



**NSAI**  
Standards

Irish Standard  
I.S. EN 13848-5:2017

# Railway applications - Track - Track geometry quality - Part 5: Geometric quality levels - Plain line, switches and crossings

**I.S. EN 13848-5:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN 13848-5:2017 is the adopted Irish version of the European Document EN 13848-5:2017, Railway applications - Track - Track geometry quality - Part 5: Geometric quality levels - Plain line, switches and crossings

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EUROPEAN STANDARD

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## Railway applications - Track - Track geometry quality - Part 5: Geometric quality levels - Plain line, switches and crossings

Applications ferroviaires - Voie - Qualité géométrique  
de la voie - Partie 5 : Niveaux de la qualité géométrique  
de la voie - Voie courante et appareils de voie

Bahnanwendungen - Oberbau - Qualität der  
Gleisgeometrie - Teil 5: Geometrische Qualitätsstufen -  
Gleise, Weichen und Kreuzungen

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## European foreword

This document (EN 13848-5:2017) 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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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 13848-5:2008+A1:2010.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

This European Standard is one of the series EN 13848 *Railway applications – Track – Track geometry quality* as listed below:

- *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 light weight devices*
- *Part 5: Geometric quality levels – Plain line, switches and crossings*
- *Part 6: Characterization of track geometry quality*

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## EN 13848-5:2017 (E)

### 1 Scope

This European Standard defines the minimum requirements for the quality levels of track geometry, and specifies the safety related limits for each parameter as defined in EN 13848-1 and measured by any track geometry measurement system as defined in EN 13848-2, EN 13848-3 and EN 13848-4.

This European Standard covers the following topics:

- immediate action limits (IAL);
- recommendations on tolerance levels for isolated defects;
- relative importance of parameters with respect to the vehicle behaviours.

The necessity to measure, the frequency of measurements and the selection of measured parameters are not covered by this European Standard.

This European Standard applies to high-speed and conventional lines, including switches and crossings, of 1 435 mm and wider gauge railways provided that the vehicles operated on those lines comply with EN 14363 and other vehicle safety standards.

This European Standard does not apply to Urban Rail Systems.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13848-1:2003+A1:2008, *Railway applications - Track - Track geometry quality - Part 1: Characterisation of track geometry*

EN 14363:2016, *Railway applications - Testing and Simulation for the acceptance of running characteristics of railway vehicles - Running Behaviour and stationary tests*

EN 13803:2017, *Railway applications - Track - Track alignment design parameters - Track gauges 1 435 mm and wider*

### 3 Terms and definitions

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

#### 3.1

##### **nominal track gauge**

reference value for track gauge used by individual networks

#### 3.2

##### **design track gauge**

design value of track gauge for a given track section, which might be different from the nominal track gauge

#### 3.3

##### **mean track gauge**

sliding arithmetic mean track gauge over a specified distance

Note 1 to entry: In this European Standard a length of 100 m is applied.



### 3.4

#### QN3 level

quality limit for discrete track defects in accordance with EN 14363

### 3.5

#### isolated defect

part of the signal exceeding a given limit such as *IAL*, *IL* or *AL* with at least one sample for a sampling distance of 0,25 m

Note 1 to entry: The length of the exceedance is given by the number of samples exceeding the limit.

## 4 Symbols and abbreviations

For the purposes of this document, the symbols and abbreviations listed in Table 1 apply.

**Table 1 — Symbols and abbreviations**

Symbol or abbreviation	Designation	Unit
<i>AL</i>	Alert limit	mm or mm/m
<i>IL</i>	Intervention limit	mm or mm/m
<i>IAL</i>	Immediate action limit	mm or mm/m
<i>D1</i>	Wavelength range <i>D1</i> : $3\text{ m} < \lambda \leq 25\text{ m}$	m
<i>D2</i>	Wavelength range <i>D2</i> : $25\text{ m} < \lambda \leq 70\text{ m}$	m
<i>D3</i>	Wavelength range <i>D3</i> : $70\text{ m} < \lambda \leq 150\text{ m}$ for longitudinal level Wavelength range <i>D3</i> : $70\text{ m} < \lambda \leq 200\text{ m}$ for alignment	m
$\ell$	Twist base-length	m
$\lambda$	Wavelength	m
<i>N/A</i>	Not applicable	
<i>R</i>	Curve radius	m
<i>D</i>	Cross level	mm
<i>V</i>	Speed	km/h

## 5 General Considerations

The importance of assessing the track geometric quality arose in the middle of the 20th century. Therefore, European Infrastructure Managers developed their own track recording vehicles allowing a continuous measurement of track geometry and based on this experience, their own track geometry quality evaluation standards evolved.

These independent developments resulted in different measuring and evaluation methods which are no longer adequate in the light of the requirements of European railway interoperability. This is because it is difficult to compare the track geometry conditions of various European infrastructures. Yet, at least for safety reasons, it is necessary to make such comparisons. The main purpose of the standard is to define minimum requirements for track geometry based on isolated defects to ensure safe operation of trains. It is based on both the experience of various European Infrastructure Managers and current track conditions.

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