



# SLOVENSKI STANDARD oSIST prEN 15954-2:2009

01-september-2009

Železniški vagoni in pripadajoča oprema - Del 2: Splošne varnostne zahteve

Railway applications - Track - Trailers and associated equipment - Part 2: General safety requirements

Bahnanwendungen - Oberbau - Anhänger und zugehörige Ausstattung - Teil 2: Allgemeine Sicherheitsanforderungen

Applications ferroviaires - Voie - Remorques et éléments associés - Partie 2: Prescriptions générales pour la sécurité

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### ICS:

45.060.20	Železniški vagoni	Trailing stock
45.120	Ujeda bdelna oprema za gradnjo in vzdrževanje železnice	Equipment for railway/cableway construction and maintenance

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ICS

English Version

## Railway applications - Track - Trailers and associated equipment - Part 2: General safety requirements

Applications ferroviaires - Voie - Remorques et éléments  
associés - Partie 2: Prescriptions générales pour la sécurité

Bahnanwendungen - Oberbau - Anhänger und zugehörige  
Ausstattung - Teil 2: Allgemeine Sicherheitsanforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

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## Foreword

This document (prEN 15954-2:2009) has been prepared by Technical Committee CEN/TC 256 “Railway Applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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 **EC Directive(s)**.

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

“Railway applications – Track – Trailers and associated equipment” consists of the following parts:

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

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## Introduction

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

The trailers 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 trailers that have been designed and built according to the provisions of this type C standard.

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## 1 Scope

This European Standard deals with the significant hazards, hazardous situations and events, common to trailers, as defined in the scope of prEN xxxxy-1:2009, intended for construction, maintenance and/or inspection of the railway infrastructure, emergency rescue and recovery, when they are used as intended by the manufacturer, see clause 4. The manufacturer shall give warning of the risks concerning the conditions of misuse which are reasonably foreseeable.

This European Standard deals with the common hazards during transport, assembly and installation, commissioning, running on track, use (including setting, programming, and process changeover), operation, cleaning, fault finding, maintenance and de-commissioning of the trailers.

NOTE Specific measures for exceptional circumstances are not dealt with in this European Standard. They can be subject of negotiation between manufacturer and the operator.

The common hazards dealt with include the general hazards presented by the trailers, and also the hazards presented by the following specific trailer functions:

- track renewal;
- rail maintenance;
- craning;
- catenary renewal / maintenance,
- maintenance of the components of the infrastructure,
- inspection and measurement of the components of the infrastructure;
- tunnel inspection / ventilation;
- emergency rescue and recovery

during commissioning, use, maintenance and servicing.

This European Standard applies to trailers that are not intended to operate signalling and control systems. Other similar machines are dealt with in other European Standards, see Annex D.

It is assumed that a finished standard automotive chassis used as a host for a road-rail trailer will offer an acceptable safety level for its designed functions before conversion. This specific aspect is not dealt with in this European Standard.

This European Standard does not deal with:

- requirements with regard to the quality of work and the performance of trailers;
- specific requirements established by a railway infrastructure manager;
- negotiations between the manufacturer and the trailer operator for additional or alternative requirements;

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- requirements for use and running of the trailer on public highway;
- hazards due to air pressure caused by the passing of high-speed trains at more than 190 km/h;
- requirements which could be necessary in case of use in extreme conditions, such as:
  - extreme ambient temperatures (tropical or polar);
  - highly corrosive or contaminating environment, e.g. due to the presence of chemicals;
  - potentially explosive atmospheres.

This European Standard applies to all trailers that are ordered one year after the publication date by CEN of this standard.

