/TS 15427-1-2:2021, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RAE/3/-/6, Railway applications - Wheel/rail friction management.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Published by BSI Standards Limited 2023

ISBN 9 78 0 539 20370 7

ICS 5.080; 45.120; 21.260

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 October 2023.

Amendments/corrigenda issued since publication

Date	Text affected
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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 15427-1-2

October 2023

ICS 21.260; 45.080; 45.120

Supersedes CEN/TS 15427-1-2:2021

English Version

**Railway applications - Wheel/rail friction management -
Part 1-2: Equipment and application - Top of rail**

Applications ferroviaries - Gestion du Frottement
Roue/Rail - Partie 1-2 : Équipements et application -
Tête de Rail

Bahnanwendungen - Reibungsmanagement zwischen
Rad und Schiene - Teil 1-2: Einrichtungen und
Anwendung - Kraftschlussmodifikatoren

This Technical Specification (CEN/TS) was approved by CEN on 9 July 2023 for provisional application.

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European foreword

This document (CEN/TS 15427-1-2:2023) 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 15427-1-2:2021.

The 2023 edition has been updated with editorial changes following the feedback from the CEN/TS 15427-1-2:2021 edition. This mainly consists of corrections and clarifications and improved consistency with the other standards and technical specifications in the 15427 suite.

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.

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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 wheel / check rail face 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 the requirements for the equipment and application of the top of rail wheel/rail friction management. It describes systems fitted on board trains and on the track, as both systems may need to be deployed to achieve effective friction management of the wheel-rail interface. This document should always be used in conjunction with the accompanying document: CEN/TS 15427-2-2 *Railway applications - Wheel/rail friction management* Part 2-2: Properties and characteristics - Top of rail materials.

Managing the wheel-rail interface effectively will reduce wear and other damage to both wheel and rail. 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 top of rail materials such that there is:

- no loss of traction or braking performance;
- no adverse effect on signalling systems or track circuits;
- understanding of the increased risk of fire;
- no harmful environmental impact;
- no incompatibility between the different lubricants/ materials in use, particularly, between solid and fluid systems.

1 Scope

This document is limited to specifying the requirements when applying material to the active interface between the wheel tread and the crown of the rail and includes trainborne and track side equipment.

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

This document specifies:

- the characteristics of top of rail equipment for wheel-rail interface, together with applicable inspection and test methods to be carried out for verification;
- all relevant terminology which is specific to the application of top of rail materials at the wheel-rail interface.

This document applies to the mainline railway.

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

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 15427-2-2:2023, *Railway applications — Wheel-rail friction management — Part 2-2: Properties and characteristics — Top of rail materials*

EN 50125-1, *Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment*

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*

EN 62621, *Railway applications — Fixed installations — Electric traction — Specific requirements for composite insulators used for overhead contact line systems*

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

active interface

contact area between wheel tread and the crown of the rail