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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 - Kraftschlussmaterialien

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European foreword

This document (CEN/TS 15427-1-3:2021) 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*

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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, Turkey and the United Kingdom.

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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 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”;

— 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 wear of both wheel and rail 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;

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

— no effect on the performance of the infrastructure.

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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 only 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 a 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 15427-2-3:2021, *Railway application – Wheel/ Rail friction management – Part 2-3: Properties and Characteristics – Adhesion materials*

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

EN 50121-1, *Railway applications - Electromagnetic compatibility - Part 1: General*

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*

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