**2 Normative references**

The following referenced documents are indispensable for the application of this European Standard. 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 294, *Safety of machinery; safety distances to prevent danger zones being reached by the upper limbs*

EN 349, *Safety of machinery; minimum gaps to avoid crushing of parts of the human body*

EN 474 series, *Earth-moving machinery — Safety*

EN 547-1, *Safety of machinery — Human body measurements — Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 547-2, *Safety of machinery — Human body measurements — Part 2: Principles for determining the dimensions required for access openings*

EN 547-3, *Safety of machinery — Human body measurements — Part 3: Anthropometric data*

EN 614-1, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

EN 618, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

EN 619, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 620, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk materials*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

- EN 894-1, *Safety of machinery — Ergonomic requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*
- EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*
- EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*
- EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*
- EN 981, *Safety of machinery — System of auditory and visual danger and information signals*
- EN 982, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*
- EN 983, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*
- EN 999, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*
- EN 1032, *Mechanical vibration — Testing of mobile machinery in order to determine the vibration emission value*
- EN 1088, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*
- EN 1837, *Safety of machinery — Integral lighting of machines*
- EN 12077-2, *Cranes safety — Requirements for health and safety — Part 2: Limiting and indicating devices*
- EN 12096:1997, *Mechanical vibration — Declaration and verification of vibration emission values*
- EN 12999, *Cranes — Loader cranes*
- EN 13001-1:2004, *Cranes — General design — Part 1: General principles and requirements*
- EN 13135-1:2003, *Cranes — Safety; Design; Requirements for equipment — Part 1: Electrotechnical equipment*
- EN 13135-2:2004, *Cranes — Equipment — Part 2: Non-electrotechnical equipment*
- EN 13478:2001, *Safety of machinery — Fire prevention and protection*
- EN 13557, *Cranes — Controls and control stations*
- prEN 14033-1:2008, *Railway applications — Track — Railbound construction and maintenance machines - Part 1: Technical requirements for running*
- EN 14033-2:2008, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for working*
- prEN 15746-2: 2008, *Railway applications — Track — Trailers and associated equipment — Part 2: General safety requirements*

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EN 28662-1:1992, *Hand-held portable power tools — Measurement of vibrations at the handle Part 1: General (ISO 8662-1:1988)*

EN 50153:2002, *Railway applications — Rolling stock — Protective provisions relating to electrical hazards*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

EN 60204-32, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines*

EN 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

EN 60529, *Degrees of protection provided by enclosures (IP code)*

EN 61310-1, *Sicherheit von Maschinen — Anzeigen, Kennzeichen und Bedienen — Teil 1: Anforderungen an sichtbare, hörbare und tastbare Signale*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking*

EN 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators*

EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

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prEN xxxyy-1:2009, *Railway applications — Track — Trailers and associated equipment — Part 1: Technical requirements for running and working* (standards.iteh.ai)

prEN xxxzz-1:2009, *Railway applications — Track — Trailers and associated equipment — Part 2: General safety requirements: Technical requirements for running and working*

EN ISO 2860, *Earth-moving machinery — Minimum access dimensions (ISO 2860:1992)*

EN ISO 2867:2006, *Earth-moving machinery — Access systems (ISO 2867:2006)*

EN ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope (ISO 3411:2007)*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

EN ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 6682, *Earth-moving machinery — Zones of comfort and reach for controls (ISO 6682:1986 including Amendment 1:1989)*

EN ISO 7096:2000, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2000)*

EN ISO 7731, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731:2003)*

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 11688-2, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 2: Introduction to the physics of low-noise design (ISO/TR 11688-2:1998)*

EN ISO 12001:1996, *Acoustics — Noise emitted by machinery and equipment — Rules for the drafting and presentation of a noise test code (ISO 12001:1996)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13850, *Safety of machinery — Emergency stop - Principles for design (ISO 13850:2006)*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)*

CEN/TR 15172-1:2005, *Whole-body vibration — Guidelines for vibration hazards reduction — Part 1: Engineering methods by design of machinery*

CR 1030-1:1995, *Hand-arm vibration — Guidelines for vibration hazards reduction — Part 1: Engineering methods by design of machinery*

ISO 3795, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

ISO 3864 series, *Graphical symbols — Safety colours and safety signs*

ISO 4305, *Mobile cranes; determination of stability*

ISO 4310, *Cranes; Test code and procedures*

ISO 5006, *Earth-moving machinery — Operator's field of view — Test method and performance criteria*

