

RAUDTEEALASED RAKENDUSED. RÖÖBASTEE.
MAANTEEL JA RAUDTEEL LIIKUVAD MASINAD NING
JUURDEKUULUV LISAVARUSTUS. OSA 1: TEHNILISED
NÕUDED LIIKUMISELE JA TÖÖTAMISELE

Railway applications - Track - Road-rail machines and
associated equipment - Part 1: Technical requirements
for travelling and working

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 15746-1:2021 sisaldab Euroopa standardi EN 15746-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 15746-1:2021 consists of the English text of the European standard EN 15746-1:2020.
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 and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.12.2020.	Date of Availability of the European standard is 23.12.2020.
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ICS 93.100

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English Version

**Railway applications - Track - Road-rail machines and
associated equipment - Part 1: Technical requirements for
travelling and working**

Applications ferroviaires - Voie - Machines rail-route et
équipements associés - Partie 1 : Prescriptions
techniques pour le déplacement et le travail

Bahnwendungen - Oberbau - Zweiwege-Maschinen
und zugehörige Ausrüstungen - Teil 1: Technische
Anforderungen an die Versetzfahrt und den
Arbeitseinsatz

This European Standard was approved by CEN on 5 May 2019.

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European foreword

This document (EN 15746-1:2020) 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of an identical text or by endorsement, at the latest by June 2021, and conflicting national standards shall be withdrawn at the latest by June 2021.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.

This document supersedes EN 15746-1:2010+A1:2011.

Principal amended clauses compared to EN 15746-1:2010+A1:2011:

- general All references updated to latest issue;
- running, travelling and working modes adopted;
- requirements solely for running mode moved to new EN 15746-3:2020;
- 4.3 New clause;
- 5.5 Clause on safety against derailment enhanced to provide greater clarity and increased options for testing;
- 5.6 Specific requirements for prevention of overturning moved from EN 15746-2:2010+A1:2011, 5.11 with enhanced requirements for RCI/RCL and data recording;
- 5.7 Requirements for frame structure simplified;
- requirements for demountable modules added;
- 5.8 Requirements for couplings made more specific for road-rail machines;
- 5.14 Requirements for lighting amended;
- 5.16 Requirements for pantographs enhanced;
- 5.24 New clause for environmental protection;
- Annexes All annexes reviewed and updated;
- Annex C Now informative;
- Annex D Now informative and the identification number changed to commence ZZ;
- Annex E Now informative.

EN 15746, *Railway applications — Track — Road-rail machines and associated equipment*, is currently composed with the following parts:

- *Part 1: Technical requirements for travelling and working;*
- *Part 2: General safety requirements;*
- *Part 3: Technical requirements for running;*
- *Part 4: Technical requirements for running, travelling and working on urban rail.*

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.

Introduction

This European Standard was prepared to meet the essential requirements of EU Directives to facilitate an open market for goods and services.

This document is the first of a series of four parts of the European Standard: *Railway applications — Track — Road-rail machines and associated equipment*, dealing with railway specific risks of the road-rail machines when running, travelling and working on railway infrastructures:

- Part 1 covers the technical requirements for the machines in travelling and working modes, and is applicable for all machines.
- Part 2 covers the safety requirements for the machines in travelling and working modes; this is a document harmonized with the European Machinery Directive 2006/42/EC.
- Part 3 covers the essential requirements for the machines that have a running mode and run on tracks within the scope of the Railway Directive 2007/58/EC; this is a document harmonized with the Railway Interoperability Directive 2008/57/EC and its associated Technical Specifications for Interoperability (TSI).
- Part 4 covers the technical requirements for the machines that have a running mode on urban rail and/or for machines intended to have running, travelling and/or working mode on urban rail.

Part 1 defines requirements for approval of the machine for use on the railway. Depending on the decision of the Infrastructure Manager or National rules the assessment of conformance could be by the Infrastructure Manager concerned, by a third party assessor or declaration of conformity by the manufacturer.

