



**SLOVENSKI STANDARD**  
**oSIST prEN 16116-2:2019**  
**01-september-2019**

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**Železniške naprave - Izvedbene zahteve za stopnice, ograje in dostop za osebje -  
2. del: Tovorni vagoni**

Railway applications - Design requirements for steps, handrails and associated access  
for staff - Part 2: Freight wagons

Bahnanwendungen - Konstruktionsanforderungen an Tritte, Handgriffe und zugehörige  
Zugänge für das Personal - Teil 2: Güterwagen

Applications ferroviaires - Exigences pour la construction des marchepieds, mains  
courantes et accès destinés au personnel - Partie 2 : Wagons

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**Ta slovenski standard je istoveten z: prEN 16116-2**

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**ICS:**

45.060.20      Železniški vagoni      Trailing stock

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 16116-2**

July 2019

ICS 45.060.20

Will supersede EN 16116-2:2013

English Version

## Railway applications - Design requirements for steps, handrails and associated access for staff - Part 2: Freight wagons

Applications ferroviaires - Exigences pour la  
construciton des marchepieds, mains courantes et  
accès destinés au personnel - Partie 2 : Wagons

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Tritte, Handgriffe und zugehörige Zugänge für das  
Personal - Teil 2: Güterwagen

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

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 16116-2:2019) 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 will supersede EN 16116-2:2013.

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 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

This document is part of the series EN 16116, *Railway applications – Design requirements for steps, handrails and associated access for staff*, which consists of the following parts:

- *Part 1: Passenger vehicles, luggage vans and locomotives;*
- *Part 2: Freight wagons.*

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**prEN 16116-2:2019 (E)****Introduction**

To achieve an undisturbed, reliable and safe operation of freight trains it is essential to define common requirements for safe access and egress for rolling stock of interoperable trains with respect to e.g. structural requirements, operating characteristics, way of operation, maintenance as well as their handling.

Coupling of freight wagons by means of screw couplings is usually done by personnel.

It is essential that the design of freight wagons can be suitable to meet these functions without exposing staff to undue risk.

Freight wagons require sufficient space for their coupling and uncoupling by staff without any rigid features impeding accessibility to the screw coupler. Also there is a need for provision of suitable footsteps and handrails for personnel, to allow temporary travel outside the vehicle during shunting as well as to access the vehicle.

If wagons according to TSI-FW are equipped with steps and handholds, these needs apply to all designs of vehicle.

To achieve an undisturbed, reliable and safe operation it is therefore essential to harmonize the functional requirements and characteristic dimensions and assess and permanently ensure their suitability for interoperable traffic.

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## 1 Scope

This document specifies the minimum requirements for ergonomic and structural integrity of steps and handrails used together to give staff access to freight wagons. It does not cover ladders, top platforms and top gangways.

It defines in particular the required spaces necessary for shunter handrails, for shunter's stand, for steps and handrails.

This document also defines their dimensions, positions, limits for durability and functionality.

It also defines the general requirements for the access to tail lights for freight wagons.

## 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 10025-2, *Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels*

EN 12561-7, *Railway applications – Tank wagons – Part 7: Platforms and ladders*

EN 15273-2, *Railway applications – Gauges – Part 2: Rolling stock gauge*

EN 16839, *Railway applications – Rolling stock – Head stock layout*

## 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

#### clearance

defined free space which is needed to ensure space for the correct functioning of, and safety when handling, devices

### 3.2

#### step

footstep with defined properties solely for staff use

### 3.3

#### shunter

shunting staff who couples and uncouples vehicles or directs movements

### 3.4

#### shunter's step

specific step used for the shunter's stand

**prEN 16116-2:2019 (E)****3.5****handrail**

handrail with defined properties solely for staff use

**3.6****shunter handrail**

specific handrail fitted at headstock under each buffer

**3.7****shunter's stand**

shunter's step in combination with handrail for the specific use of shunting staff to allow travel outside the wagon during shunting

**3.8****reserved spaces**

defined free space which is needed to ensure safe working conditions for the shunting staff during coupling and uncoupling of screw couplings

**4 Steps and handrails****4.1 General requirements**

If not otherwise defined in this standard, steps and handrails used by staff shall be secured as follows:

- with bolts of adequate length and self-locking nuts, or
- with bolts of adequate length and cottered hexagon castlenuts, or
- with high-strength lock ring-bolts.

