

Railway applications — Track — Road- rail machines and associated equipment

Part 2: General safety requirements

ICS 93.100

National foreword

This British Standard is the UK implementation of EN 15746-2:2010+A1:2011. It supersedes BS EN 15746-2:2010, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee RAE/2, Railway Applications - Track.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2010

© BSI 2011

ISBN 978 0 580 74620 8

Amendments/corrigenda issued since publication

Date	Comments
30 November 2011	Implementation of CEN amendment A1:2011

English Version

Railway applications - Track - Road-rail machines and associated equipment - Part 2: General safety requirements

Applications ferroviaires - Voie - Machines rail route et éléments associés - Partie 2: Prescriptions générales de sécurité

Bahnanwendungen - Oberbau - Zwei-Wege Maschinen und zugehörige Ausstattung - Teil 2: Allgemeine Sicherheitsanforderungen

This European Standard was approved by CEN on 11 March 2010 and includes Amendment 1 approved by CEN on 13 September 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.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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



Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	5
Introduction	6
1 Scope	7
2 Normative references	8
3 Terms and definitions	12
4 List of significant hazards	12
5 General safety requirements and/or measures	12
5.1 General.....	12
5.2 Access and egress to and from working places	13
5.2.1 Cabs	13
5.2.2 Working places, places for control and maintenance outside of cabs.....	14
5.2.3 Walkways on the machine	14
5.3 Ergonomics	14
5.4 Requirements for cabs.....	15
5.4.1 General.....	15
5.4.2 Minimum dimensions in cabs.....	15
5.4.3 Cab floors	15
5.4.4 Emergency exit	15
5.4.5 Climatic conditions in cab	15
5.4.6 Protection from dust	15
5.4.7 Visibility from cabs and other permanent work places	16
5.4.8 Windows	18
5.4.9 Storage for instruction handbook.....	19
5.5 Seats	19
5.5.1 Seats for the operator(s)	19
5.5.2 Additional seats	19
5.6 Standing places	19
5.7 Edges and corners.....	19
5.8 Pipes and hoses.....	19
5.9 Communications between work positions.....	20
5.10 Prevention of derailment.....	20
5.10.1 General.....	20
5.10.2 Lifeguards.....	20
5.11 Stability and measures preventing overturning	20
5.11.1 Stability against overturning in road configuration	20
5.11.2 Proof of stability against overturning, machine stationary in rail configuration	20
5.11.3 Prevention of derailment during running and when moving along the track in working configuration	22
5.11.4 Rated capacity indicator (RCI).....	24
5.12 Emergency stopping devices	24
5.12.1 Emergency stopping devices for movement of the machine and working equipment	24
5.12.2 Action of emergency stopping devices	24
5.13 Moving parts and materials	25
5.14 Operators controls and indicators	25
5.14.1 General requirement.....	25
5.14.2 Starting system	27
5.14.3 Inadvertent activation.....	27
5.14.4 Pedals	27
5.14.5 Protection against uncontrolled motion in working configuration	27

5.14.6	Control panels and indicators.....	27
5.14.7	Remote controls	27
5.15	Thermal hazards	28
5.16	Electrical system	28
5.16.1	Electrical equipment	28
5.16.2	Disconnection devices.....	29
5.16.3	Working environment.....	29
5.16.4	Conductors, cables and wiring practices	29
5.16.5	Batteries	29
5.16.6	Catenaries	29
5.16.7	Equi-potential bonding	31
5.16.8	Antennae	31
5.17	Machine safety requirements related to electromagnetic compatibility	31
5.18	Emission of gas and particles.....	31
5.19	Pressurised systems.....	32
5.20	Fuel tanks and hydraulic tanks.....	32
5.21	Noise.....	32
5.22	Vibration	33
5.22.1	General	33
5.22.2	Whole body vibration	33
5.22.3	Hand arm vibration.....	33
5.23	Protection from the risks of fire	33
5.23.1	General risk assessment	33
5.23.2	Fire fighting equipment.....	33
5.23.3	Material requirements	33
5.23.4	Fire extinguishing system	34
5.24	Braking systems.....	34
5.24.1	General	34
5.24.2	Special case for category 8 machines	35
5.24.3	Holding on gradients.....	35
5.24.4	Braking of trailed machines/vehicles	36
5.24.5	Air continuous service brake for hauled machines/vehicles.....	36
5.25	Lighting.....	36
5.26	Warning systems.....	37
5.27	Maintenance	37
5.27.1	General	37
5.27.2	Frequent maintenance	37
5.27.3	Support devices.....	37
5.27.4	Unauthorised access to the engine compartment.....	37
5.28	Safe handling	38
6	Additional safety requirements or measures for specific machine functions.....	38
6.1	Conveyors	38
6.2	Cranes and lifting devices fixed on the machine	38
6.3	Transport of loads by machines used for lifting.....	39
6.4	Elevating work platforms.....	39
7	Verification of the conformity to the requirements and/or particular safety measures.....	39
7.1	General	39
7.2	Methods of examination	39
7.2.1	General	39
7.2.2	Visual check.....	39
7.2.3	Measurement	39
7.2.4	Functional test	39
7.2.5	Load test(s)	39
7.2.6	Specific verification/measurements and other controls	39
8	Information for use	40
8.1	General	40
8.2	Instruction handbook.....	40
8.2.1	Specific information in instruction handbook.....	40

8.2.2	Restrictions of use.....	41
8.2.3	Mass of the machine in working condition	42
8.2.4	Stability of the machine	42
8.2.5	Conformance to the lateral limit of work	42
8.2.6	Opening and closing the machine	42
8.2.7	Locking of tools and equipment	42
8.2.8	Devices to prevent access to an operating track	42
8.2.9	Work places situated outside the running gauge	43
8.2.10	Warning systems	43
8.2.11	Testing of warning systems	43
8.2.12	Information for maintenance	43
8.2.13	Trailing loads.....	43
8.2.14	Vibration	44
8.3	Warning signs and written warnings	45
8.4	Marking	46
Annex A	(normative) List of significant hazards	47
Annex B	(normative) Check list for conformity	50
Annex C	(normative) Noise test code (grade of accuracy 2)	56
C.1	Scope	56
C.2	Definitions	56
C.3	Determination of the emission sound pressure level at the work station or other specified positions	56
C.4	Sound power level determination	57
C.5	Installation and mounting conditions.....	57
C.6	Operating conditions.....	57
C.7	Measurement uncertainties	60
C.8	Information to be recorded	60
C.9	Information to be reported	60
C.10	Declaration and verification of noise emission values.....	61
Annex D	(informative)  Structure of European Standards for track construction and maintenance machines 	63
Annex ZA	(informative) Relationship between this European Standard and the Essential Requirements of EU Directive Machinery 98/37/EC, amended by 98/79/EC	65
Annex ZB	(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC	66
Annex ZC	(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC	67
Bibliography	68

Foreword

This document (EN 15746-2:2010+A1:2011) 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 April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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(s).

For relationship with EU Directive(s), see informative Annexes ZA, ZB and ZC, which are integral parts of this document.

This document includes Amendment 1, approved by CEN on 2011-09-13.

This document supersedes EN 15746-2:2010.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 and A1.

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.

EN 15746, *Railway applications — Track — Road-rail machines and their associated equipment*, consists of the following parts:

- *Part 1: Technical requirements for running and working*
- *Part 2: General safety requirements*

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 and United Kingdom.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this European Standard.

When provisions of this type C standard are different from those which are stated in type B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.