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Railway applications – Braking – Calculations for the estimation of stopping distance for specific Wheel Slide Protection testing

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National foreword

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Railway applications - Braking - Calculations for the estimation of stopping distance for specific Wheel Slide Protection testing

Applications ferroviaires - Freinage - Calculs pour l'estimation des distances d'arrêt pour les essais spécifiques aux dispositifs d'anti-enrayage

Bahnanwendungen - Bremsen - Bremswegberechnungen für den Schleuderschutz

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European foreword

This document (CEN/TR 17315:2019) 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.

Introduction

EN 15595 for Wheel Slide Protection (WSP) provides methods for testing a WSP system (Clause 7) and criteria for the evaluation of its performance under test (Clause 8). This includes tests and evaluation of the stopping performance of a vehicle/train with the WSP system fitted, carried out as track tests or on a WSP simulator.

For the evaluation of stopping performance during slide tests (see 8.3), the standard specifies the maximum permitted stopping distance extension for a vehicle/train, measured as a percentage of its dry rail stopping distance (Table 8). The maximum extension values are derived from estimations of the wheel/rail adhesion improvement produced by the operation of the WSP system and the associated vehicle stopping distances expected in the slide tests, calculated as detailed in this document.

1 Scope

This document gives guidelines for the calculation of vehicle stopping distances when testing a WSP system using the methods specified in EN 15595, the standard for Wheel Slide Protection, under the conditions defined in that standard.

This document is only applicable to the calculation of stopping distances for the evaluation of the results of WSP tests carried out in accordance with EN 15595.

This document does not apply to calculations used to determine the stopping performance of a WSP equipped train under operational conditions as it is only applicable for specific WSP test conditions.

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 14478, *Railway applications – Braking - Generic vocabulary*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
adhesion profile
predefined set of data representing the adhesion characteristics of a section of running line

3.2
dry rail
conditions where 100 % of the brake force of the vehicle can be applied with no wheelset sliding more than 2 %

3.3
dry rail stopping distance
actual measured stopping distance in dry rail conditions

3.4
low adhesion
conditions where the wheel/rail adhesion is in the range 0,08 to 0,05

3.5
very low adhesion
conditions where the wheel/rail adhesion is in the range 0,05 to 0,03

3.6
extremely low adhesion
conditions where the wheel/rail adhesion is below 0,03

3.7
slide test
test performed under low, very low and extremely low adhesion conditions