The mechanical strength of the material used for all kind of handrails and steps, where the properties according to 4.2.2 are not required, shall be as a minimum that of EN 10025-2, grade S235JR.

**4.2 Steps****4.2.1 General**

Steps shall be made with non-slip surface.

This should be a metal grating, see Figure 1, Pos. One or Pos. 2.

For all other solutions the following characteristics shall be fulfilled:

- **Resistance to friction:**

The average value of the friction coefficient measured in three directions (lengthwise, breadthwise and diagonally) shall reach the following minimum values:

- a) in dry condition = 0,65;
- b) in wet condition (water) = 0,65;
- c) in oiled condition = 0,30;



Friction coefficient values shall be ascertained by means of a 100 mm × 100 mm movable plate, on which a rubber pad with 80 shore hardness shall be glued; this plate shall be loaded with a weight of 75 kg. For the measurements carried out with water and oil, the grating shall be fully immersed.

— **Mechanical strength:**

Metal gratings shall withstand, without residual deformation, a horizontal compression force of at least 4 kN, exerted parallel and at right angles to the edge of the step board, and of at least 8 kN exerted diagonally in relation to the edge of the step board. Elastic deformations shall not exceed 10 mm.

— **Grating structure;**

To ensure that the gratings are sufficiently well-adapted to winter conditions, a ratio of at least 50 % of “void” area to total area shall be observed. Only apertures with a minimum area of 400 mm<sup>2</sup> shall be taken into account to determine this ratio.

NOTE The “void” area is the free space afforded by the grating apertures in the vertical direction.

#### 4.2.2 Shunter's step

The material for the steps support shall be S355J2C + N in accordance with EN 10025-2.

Cold forming for steps support is not allowed.

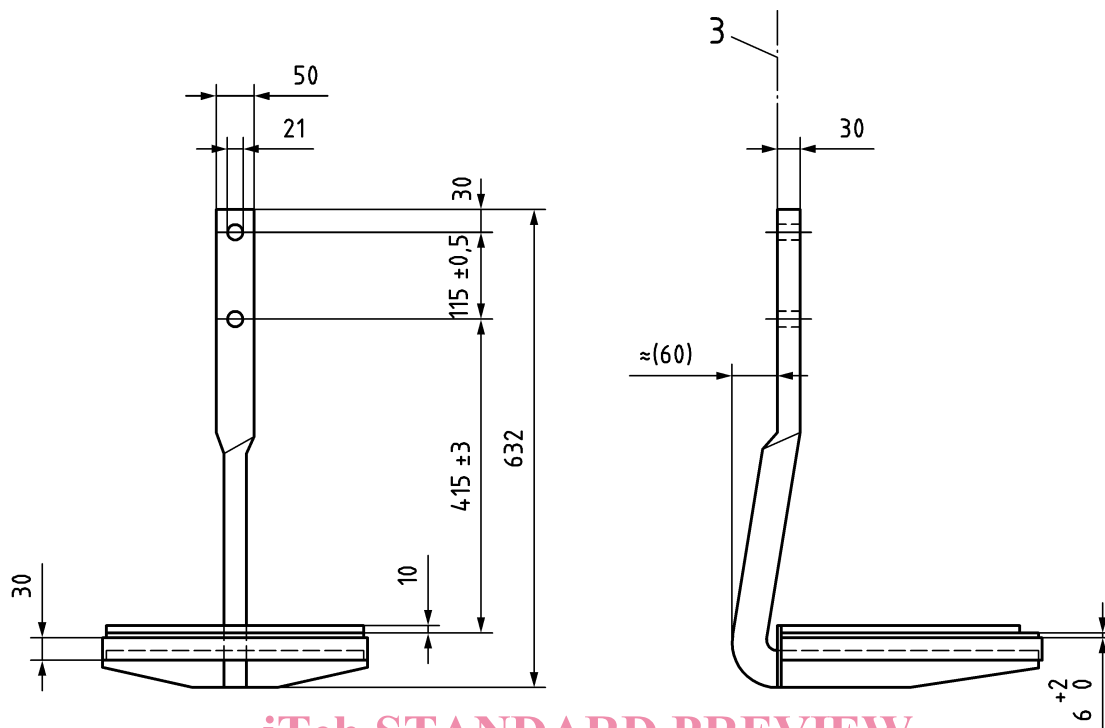
The shunter's step is shown in Figure 1. The grating according to Figure 1 is mandatory.

