

# SVENSK STANDARD

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**Järnvägar – Friktionsstyrning av hjul/räl – Smörjning av flänsar**

**Railway applications – Wheel/rail friction management – Flange lubrication**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 15427**

October 2008

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ICS 21.260; 45.040

English Version

## Railway applications - Wheel/rail friction management - Flange lubrication

This European Standard was approved by CEN on 24 August 2008.

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## Foreword

This document (EN 15427:2008) 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by April 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to support Essential Requirements of EU Directive 96/48/EC<sup>1)</sup>, as modified by EU Directive 2004/50<sup>2)</sup> of 29 April 2004.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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<sup>1)</sup> Official Journal of the European Communities No L 235 of 17.09.96.

<sup>2)</sup> Official Journal of the European Communities No. L 220 of 21.6.04.

## SS-EN 15427:2008 (E)

### 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”;
- friction modification of the top of rail / wheel tread interface, commonly referred to as “top of rail friction management”.

This document sets out requirements for the lubrication of the wheel flange / rail gauge corner only. It describes systems fitted on board trains and on the track, as both systems may need to be employed to achieve effective lubrication of the wheel-rail interface.

Managing the wheel-rail interface effectively will reduce wear of both wheel and rail. When friction is managed effectively, noise levels, energy consumption 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 lubrication such that there is no:

- loss of traction or braking performance;
- adverse effect on signalling systems or track circuits;
- intolerable increased risk of fire;
- harmful environmental effect;
- incompatibility between the different lubricants in use, particularly, between solid and fluid systems.



## 1 Scope

This document is limited to specifying the requirements when applying lubricants to the wheel-rail interface between the wheel flange and the rail gauge corner (active interface) either directly or indirectly to the wheel flange or to the rail, and includes both trainborne and trackside solutions.

This document defines:

- the characteristics that systems of lubrication 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 lubrication of the wheel-rail interface.

## 2 Normative references

The following referenced documents are indispensable for the application 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*

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

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

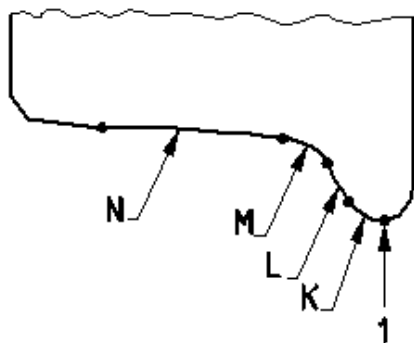
EN 61373, *Railway applications — Rolling stock equipment — Shock and vibration tests (IEC 61373:1999)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

Figures 1 and 2 show the areas on the wheel and rail that are referred to in this standard.

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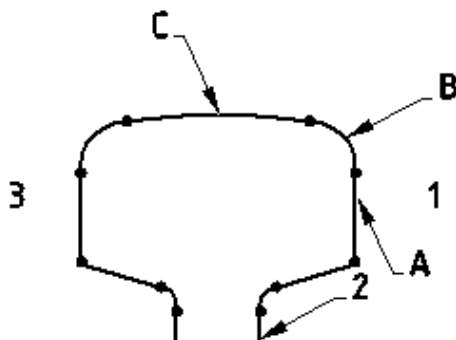


Key

- 1 flange tip
  - K flange toe
  - L flange face
  - M flange root/fillet
  - N tread/running surface
- } Flange

NOTE This terminology is specific to this document.

Figure 1 — Areas of a wheel tread



Key

- A gauge side face
- B gauge side corner
- C rail head
- 1 inside of rail
- 2 web
- 3 outside of rail

Figure 2 — Areas of a rail

3.1 active interface

contact area between wheel flange root and rail gauge side corner

NOTE Contact also occurs between the wheel tread and the rail head but this interface is not within the scope of this document.

### 3.2

#### **lubricant**

oil, grease, solid stick or other substance that lowers the friction level

### 3.3

#### **flange lubrication**

lubrication of the active interface by applying a lubricant to the wheel flange

### 3.4

#### **rail lubrication**

lubrication of the active interface by applying a lubricant to the rail gauge side face

### 3.5

#### **lubricant application unit (LAU)**

component of the lubrication system (trainborne or trackside) that delivers the lubricant to the active interface

NOTE This includes stick applicators, spray nozzles, trackside GDUs/blades, etc. See Annex A for more systems.

### 3.6

#### **lubrication system**

components required to apply lubricant to the active interface that may include one or more Lubricant Application Units, a reservoir unit, pump and/or a control device

### 3.7

#### **trainborne equipment**

lubrication system installed on the train

### 3.8

#### **trackside equipment**

lubrication system installed on or adjacent to the track

## 4 Requirements for trainborne equipment

### 4.1 General

**4.1.1** The trainborne equipment shall apply lubricant to take effect in the active interface as described in 4.5. It is generally used to apply lubricant to the wheel. The most effective use of lubricant is achieved by installation of lubricating equipment on wheelsets close to the leading end of a train. This ensures that all the subsequent active interfaces between train wheels and rails are lubricated. The optimum position for this equipment is on the leading wheelset, but space limitations may preclude this. The area of implementation and the lubrication system shall be defined and agreed by the customer.

NOTE If required, further wheelsets may be equipped with trainborne equipment.

**4.1.2** The trainborne equipment shall be designed to optimize lubrication of the active interface and limit contamination of any other part of the train or infrastructure. Build up of excess lubricant on the train should be avoided to reduce the risk of fire.

**4.1.3** Solid lubricants that are used in the form of, for example stick application on to the flange, may eject part of the stick as debris. The size of any piece of debris should be kept to a minimum.

NOTE It is suggested that the mass of any piece of debris should be no greater than 5 g.