PD CEN/TS 15427-2-3:2021

BSI Standards Publication

Railway applications — Wheel/ Rail friction management

Part 2-3: Properties and Characteristics — Adhesion materials

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National foreword

This Published Document is the UK implementation of CEN/TS 15427-2-3:2021.

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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English Version

Railway applications - Wheel/Rail friction management - Part 2-3: Properties and Characteristics - Adhesion materials

Applications ferroviaires - Gestion du frottement roue/rail - Parte 2-3: Propriétés et Caractéristiques - Matériau d'Adhésion

Bahnanwendungen - Reibungsmanagement zwischen Rad und Schiene - Teil 2-3: Eigenschaften und Merkmale - Kraftschlussmaterialien

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (CEN/TS 15427-2-3:2021) 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 is part of the series EN 15427, Railway applications - Wheel/Rail friction management, which consists of the following parts:

— *Part 1-1: Equipment and Application - Flange Lubrication*

— *Part 1-2: Equipment and Application - Top of Rail materials*

— *Part 1-3: Equipment and Application - Adhesion materials*

— *Part 2-1: Properties and Characteristics - Flange lubricants*

— *Part 2-2: Properties and Characteristics - Top of Rail materials*

— *Part 2-3: Properties and Characteristics - Adhesion materials*

— *Part 3: Rationale for requirements and further background information*

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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 the following aspects:

— 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”;

— altering 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”;

— altering the level of adhesion at the interface between the top of rail and the wheel tread.

This document sets out requirements for the material to be used for adhesion management. It specifies requirements for the material, how to test it and how to approve it.

The main purpose of an adhesion material is to condition the wheel/ rail contact to either prevent the occurrence of slipping or sliding or to enable recovery of traction/ braking where slipping or sliding occurs.

The adhesion material should be tested to confirm there is:

— compatibility with top of rail systems;

— no intolerable increased risk of fire;

— no harmful environmental effects;

— no incompatibility between the different materials in use, particularly between solid and fluid systems;

— satisfactory and consistent product quality and performance;

— no degradation to the safety of the railway (braking, signalling).

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1 Scope

This document specifies the requirements of adhesion materials intended to be applied to the interface between the wheel tread and the rail crown (active interface). It can be applied either directly or indirectly to the wheel tread or rail.

It outlines the information required for most approval procedures, the method of testing and routine control/monitoring of the material.

This document does not deal with Top of Rail materials. For Top of Rail materials see CEN/TS 15427-2-2:2021.

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 933-1:2012, *Tests for geometrical properties of aggregates - Part 1: Determination of particle size distribution - Sieving method*

EN 1097-3:1998, *Tests for mechanical and physical properties of aggregates - Part 3: Determination of loose bulk density and voids*

EN 1097-6:2013, *Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption*

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EN 1744-1:2009+A1:2012, *Tests for chemical properties of aggregates - Part 1: Chemical analysis*

ISO 2049:1996, *Petroleum products - Determination of colour (ASTM scale)*

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 http://www.electropedia.org/

3.1
adhesion material
substance that is used to either prevent the occurrence of slipping or sliding or to enable recovery of traction/ braking where slipping or sliding occurs

3.2
batch
entire content of a single identified production of material from the same manufacturing process

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3.3
active interface
contact area between the wheel tread and the top of the rail

3.4
trainborne
type of system installed on a train

3.5
trackside
type of system installed on or adjacent to the track

3.6
customer
railway undertaking, infrastructure owner, manufacturer or buyer of railway products or subassemblies, or their representative

3.7
supplier
supplier of adhesion materials

Note 1 to entry: A supplier might also be the manufacturer of the product.

3.8
product specification
document prepared by the customer that describes the conditions and requirements for the lubricant to meet

4 Adhesion material requirements

The adhesion material shall be designed to either reduce the occurrence of slipping or sliding or to enhance recovery of traction/ braking where slipping or sliding occurs.

Different materials may be used for traction/ braking.

When applied within the specified limits to the active interface the material shall not compromise the safety of the railway (i.e braking distance, signalling systems).

NOTE See Annex A.

5 General requirements

5.1 Introduction

This clause outlines the information required to gain approval on most railway networks. It does not cover its performance on the railway.

5.2 Product specification

The product specification shall be fully documented and shall include the following information:

a) purpose of material;

b) conformity to the applicable type tests as set out in Tables A.1 to A.2;

c) conformance with other relevant local requirements (such as environmental, fire, toxicity, etc…);

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