For specific operation the size of the step of the shunter's stand can be reduced to 270 mm x 225 mm.

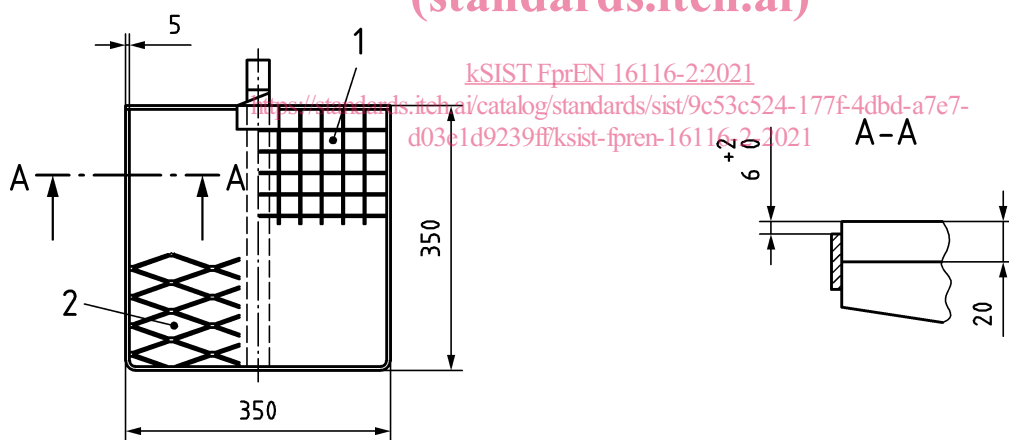
The surface protection (e.g. hot-galvanized) should provide an adequate service life.

