

# SVENSK STANDARD

## SS-EN 13231-3:2012



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### **Järnvägar – Spår – Godkännande av arbeten – Del 3: Godkännande av reprofilering av räler i spår**

### **Railway applications – Track – Acceptance of works – Part 3: Acceptance of reprofiling rails in track**

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Denna standard ersätter SS-EN 13231-3:2006, utgåva 1.

The European Standard EN 13231-3:2012 has the status of a Swedish Standard. This document contains the official version of EN 13231-3:2012.

This standard supersedes the Swedish Standard SS-EN 13231-3:2006, edition 1.

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EUROPEAN STANDARD

**EN 13231-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2012

ICS 93.100

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English Version

## Railway applications - Track - Acceptance of works - Part 3: Acceptance of reprofiling rails in track

Applications ferroviaires - Voie - Réception des travaux -  
Partie 3: Critères de réception des travaux de reprofilage  
des rails en voie

Bahnanwendungen - Oberbau - Abnahme von Arbeiten -  
Teil 3: Abnahme von reprofilierten Schienen im Gleis

This European Standard was approved by CEN on 20 August 2011.

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.

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

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## SS-EN 13231-3:2012 (E)

### Foreword

This document (EN 13231-3:2012) 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 July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

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.

This document supersedes EN 13231-3:2006.

The changes with respect to the previous document (EN 13231-3:2006) include:

- a) a reduced number of acceptance criteria for the longitudinal profile (only one instead of three) in line with current European practice;
- b) reference points for interpretation of transverse profiles corresponding with the gauge recording points;
- c) simplified methods to prove measurement systems (for reference and approved instruments as described in Annexes A and B);
- d) introduction of a procedure to routinely demonstrate acceptability of approached instruments in Annex D;
- e) integration of normative Annexes A, B, C and D.

This European Standard is one of the series EN 13231 "Railway applications — Track — Acceptance of works" as listed below:

— *Part 1: Works on ballasted track — Plain line, switches and crossings*

— *Part 3: Acceptance of reprofiling rails in track*

— *Part 4: Acceptance of reprofiling rails in switches and crossings*

NOTE Part 2 does not exist in this series.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



## 1 Scope

This European Standard specifies the technical requirements and the measurements to be made for the acceptance of work to reprofile longitudinally and/or transversely the heads of railway rails. For acceptance purposes, two classes of longitudinal profile and three classes of transverse profile tolerance are defined.

Annexes describe procedures to verify reference instruments to be used for these measurements as well as methods to approve non-reference instruments to be used for measurements.

This European Standard applies to reprofiled vignole railway rails 46 kg/m and above.

It does not apply for acoustic rail reprofiling.

A form of acceptance documentation that may be used is given in Annex E.

## 2 Normative references

The following referenced documents are indispensable for the application 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 ISO 3274, *Geometrical product specifications (GPS) — Surface texture: Profile method — Nominal characteristics of contact (stylus) instruments (ISO 3274:1996)*

EN ISO 3611, *Geometrical product specifications (GPS) — Dimensional measuring equipment: Micrometers for external measurements — Design and metrological characteristics (ISO 3611:2010)*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 4288, *Geometrical product specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture (ISO 4288:1996)*

EN ISO 10360-2, *Geometrical product specifications (GPS) — Acceptance and reverification tests for coordinate measuring machines (CMM) — Part 2: CMMs used for measuring linear dimensions (ISO 10360-2:2009)*

## 3 Terms and definitions

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

### 3.1

#### **angle of inclination of rail**

nominal angle at which rail is laid (see Figure 1 b)), e.g. 0° (vertical rails), 2,86° (1:20 inclination), 1,91° (1:30 inclination), 1,43° (1:40 inclination), etc., inclined towards the centre of the track

NOTE For rail which is laid in non-canted track, the angle of inclination of the rail is equal to the angle between the vertical and the centre-line of the inclined rail.

### 3.2

#### **approved instrument**

instrument for measurement of longitudinal or transverse profile the usage of which is justified by correlation of its performance with that of a reference instrument in accordance with the defined procedure

NOTE For procedure to demonstrate correlation, see Annex B.

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### 3.3

#### **characteristic length**

length on the rail travelled during one rotation of a grinding stone or milling wheel

### 3.4

#### **class 1, class 2**

classes of longitudinal profile differentiated by the proportion of a reprofiling site reaching a specified standard

NOTE For longitudinal profile, see 4.3.

### 3.5

#### **class Q, class R, class S**

classes of transverse profile differentiated by the proportion of a reprofiling site reaching a specified standard

NOTE For transverse profile, see 5.3.

### 3.6

#### **cut-off wavelength**

wavelength of a sinusoidal profile of which 50 % of the amplitude is transmitted by the profile filter

NOTE Profile filters are identified by their cut-off wavelength value, see EN ISO 11562.

### 3.7

#### **deviation of the measured profile**

deviation between the measured transverse profile and the reference rail, measured normal to the surface of the reference rail when the measured transverse profile and the reference rail are aligned at points A and B<sub>1</sub> or A and B<sub>2</sub>, without rotation of either profile; the deviation is considered positive when the measured transverse profile is above the reference rail

NOTE For deviation, see Figure 3.

### 3.8

#### **facet**

approximately plane sector of the profile of a reprofiled rail produced by the reprofiling tool

### 3.9

#### **filtered profile**

profile which results from applying a profile filter to the primary profile

### 3.10

#### **percentage exceedance**

percentage length of a test site over which a measurement of the amplitude of the filtered profile exceeds a prescribed limit

### 3.11

#### **phase correct profile filter**

profile filter which does not cause phase shifts which lead to asymmetrical profile distortions

NOTE For profile filter, see EN ISO 11562.

### 3.12

#### **primary profile**

representation of the measured longitudinal profile before application of any profile filter

### 3.13

#### **profile filter**

electronic device or signal processing which separates profiles into long-wave and short-wave components, or into components within a specified wavelength range

**3.14**

**rail crown line**

that line on the rail head surface that is corresponding to the Y-Y axis of the rail profile

**3.15**

**range of deviation**

difference between the maximum and minimum values of the deviation of the measured transverse profile

NOTE For measured profile, see Figure 3.

**3.16**

**reference instrument**

instrument for the measurement of longitudinal or transverse profile the performance of which has been verified in accordance with the procedure defined in Annex A

**3.17**

**reference line**

line normal to the track's longitudinal axis and tangent to the heads of both rails

**3.18**

**reference point A**

point towards the gauge side of a reference rail at which the angle between the reference line and the tangent to the profile is equal to the specified angle of inclination

NOTE For specified angle of inclination, see Figure 1.

**3.19**

**reference point B<sub>1</sub>**

point on the gauge face of a reference rail which lies 14 mm below that line that is parallel to the reference line and which passes through reference point A

NOTE For reference point, see Figure 1 a).

**3.20**

**reference point B<sub>2</sub>**

point on the gauge corner of a reference rail at which a line which is tangent to the rail lies at an angle of 45° to the reference line

NOTE For reference point, see Figure 1 b).

**3.21**

**reference profile**

transverse profile to which rail is to be reprofiled, within the specified tolerances

**3.22**

**reference rail**

rail with the reference profile, at the desired angle of inclination relative to the reference line

NOTE For reference rail, see Figure 1 a).

**3.23**

**reprofiling**

action that is undertaken to modify the longitudinal or transverse profile of a rail

**3.24**

**reprofiling site**

continuous length of track where the rail is to be reprofiled excluding level crossings and switches and crossing work within the length of track