Part 2 defines requirements for the machine to be declared conformant by the manufacturer, except in the case of machines classified under Annex 4 of the Machinery Directive, which require a conformity check in conjunction with a notified body.

Part 3 defines requirements for running on the European railway network. Assessment of conformity is by a notified body as prescribed in the Railway Interoperability Directive.

Part 4 defines requirements for approval of the machine for use on urban rail. Depending on the decision of the manager of the network or National rules the assessment of conformance could be by the Urban Rail Manager concerned, by a third party assessor or declaration of conformity by the manufacturer.

The risks which exist in all mechanical, electrical, hydraulic, pneumatic and other components of machines and which are dealt with in the relevant European Standards are not within the scope of this European Standard. Where necessary, references are made to appropriate standards of this type.

1 Scope

1.1 General

This document deals with the technical requirements to minimize the specific railway hazards of self-propelled road-rail machines – henceforward referred to as machines – and associated equipment, which can arise during the commissioning, operation and maintenance of the machines when carried out in accordance with the specification given by the manufacturer or his authorized representative.

These risks are normally common regardless of the track gauge. However, additional requirements can apply for travelling and working on infrastructures with narrow gauge or broad gauge lines, railways utilizing other than adhesion between the rail and rail wheels and underground infrastructures.

This document is also applicable for machines and associated equipment that in working configuration are partly supported on the ballast or the formation. Such machines are capable of independent self-propelled movement on the ground.

This document does not apply to the following:

- the requirements for quality of the work or performance of the machine;
- the specific requirements established by the machine operator for the use of machines, which will be the subject of negotiation between the manufacturer and the Infrastructure Manager;
- moving and working while not on rails;
- separate machines temporarily mounted on machines and associated equipment;
- demountable machines as defined in 3.2;
- trailers as defined in 3.3, including road-rail trailers.

Vehicles which are not track-guided themselves but have attachments that are track-guided are not road-rail machines.

The requirements within this document are amended and added to by the requirements in EN 15746-4 for machines designed and intended to use urban rail.

This document does not establish the additional requirements for the following:

- operation subject to special rules, e.g. potentially explosive atmospheres;
- hazards due to natural causes, e.g. earthquake, lightning, flooding;
- working methods;
- operation in severe working conditions requiring special measures, e.g. work in tunnels or in cuttings, extreme environmental conditions such as: freezing temperatures, high temperatures, corrosive environments, tropical environments, contaminating environments, strong magnetic fields;
- hazards due to errors in software;
- hazards occurring when used to handle suspended loads which may swing freely.

For a road-rail machine it is assumed that an EU road permissible host vehicle will offer an accepted safety level for its designed basic functions before conversion. Unless explicitly stated otherwise in a particular clause this specific aspect is not dealt with in this European Standard.

Other track construction and maintenance machines used on railway tracks are dealt with in other European Standards, see Annex F.

1.2 Validity of this document

This document applies to all machines which are ordered one year after the publication date by CEN of this document.

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 280, *Mobile elevating work platforms — Design calculations — Stability criteria — Construction — Safety — Examinations and tests*

EN 286-3, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 3: Steel pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

EN 286-4, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 4: Aluminium alloy pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

EN 13309, *Construction machinery — Electromagnetic compatibility of machines with internal power supply*

EN 13715, *Railway applications — Wheelsets and bogies — Wheels — Tread profile*

EN 14033-1:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 1: Technical requirements for running*

EN 14033-2:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for travelling and working*

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 14601, *Railway applications — Straight and angled end cocks for brake pipe and main reservoir pipe*

EN 15273-2:2013+A1:2016, *Railway applications — Gauges — Part 2: Rolling stock gauge*

EN 15528, *Railway applications — Line categories for managing the interface between load limits of vehicles and infrastructure*

EN 15566, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

EN 15746-2:2020, *Railway applications — Track — Road-rail machines and associated equipment — Part 2: General safety requirements*

