SLOVENSKI STANDARD
oSIST prEN 16116-2:2022

01-september-2022

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 entsprechende Zugänge für das Personal - Teil 2: Güterwagen

Applications ferroviaires - Exigences pour la construction des marchepieds, poignées et accès personnel - Partie 2 : Wagons

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

ICS:

45.060.20	Železniški vagoni	Trailing stock

oSIST prEN 16116-2:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 16116-2

July 2022

ICS 45.060.20 | Will supersede EN 16116-2:2021

English Version

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

Applications ferroviaires - Exigences pour la construction des marchepieds, poignées et accès personnel - Partie 2 : Wagons

Bahnanwendungen - Konstruktionsanforderungen an Tritte, Handgriffe und entsprechende 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.

This draft European Standard was established by CEN 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.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

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

Ref. No. prEN 16116-2:2022 E

Contents

European foreword

This document (prEN 16116-2:2022) 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 enquiry.

This document will supersede EN 16116-2:2021.

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, vans and locomotives;*

— *Part 2: Freight wagons*.

The technical changes with respect to the previous edition are listed below:

a) Concretization of the scope (heavy rail);

b) Revision of figures;

c) Minor corrections to clarify the requirements.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Directive(s)/Regulation(s).

For relationship with Directive(s)/Regulation(s), see informative Annex ZA, which is an integral part of this document.

Introduction

Freight wagons are designed so that staff are not exposed to undue risk during coupling and access to the vehicle or to special equipment.

This document gives requirements related to steps, handrails and shunter's steps for freight wagons, to allow temporary travel outside the vehicle during shunting as well as to access the vehicle.

1 Scope

This document is applicable to all types of heavy rail freight wagons.

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

It defines in particular the required free 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.

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 10025-2:2019, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 12561-7:2011, *Railway applications - Tank wagons - Part 7: Platforms and ladders*

EN 15085-1, [1], *Railway applications* — Welding of railway vehicles and components – Part 1: General

EN 15085-2:2020, [2] *Railway applications — Welding of railway vehicles and components — Part 2: Requirements for welding manufacturer*

EN 15085-3, [3], Railway applications — Welding of railway vehicles and components — Part 3: Design requirements

EN 15085-4, [4], Railway applications — Welding of railway vehicles and components – Part 4: Production requirements

EN 15085-5, [5], Railway applications — Welding of railway vehicles and components – Part 5: Inspection, testing and documentation

EN 15085-6, [6] *Railway applications — Welding of railway vehicles and components — Part 6: Maintenance welding requirements*

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

[1] The document is currently being revised. For the application of EN 16116-2, reference is made to prEN 15085-1:2021.

[2] The document is currently being amended by EN 15085-2:2020/prA1:2022.

[3] The document is currently being revised. For the application of EN 16116-2, reference is made to FprEN 15085-3:2022.

[4] The document is currently being revised. For the application of EN 16116-2, reference is made to FprEN 15085-4:2022.

[5] The document is currently being revised. For the application of EN 16116-2, reference is made to FprEN 15085-5:2022.

[6] The document is currently being revised. For the application of EN 16116-2, reference is made to FprEN 15085-6:2022.

EN 17343, [7], Railway applications — General terms and definitions

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 17343:2020 and the following terms and definitions apply.

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

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://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

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 space
defined free space which is needed to ensure safe working conditions for the shunting staff

[7] The document is currently being revised. For the application of EN 16116-2, reference is made to prEN 17343:2022.

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 and self-locking nuts, or

— with bolts 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 10025-2:2019, grade S235JR.

4.2 Steps

4.2.1 General

Steps shall be made with non-slip surface.

If steps are welded into place, it shall be done in accordance with the EN 15085 series.

The clearance of steps shall be in accordance with EN 12561-7:2011.

