

<b>STN P</b>	<b>Železnice</b> <b>Skúmanie vozidiel na kvantifikáciu zaťaženia</b> <b>koľaje v polomeroch oblúkov menších ako 250 m</b>	<b>STN P</b> <b>CEN/TS 17843</b>  28 0352
------------------	---	--

Railway applications - Investigations on vehicles to quantify track loading in curve radii below 250 m

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/22

Táto predbežná slovenská technická norma je určená na overenie. Prípadné pripomienky pošlite do augusta 2024 Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

Obsahuje: CEN/TS 17843:2022

**136084**



TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CEN/TS 17843**

September 2022

ICS 45.060.01

English Version

**Railway applications - Investigations on vehicles to  
quantify track loading in curve radii below 250 m**

Applications ferroviaires - Investigations sur les  
véhicules pour quantifier la sollicitation de la voie dans  
les courbes de rayon inférieur à 250 m

Bahnanwendungen - Untersuchungen an Fahrzeugen  
zur Quantifizierung der Fahrwegbeanspruchung in  
Bogenradien unter 250 m

This Technical Specification (CEN/TS) was approved by CEN on 15 August 2022 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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.



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

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

**CEN/TS 17843:2022 (E)**

<b>Contents</b>		<b>Page</b>
<b>European foreword</b> .....		<b>3</b>
<b>Introduction</b> .....		<b>4</b>
<b>1</b>	<b>Scope</b> .....	<b>5</b>
<b>2</b>	<b>Normative references</b> .....	<b>5</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>5</b>
<b>4</b>	<b>Deviation from requirements</b> .....	<b>6</b>
<b>5</b>	<b>Test requirements</b> .....	<b>6</b>
<b>5.1</b>	<b>General</b> .....	<b>6</b>
<b>5.2</b>	<b>Test extent</b> .....	<b>6</b>
<b>5.3</b>	<b>Test vehicle</b> .....	<b>6</b>
<b>5.4</b>	<b>Test conditions</b> .....	<b>6</b>
<b>5.5</b>	<b>Assessment of test results and documentation</b> .....	<b>6</b>
<b>6</b>	<b>Test zone 5 – dynamic performance assessment</b> .....	<b>7</b>
<b>6.1</b>	<b>General</b> .....	<b>7</b>
<b>6.2</b>	<b>Choice of measuring method</b> .....	<b>7</b>
<b>6.3</b>	<b>Performing on-track tests</b> .....	<b>7</b>
<b>6.4</b>	<b>Measured quantities and measuring points</b> .....	<b>8</b>
<b>6.5</b>	<b>Assessment quantities and limit values</b> .....	<b>8</b>
<b>6.6</b>	<b>Test evaluation</b> .....	<b>9</b>
<b>6.7</b>	<b>Dispensation from tests, reduced test extent</b> .....	<b>10</b>
<b>Annex A (informative) Running Safety and Track Loading in Curves with <math>R &lt; 250</math> m</b> .....		<b>11</b>
<b>Annex B (informative) Example for a simplified method using simulation validated for application under test zone 5 conditions</b> .....		<b>15</b>
<b>Annex C (informative) Example of limit values</b> .....		<b>17</b>
<b>Annex D (informative) Simple parameter check (dispensation from assessment of track loading)</b> .....		<b>18</b>
<b>Bibliography</b> .....		<b>20</b>

## **European foreword**

This document (CEN/TS 17843:2022) 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.

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 announce this Technical Specification: 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.

**CEN/TS 17843:2022 (E)****Introduction**

EN 14363 defines necessary tests for assessing running behaviour for vehicle homologation. In the acceptance process the range of curve radii tested during on-track testing is defined with  $R_{\min} = 250$  m. A vehicle accepted according to the requirements of this document is able to be operated on all standard gauge tracks complying with EN 13803 [1], which means with  $R_{\min} = 150$  m. Beyond that, operation is also permitted even in smaller curve radii. It is state of the art that the minimum curve radius a vehicle is able to negotiate is validated by tests as described in EN 50215:2009, 9.9.2 [2]. These tests cover verification of adequate clearances for operation of the vehicle under specified limited cases (curvature, cant, etc.) in all load conditions and failure modes of the suspension. Running safety in curve radii below 250 m is covered by these tests as well as the proof of safety against derailment in twisted track according to EN 14363:2016+A1:2018, 6.1 (see A.1).

Regardless of the topic 'curve radius' it is stated in the EN 14363 that "experience over many years has demonstrated that vehicles complying with this document can be operated safely on infrastructure with conditions more severe than the target test conditions, if the current general operating rules are applied." General operating rules, including parameters like cant deficiency or axle load, have an influence on the physical effects that are intended to be controlled by this specification.

Most European infrastructure managers operate vehicles accepted according to EN 14363 without requesting additional on-track testing with curve radii lower than 250 m. Despite this, they have been running safely and reliably for many decades.

Depending on experience from some infrastructure managers, facing damages on tracks with curve radii smaller than 250 m after introduction of new rolling stock and modifications of operating conditions national rules were developed to control this field of operation, for example in Austria [5], the Czech Republic (applying also [5]) and Switzerland [4]. The requirements of these national rules differ in detail and make bilateral acceptance unfeasible.

Therefore, this specification has been developed.

**NOTE** The experience of many countries over many decades shows that for safe operation with an acceptable level of track loading on the whole network it is sufficient to assess vehicles according to EN 14363. It is not the intention of this specification to initiate new national rules in these fields.

## 1 Scope

This document covers the following aspects:

- Definition of a common method to assess track loading of a heavy rail vehicle for lines of 1 435 mm track gauge in curve radii below 250 m (test zone 5), which is not part of the acceptance testing according to EN 14363. This method is restricted to vehicles with maximum vertical wheelset forces up to 225 kN. It includes consideration of:
  - on-track measurements with instrumented wheelsets;
  - on-track measurements with local measurement sites;
  - simulation including description of requirements for use;
  - recalculation of EN 14363 results including description of requirements for use;
  - simple parameter check (dispensation from assessment of track loading).
- Description of available knowledge of running behaviour of existing vehicles.
- Description of observed track wear and damage related to traffic mix, track loading results of vehicles and axle loads related to track design.

The decision which railway line requires these tests is not part of this specification.

This specification can support national regulations in this field but does not affect directly existing national regulations such as [4] and [5].

## 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 14363:2016+A1:2018, *Railway applications - Testing and Simulation for the acceptance of running characteristics of railway vehicles - Running Behaviour and stationary tests*

EN 15663, *Railway applications — Vehicle reference masses*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**