

PD CEN/TR 16513:2014



BSI Standards Publication

Railway applications — Track — Survey of track geometry quality

bsi.

...making excellence a habit.™

National foreword

This Published Document is the UK implementation of CEN/TR 16513:2014.

The UK participation in its preparation was entrusted to Technical Committee RAE/2, Railway Applications — Track.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2014.
Published by BSI Standards Limited 2014

ISBN 978 0 580 77867 4
ICS 93.100

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 April 2014.

Amendments/corrigenda issued since publication

Date	Text affected
-------------	----------------------

ICS 93.100

English Version

Railway applications - Track - Survey of track geometry quality

Applications ferroviaires - Voie - Analyse de la qualité de la
géométrie de la voie

Bahnwendungen - Oberbau - Überblick über die
geometrische Gleislagequalität

This Technical Report was approved by CEN on 18 May 2013. It has been drawn up by the Technical Committee CEN/TC 256.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword	3
1 Scope	4
2 Terms and definitions	4
3 Symbols and abbreviations	4
4 Methodology	5
4.1 General considerations and confidentiality	5
4.2 Collected data	5
4.2.1 Scope of survey	5
4.2.2 Speed classes applied	5
4.2.3 Calculation of standard deviation	6
4.2.4 Calculation of cumulative frequency distributions	6
4.3 Data processing	6
5 Participating networks and involvement	6
5.1 Participating networks	6
5.2 Sample size of track data	7
6 Results	7
6.1 Results for standard deviation of longitudinal level	7
6.2 Results for standard deviation of alignment	9
6.3 Observation on results	11
7 Application of the results to EN 13848-6	12
Annex A (informative) Tables for cumulative frequency distributions for average track quality of all participating networks	13
Annex B (informative) Spread of data collected	15
Bibliography	17

Foreword

This document (CEN/TR 16513:2014) 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

1 Scope

CEN/TC 256/SC 1/WG 28 "Railway applications/Infrastructure/Track geometry quality" conducted a survey of the geometric quality of track across European railway networks. This was to get an understanding and overview of the track geometry across Europe in order to support the definition of track geometric quality classes for the writing of EN 13848-6.

This Technical Report describes the methodology used for the survey and gives the results.

2 Terms and definitions

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

2.1 track quality index

TQI

value that characterises track geometry quality of a track section based on parameters and measuring methods compliant with the EN 13848 series

2.2 track quality class

TQC

characterisation of track geometry quality as a function of speed and expressed as a range of *TQIs*

2.3 re-colouring

algorithm which converts one signal into a different signal and which is used in the EN 13848 series to convert a chord measurement signal into a *D1* or *D2* measurement signal

3 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

Table 1 — Symbols and abbreviations

Symbol	Designation	Unit
AL	Alignment	mm
<i>D1</i>	Wavelength range $3\text{ m} < \lambda \leq 25\text{ m}$	m
<i>D2</i>	Wavelength range $25\text{ m} < \lambda \leq 70\text{ m}$	m
λ	Wavelength	m
LL	Longitudinal level	mm
<i>QN1</i>	50 % quality level according to EN 14363:2005	mm
<i>QN2</i>	90 % quality level according to EN 14363:2005	mm
<i>SD</i>	Standard deviation	mm
<i>TQI</i>	Track Quality Index	–
ETQS	European track quality survey	–
<i>TQC</i>	Track Quality Class	–
<i>V</i>	Speed	km/h

NOTE In this Technical Report, "AL" stands for "alignment" and is not to be confused with *AL* standing for "alert limit" as defined in EN 13848-5.