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

For all other solutions, the following characteristics shall be fulfilled:

— **Friction resistance:**

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^2 may 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

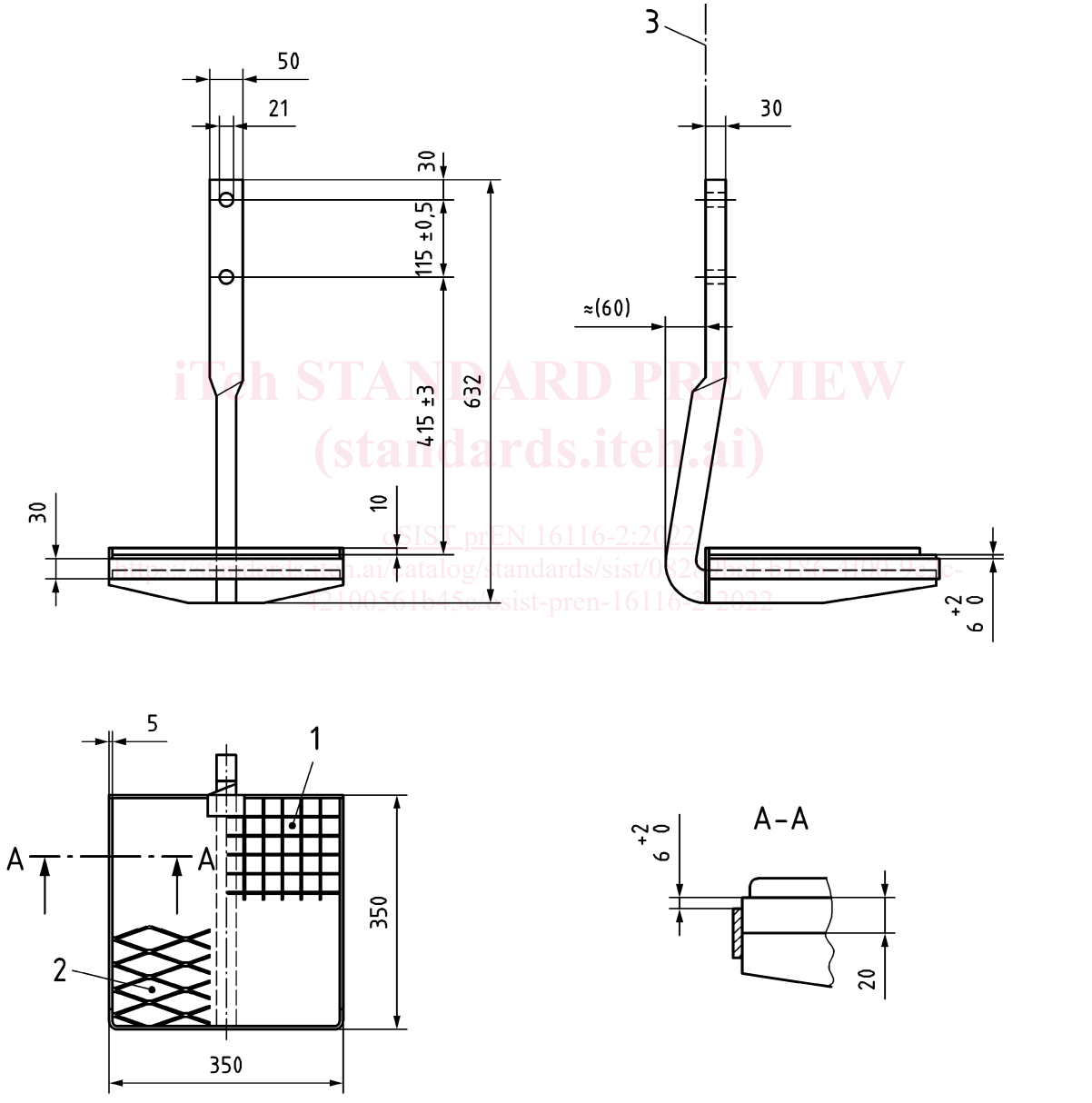
The material for the steps support shall be S355J2C + N in accordance with EN 10025-2:2019.

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.

The surface protection (e.g. hot-galvanized) should provide a minimum service life of 6 years.