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Dimensions in millimetres



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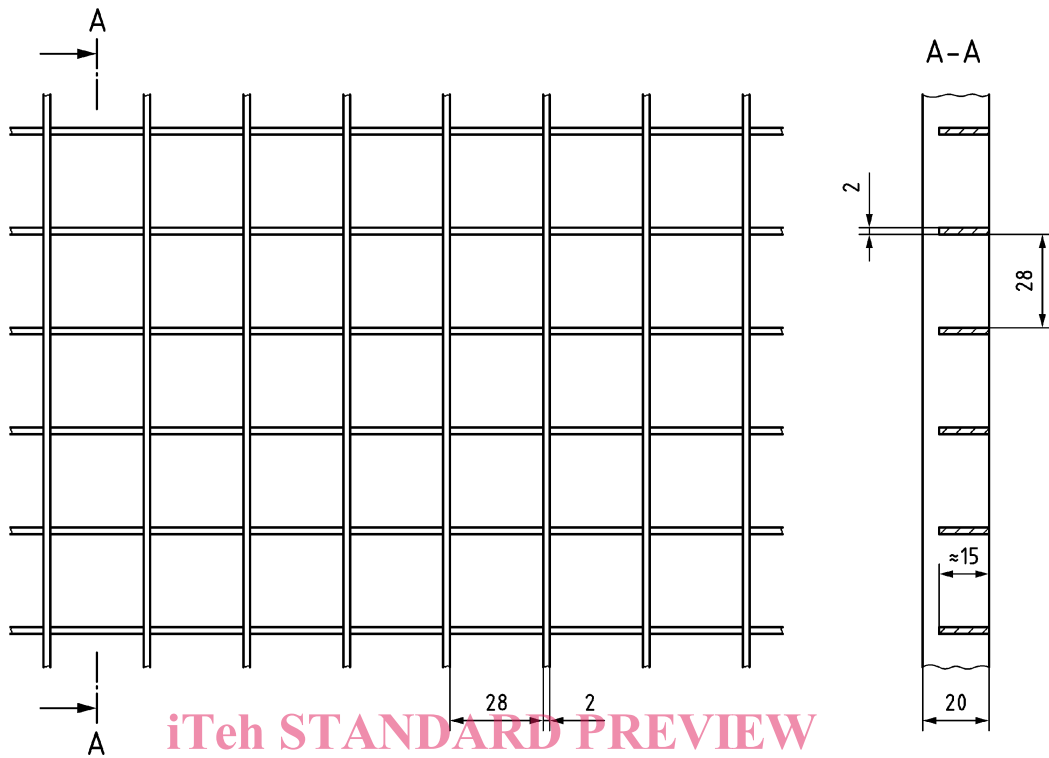


**Key**

- 1 grating from welded metal (Figure 2 a))
- 2 grating from expanded metal (Figure 2 b))
- 3 buffer fixing plane

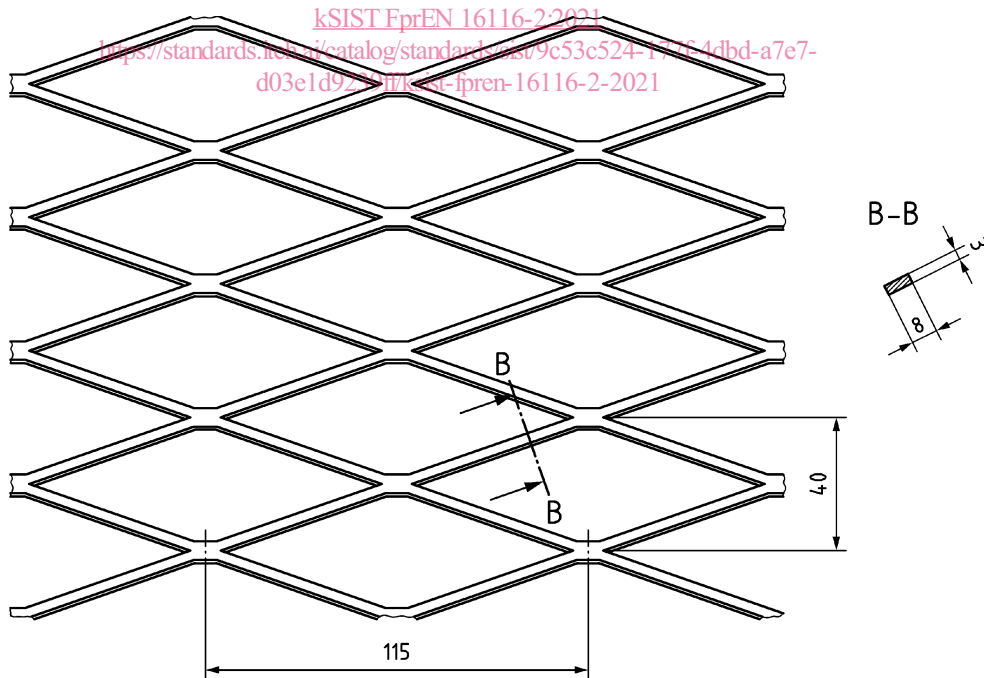
**Figure 1 — Shunter's step**

Dimensions in millimetres



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a) Example for grating from welded metal



b) Example for grating from expanded metal

Figure 2 — Examples for grating