EN 15746-3:2020, *Railway applications — Track — Road-rail machines and associated equipment — Part 3: Technical requirements for running*

EN 15746-4:2020, *Railway applications — Track — Road-rail machines and associated equipment — Part 4: Technical requirements for running, travelling and working on urban rail*

EN 15954-1:2013, *Railway applications — Track — Trailers and associated equipment — Part 1: Technical requirements for running and working*

EN 15954-2, *Railway applications — Track — Trailers and associated equipment — Part 2: General safety requirements*

EN 15807, *Railway applications — Pneumatic half couplings*

EN 15877-1:2012+A1:2018, *Railway applications — Marking on railway vehicles — Part 1: Freight wagons*

EN 50121-3-1:2017,¹ *Railway applications — Electromagnetic compatibility — Part 3-1: Rolling stock — Train and complete vehicle*

EN 50121-3-2:2016,² *Railway applications — Electromagnetic compatibility — Part 3-2: Rolling stock - Apparatus*

EN 50122-1:2011,³ *Railway applications — Fixed installations — Electrical safety, earthing and the return circuit — Part 1: Protective provisions against electric shock*

EN 50206-1, *Railway applications — Rolling stock — Pantographs: Characteristics and tests — Part 1: Pantographs for main line vehicles*

EN 50206-2, *Railway applications — Rolling stock — Pantographs: Characteristics and tests — Part 2: Pantographs for metros and light rail vehicles*

EN 50317, *Railway applications — Current collection systems — Requirements for and validation of measurements of the dynamic interaction between pantograph and overhead contact line*

EN 50318, *Railway applications — Current collection systems — Validation of simulation of the dynamic interaction between pantograph and overhead contact line*

EN 50367, *Railway applications — Current collection systems — Technical criteria for the interaction between pantograph and overhead line (to achieve free access)*

EN 50405, *Railway applications — Current collection systems — Pantographs, testing methods for contact strips*

EN 60947 (all parts), *Low-voltage switchgear and controlgear (IEC 60947, all parts)*

¹ As impacted by EN 50121-3-1:2017/A1:2019.

² As impacted by EN 50121-3-2:2016/A1:2019.

³ As impacted by EN 50122-1:2011/A1:2011, EN 50122-1:2011/A2:2016, EN 50122-1:2011/A3:2017 and EN 50122-1:2011/A4:2017.

EN ISO 7731, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731)*

ISO 16754, *Earth moving machinery — Determination of average ground contact pressure for crawler machines*

ISO 8755, *Commercial road vehicles — 40 mm drawbar eye — Interchangeability*

DIN 74054 (all parts), *Mechanical connections between towing vehicles and trailers*

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 <http://www.iso.org/obp>

3.1

road-rail machine

self-propelled machine that can move on rails and ground

Note 1 to entry It is normally a road vehicle adapted for moving on rail also, but can be a specially designed rail vehicle for moving on the ground also.

Note 2 to entry It does not imply that the machine is suitable for use on the public road.

3.2

demountable machine

machine that can travel and work only on rail and which is not intended to operate track signalling and control systems, but is not able to travel on the ground

Note 1 to entry Such a machine is designed to get on and off track by its own means or with other lifting equipment. In the case of demounting by its own means these are not intended for operating on the ground.

Note 2 to entry Such a machine is permitted to work on the railway only under special operating conditions granted by the Infrastructure Manager and travel under special conditions granted by the authorized body and/or the Infrastructure Manager.

3.3

trailer

non-self-propelled machine that can be hauled on rail wheels

Note 1 to entry: Trailers are not intended to operate track signalling and control systems and are not designed to be transported between work areas on their rail wheels.

3.4

mobile elevating work platform

MEWP

mobile machine intended to move persons to working positions where they carry out work from the work platform with the intention that persons get on and off the work platform at one defined access position, and which consists as a minimum of a work platform with controls, an extending structure and a chassis