Dimensions in millimetres



Key

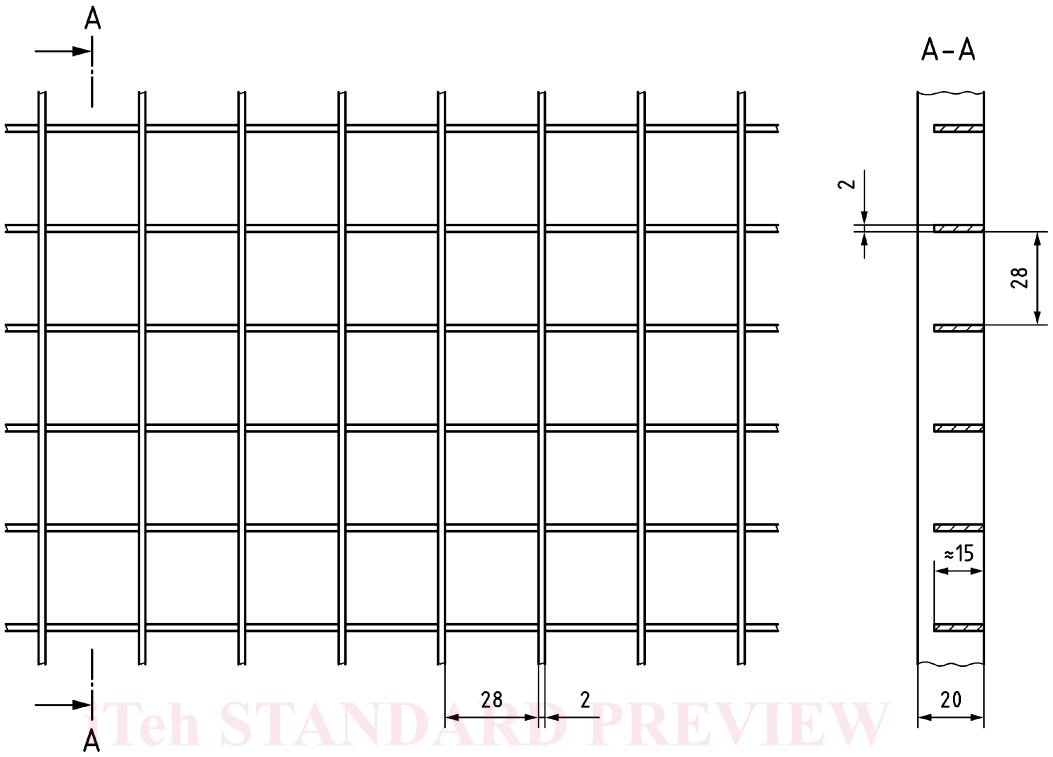
1 grating from welded metal (Figure 2a))

2 grating from expanded metal (Figure 2b))

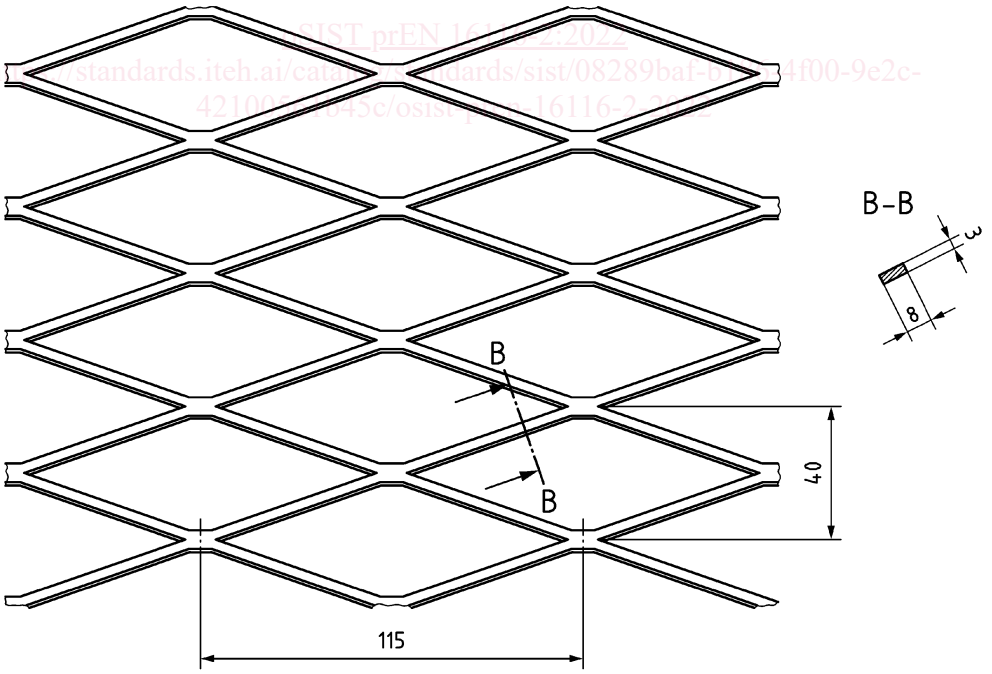
3 buffer fixing plane

Figure 1 — Shunter's step

Dimensions in millimetres



a) Example for grating from welded metal



b) Example for grating from expanded metal

Figure 2 — Examples for grating