ISO 5353, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point*

ISO 6405-1, *Earth-moving machinery — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 7000:2004, *Graphical symbols for use on equipment — Index and synopsis*

ISO 10263-2, *Earth-moving machinery — Operator enclosure environment — Part 2: Air filter test*

ISO 10263-3, *Earth-moving machinery — Operator enclosure environment — Part 3: Operator enclosure pressurization test method*

ISO 10263-5, *Earth-moving machinery — Operator enclosure environment — Part 5: Windscreen defrosting system test method*

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ISO 10567, *Earth-moving machinery — Hydraulic excavators — Lift capacity*

ISO 11112:1995, *Earth-moving machinery — Operator's seat — Dimensions and requirements*

ISO 12508, *Earth-moving machinery — Operator station and maintenance areas — Bluntness of edges*

ISO/DIS 16001, *Earth-moving machinery — Hazard detection systems and visual aids — Performance requirements and tests*

**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100-1 and in prEN xxxxy-1:2009 and the following apply.

**3.1****rail configuration**

state of a road-rail trailer when it is in place on the track ready to work or running along the track

NOTE Rail configuration does not include the transient state during getting on and off the track.

**3.2****road configuration**

state of a road-rail trailer when the trailer is on the ground, i.e. not on the track

NOTE It does not imply that the trailer is suitable for use on the public highway.

**3.3****working place**

working cabs, combined working and driving cabs, operators places situated outside cabs and places situated at control or maintenance locations

**3.4****operating brake**

braking system to bring trailer (and any permitted towed load) to stand in specified distance during normal operation and running of the trailer

**3.5****parking brake**

brake capable of operation and function without power from the trailer

**3.6****rated capacity indicator (RCI)**

device which gives, within specified tolerance limits, at least a continuous indication that the rated capacity is exceeded

NOTE For rated capacity, see EN 12077-2.

**4 List of significant hazards**

Table A.1 shows all the significant hazards, hazardous situations and events, as far as they are dealt with in this European Standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

## 5 General safety requirements and/or measures

### 5.1 General

Trailers shall comply with the safety requirements and/or protective measures of this clause. In addition, the trailer shall be designed according to the principles of EN ISO 12100 for relevant but not significant hazards, which are not dealt with by this European Standard.

This standard formulates general/common requirements for the equipment in the scope of this standard, therefore the manufacturer shall have to carry out a complete risk assessment for identifying the specific hazards for the particular trailer and the corresponding measures (including the measures additional to those of clauses 5 and 6 that may be required).

The function(s) of trailers which is (are) dealt with in another European Standard for machinery safety shall comply with that standard as far as applicable and taking account of the additional requirements and deviations of the present standard.

NOTE Relevant standards trailer functions are for example:

- For “road” earth moving machinery: Series EN 474;
- for cranes: EN 13001-1 ;
- for cranes on trucks: EN 12999;
- for mobile elevating work platforms: EN 280.

Where there is a conflict between the requirements of this European Standard and the other above-mentioned European Standard(s), then this standard shall prevail.

When a choice is necessary for the application of type B standards referred to in this European Standard, e.g. EN 60204-1, EN 982 and EN 983 the manufacturer shall carry out a risk assessment for making this choice.

If a road-rail trailer is constructed on the basis of a host vehicle this host vehicle shall comply with one of the following:

- the European Standard for machinery safety relevant for that host vehicle (as far as not explicitly required otherwise in specific clauses of this European Standard)
- or
- this European Standard.

It is assumed that a finished automotive chassis or a chassis complying with the same rules, used as a host for a road-rail trailer will offer an acceptable safety level for its designed functions before conversion. Unless otherwise specified this specific aspect is not dealt with in this European Standard.

Where modifications are made to the original standard automotive chassis the manufacturer shall carry out an appropriate risk assessment of the effects and consequences of the modifications on the whole trailer.

### 5.2 Access and egress to and from working places

#### 5.2.1 Cabs

Except as shown below, where a trailer is fitted with driving cabs, working cabs and/or combined working and driving cabs, access and egress shall be from both sides of the trailer or directly into the area between the rails of the working track.