

This document is a preview generated by EVS

Railway applications - Rail defects - Part 1: Rail defect management

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 17397-1:2020 sisaldab Euroopa standardi EN 17397-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 17397-1:2020 consists of the English text of the European standard EN 17397-1:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.11.2020.	Date of Availability of the European standard is 25.11.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 93.100

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 17397-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2020

ICS 93.100

English Version

## Railway applications - Rail defects - Part 1: Rail defect management

Applications ferroviaires - Défauts de rails - Partie 1 :  
Gestion des défauts de rails

Bahnanwendungen - Schienenfehler - Teil 1:  
Handhabung von Schienenfehlern

This European Standard was approved by CEN on 28 September 2020.

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, Turkey 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**

<b>Contents</b>	<b>Page</b>
European foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions .....	4
4 Abbreviations .....	7
5 Defect management system.....	7
5.1 General.....	7
5.2 Defect types.....	7
5.3 NDT inspection of rails.....	7
5.4 Management of NDT inspection results .....	8
6 Limits of rail condition.....	8
6.1 General.....	8
6.2 Definition of limits.....	8
6.3 Rail defect immediate action limits $L_{IA}$ .....	10
7 Risk mitigation .....	10
Annex A (informative) Description of rail defects .....	11
A.1 Definition and description of rail defects.....	11
A.2 Characterization of rail defects.....	15
A.2.1 Transverse cracking.....	15
A.2.2 Horizontal cracking.....	19
A.2.3 Longitudinal vertical cracking .....	25
A.2.4 Squat .....	29
A.2.5 Head checks.....	33
A.2.6 Other rail head surface conditions .....	35
A.2.7 Corrosion.....	50
A.2.8 Wear.....	54
A.2.9 Other rail defects.....	59
Annex B (informative) Immediate action limits $L_{IA}$ .....	67
Bibliography.....	69

## European foreword

This document (EN 17397-1:2020) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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.

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, Turkey and the United Kingdom.

## 1 Scope

This document specifies the defect management system the infrastructure manager uses to control the risk of severe accidents due to degradation of internal or surface defects on rails complying with EN 13674-1, EN 13674-2, EN 13674-4 and EN 15689:2009 (excluding grooved rails EN 14811 — which need alternative 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 16729-3:2018, *Railway applications - Infrastructure - Non-destructive testing on rails in track - Part 3: Requirements for identifying internal and surface rail defects*

## 3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **plain rail**

zone comprising all parts of the rail located away from the rail ends and the welding zones

### 3.2

#### **rail end**

part of the rail located within the length of the fishplates

### 3.3

#### **welding zone**

weld material itself plus 20 mm from each end of the weld collar (for aluminothermic welding and electric arc welding) or upset (flash-butt welding)

Note 1 to entry: Any defect occurring in this zone is classified as a welding defect.

### 3.4

#### **defective rail**

rail which, for reasons of integrity or profile (including wear), requires management (examples in Annex A)

### 3.5

#### **damaged rail**

rail which is neither cracked nor broken, but which has other defects

### 3.6

#### **cracked area**

part of the rail with a localized material discontinuity