SLOVENSKI STANDARD
SIST EN 13848-6:2026

01-september-2026

Nadomešča:
SIST EN 13848-6:2014+A1:2021

Železniške naprave - Zgornji ustroj proge - Kakovost tirne geometrije - 6. del: Karakterizacija kakovosti tirne geometrije

Railway applications - Track - Track geometry quality - Part 6: Characterisation of track geometry quality

Bahnanwendungen - Oberbau - Gleislagequalität - Teil 6: Charakterisierung der geometrischen Gleislagequalität

Sample Document

Applications ferroviaires - Voie - Qualité géométrique de la voie - Partie 6 : Caractérisation de la qualité géométrique de la voie

get full document from standards.iteh.ai

Ta slovenski standard je istoveten z: **EN 13848-6:2026**

ICS:

45.080	Tračnice in železniški deli	Rails and railway components
93.100	Gradnja železnic	Construction of railways

SIST EN 13848-6:2026 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

Sample Document

get full document from standards.iteh.ai

SIST EN 13848-6:2026

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13848-6

July 2026

ICS 93.100

Supersedes EN 13848-6:2014+A1:2020

English Version

Railway applications - Track - Track geometry quality - Part 6: Characterization of track geometry quality

Applications ferroviaires - Voie - Qualité géométrique de la voie - Partie 6 : Caractérisation de la qualité géométrique de la voie

Bahnanwendungen - Oberbau - Gleislagequalität - Teil 6: Charakterisierung der geometrischen Gleislagequalität

This European Standard was approved by CEN on 27 April 2026.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Türkiye and United Kingdom.

Sample Document
get full document from standards.iteh.ai

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

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

© 2026 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 13848-6:2026 E

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

Contents

Page

Standards Document
iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

Sample Document
get full document from standards.iteh.ai

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

European foreword

This document (EN 13848-6:2026) 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 January 2027, and conflicting national standards shall be withdrawn at the latest by January 2027.

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 supersedes EN 13848-6:2014+A1:2020.

EN 13848-6:2026 includes the following significant technical changes with respect to EN 13848-6:2014+A1:2020:

— change of the structure of the document;

— revision of Annex A;

— revision of Annex B.

In this document, the Annex C is normative and the Annexes A, B and D are informative.

Sample Document

The EN 13848 series, under the general title *Railway applications — Track — Track geometry quality*, consists of the following parts:

get full document from standards.iteh.ai

— *Part 1: Characterization of track geometry;*

— *Part 2: Measuring systems — Track recording vehicles;*

— *Part 3: Measuring systems — Track construction and maintenance* machines;

— *Part 4: Measuring systems — Manual and lightweight devices;*

— *Part 5: Geometric quality levels — Plain line, switches and crossings;*

— *Part 6: Characterization of track geometry quality.*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: 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, Türkiye and the United Kingdom.

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

1 Scope

This document specifies the method to characterize and classify the quality of track geometry based on parameters specified in EN 13848-1.

This document also specifies different track geometry classes.

This document does not:

— apply to lines with a nominal gauge less than 1 435 mm;

— specify requirements for urban rail systems.

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 13848-1:2019, *Railway applications - Track - Track geometry quality - Part 1: Characterization of track geometry*

EN 17343, *Railway applications - General terms and definitions*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

Sample Document

For the purposes of this document, the terms and definitions given in EN 17343 and the following apply.

det full document from standards.iteh.ai

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

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
decolouring
algorithm which modifies the spectral content of a signal aimed to compensate or apply the characteristics of a specific measuring system

Note 1 to entry: The decolouring is used in EN 13848 series to convert a chord measurement signal into a *D1* or *D2* measurement signal.

3.1.2
track quality index
TQI
value that characterizes track geometry quality of a track section based on parameters and measuring methods in conformity with the EN 13848 series

3.1.3
track quality class
TQC
characterization of track geometry quality as a function of speed and expressed as a range of TQIs

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

3.2 Symbols and abbreviations

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

AL	alignment	mm
ATQI	alternative track quality index	
CL	cross level	mm
CoSD	combined standard deviation	mm
cr	curvature	1/m
D0	wavelength range $1 < \lambda \leq 5$	m
D1	wavelength range $3 < \lambda \leq 25$	m
D2	wavelength range $25 < \lambda \leq 70$	m
D3	wavelength range $70 < \lambda \leq 150$ for longitudinal level wavelength range $70 < \lambda \leq 200$ for alignment	m
λ	wavelength	m
G	track gauge	mm
LL	longitudinal level	mm
MBS	multi body system	
PMA	point mass acceleration [method]	
PSD	power spectral density	$m^2/(1/m)$
SD	standard deviation	mm
SD_{LL}	standard deviation, longitudinal level	mm
SD_{AL}	standard deviation, alignment	mm
TQI	track quality index	
TQI_{ref}	reference track quality index	
TQC	track quality class	
V	speed	km/h
VRA	vehicle response analysis [method]	

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

Sample Document
get full document from standards.iteh.ai

4 General principles

4.1 Introduction

In order to provide a sufficient level of safety, ride quality and cost-effective railway traffic, track geometry quality is assessed.

This document deals with track geometry quality classification regarding ride quality through TQIs. The safety aspect on the other hand is covered in EN 13848-5.

TQIs can be calculated using different methods. The ones described in Clause 5 are applied by at least one European network. The reference method for calculating comparable TQIs is detailed in Clause 7.

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026

SIST EN 13848-6:2026

4.2 Parameters for track geometry quality assessment

As track geometry measurement systems present their outputs in accordance with the parameters specified in EN 13848-1, any standardized assessment method shall be based on these parameters.

4.3 Transparency

Any algorithm for track geometry quality assessment complying with this document shall be fully documented, reproducible and available in the public domain.

4.4 Complexity

Track geometry quality should be assessed by as few *TQI*s as possible and the algorithm should be understandable by the user.

4.5 Track-vehicle interaction

Track quality assessment should reflect the principles of track-vehicle interaction. For example, the track geometry defects of the same amplitude but different wavelengths lead to different vehicle responses and the required wavelength range will be different depending on the track-vehicle interaction parameters to be assessed.

5 Methods of assessment of track geometry quality

5.1 General

Considering their wide use across European railway networks and the need to have a single, easily understandable *TQI*, standard deviation (*SD*) of longitudinal level and alignment defined in 5.2 is taken as the reference method to describe track geometry quality. It will be referred to as TQI_{ref} in the following and is specified in Annex C.

Sample Document
get full document from standards.iteh.ai

Establishing a TQI by other means may be used providing that complete documentation is available about the method and how it relates to the reference method as described in Annex D.

The methods described in the following subclauses can be applied to any track geometry data of interest. Switches may be included.

5.2 Reference method: TQI_{ref} - Standard deviation (*SD*)

The standard deviation is the most commonly used aggregation method to calculate *TQI* by European railway networks. It represents the dispersion of a signal over a given track section, in relation to the mean value of this signal over the considered section.

$$SD = \sqrt{\frac{\sum_{i=1}^{N} (x_i - \bar{x})^2}{N-1}} \quad (1)$$

where

N is the number of values in the sample;

x_i is the current value of a signal;

$\bar{x}$ is the mean value of a signal;

SD is the standard deviation.

The standard deviation is linked to the energy of the signal in a given wavelength range $[\lambda 1, \lambda 2]$ according to the following relationship:

SIST EN 13848-6:2026 • https://standards.iteh.ai/catalog/standards/sist/23bece2f-4c2a-46e7-9af5-50e03e63ca00/sist-en-13848-6-2026