

SLOVENSKI STANDARD SIST EN 14752:2020

01-januar-2020

Nadomešča:

SIST EN 14752:2015

Železniške naprave - Vrata in zapiralni sistemi na železniških potniških vozilih

Railway applications - Bodyside entrance systems for rolling stock

Bahnanwendungen - Seiteneinstiegssysteme für Schienenfahrzeuge

iTeh STANDARD PREVIEW
Applications ferroviaires - Systèmes d'accès latéraux pour matériel roulant (standards.iteh.ai)

Ta slovenski standard je istoveten z:sten EN 14752:2019

https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-

ccfdc35bf9c8/sist-cn-14752-2020

ICS:

45.060.20 Železniški vagoni Trailing stock

45.140 Oprema za podzemne vlake, Metro, tram and light rail

tramvaje in lahka tirna vozila equipment

SIST EN 14752:2020 en,fr,de

SIST EN 14752:2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 14752:2020

https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-eefdc35bf9c8/sist-en-14752-2020

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM EN 14752

November 2019

ICS 45.140

Supersedes EN 14752:2015

English Version

Railway applications - Bodyside entrance systems for rolling stock

Applications ferroviaires - Systèmes d'accès latéraux pour matériel roulant

Bahnanwendungen - Seiteneinstiegssysteme für Schienenfahrzeuge

This European Standard was approved by CEN on 12 May 2019.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-eefdc35bf9c8/sist-en-14752-2020



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

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

Cont	ents	Page
_	ean foreword	
Introd	uction	7
1	Scope	8
2	Normative references	
3	Terms and definitions	
4	Constructional requirements	
4.1	Door design	
4.1.1	Door throughway design	
4.1.2	Steps	
4.1.3	Track level access	
4.1.4 4.1.5	Relative position of the step edge Train surfing	
4.1.5 4.1.6	Door windows	
4.1.6 4.1.7	Design of body side entrance doors used for accessing driver's cabs	
4.1./ 4.1.8	Water drainage	19 10
4.1.0 4.2	Water drainage	10
4.2.1	Door mechanical strongth	10
4.2.1 4.2.2	Door mechanical strength	19 21
4.2.2 4.3	Local door control devices	
4.3.1	Door buttons SISTEN 14752:2020	
4.3.2	Emergency egress device dards iteh ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-	22
4.3.3	Access device eefdc35bf9c8/sist-en-14752-2020	24
4.4	Labels/warning signs	
4.5	Interfaces with the vehicle	
4.5.1	Electric and pneumatic power supplies	
4.5.2	Mechanical interface with the vehicle	
4.6	Other requirements	
4.6.1	Fire protection	
4.6.2	Insulation	
4.7	Electronic equipment	26
4.7.1	Hardware	26
4.7.2	Software for electronic door control systems	26
4.8	Reliability, availability, maintainability, safety (RAMS)	26
4.9	Protection against electrical hazards	
4.10	Environmental conditions	27
	Weather	
	Water tightness	
	Pressure tightness	
4.11	Manual and semi-automatic ramps, bridging plates	28
5	Operational requirements	28
5.1	Door control	28
5.1.1	General	
5.1.2	Release doors and steps	
5.1.3	Interlocking of released doors	
5.1.4	Single point failure	28

5.1.5	Mechanical locking	
5.1.6	Out-of-service devices	29
5.1.7	Isolation for maintenance purposes	
5.2	Closing and opening conditions	
5.2.1	Safety during closing	
5.2.2	Entrance system closed proving	42
5.3	Opening conditions	
5.3.1	Safety during opening	
5.3.2	Limitation of opening	42
5.4	Moveable step obstacle detection	43
5.4.1	General	43
5.4.2	Steps outside the vehicle	43
5.4.3	Steps inside the vehicles	43
5.5	Emergency operation	43
5.5.1	Emergency egress	43
5.5.2	Emergency windows in access doors	46
5.5.3	Access device	
5.5.4	Powering up	47
5.6	Other requirements	
5.6.1	Passenger access door area illumination	
5.6.2	Status indication	
6	Categories of tests	47
6.1	General Tch STANDARD PREVIEW	47
6.2	Type tests	47
6.3	Routine tests during manufacture r.d.s.iteh.ai	
6.4	Routine test on the fully assembled vehicle/train consist	
7	Documentation related to installation and maintenance of the entrance systemhttps://standards.tich.ai/catalog/standards/sist/02e34252-107c-4c58-9e5e-	48
Annex	A (normative) Passenger interface devices 4752-2020.	49
A.1	Purpose	49
A.2	Design of door buttons	
A.3	Labels on or near door buttons	
A.4	Recommended emergency egress device	
A.5	Sample of labels	
	•	
	B (normative) Water test procedure	
B.1	Purpose	
B.2	Test arrangement	
B.3	Test procedure	
B.4	Test decision	55
Annes	C (normative) Specification and testing of the pressure tightness of door	57
C.1	Purpose	
C.2	Calculation - Flowchart	
C.3	Example of pressure tightness requirement specification	
C.4	Pressure tightness testing	
C.4.1	General	
C.4.1 C.4.2	Variable pressure measurement method	
C.4.2 C.4.3	Variant: Constant pressure method of measurement	
U.4.3	variant. Constant pressure method of measurement	00
Annex	D (normative) Requirements for measuring the closing forces of power-operated	
	doors	
D.1	General	
D.2	Terms and definitions	62

SIST EN 14752:2020

EN 14752:2019 (E)

D.3	Measurements	63
D.3.1	Conditions of measurement	63
D.3.2	Measurement points	63
D.3.3	Measuring method	63
Annex	E (normative) Test plan	65
Annex	F (normative) Load requirements for doors due to aerodynamic loads on passenger	
	trains	67
Annex	G (informative) Clauses in this European Standard requiring clarification in the technical specification	68
Annex	H (normative) RIC-KEY	70
Annex	I (informative) Calculation of kinetic energy	71
Annex	J (informative) Non-contact obstacle detection	77
J.1	General	77
J.2	Light barrier	77
J.3	Step sensors for external steps	77
J.4	Area monitoring systems	77
J.4.1	Arrangement of area monitoring system	77
J.4.2	Testing of area monitoring system	80
Annex	ZA (informative) Relationship between this European Standard and the Essential	
	Requirements of EU Directive 2016/797 aimed to be covered	82
Diblia		
กากเกร	graphy(standards.iteh.ai)	04

SIST EN 14752:2020 https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5eeefdc35bf9c8/sist-en-14752-2020

European foreword

This document (EN 14752:2019) 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 May 2020, and conflicting national standards shall be withdrawn at the latest by May 2020.

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 14752:2015.

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 2016/797.

For relationship with EU Directive 2016/797, see informative Annex ZA, which is an integral part of this document.

EN 14752:2019 includes the following significant technical changes with respect to EN 14752:2015:

iTch STANDARD PREVIEW		
Subclause/paragraph/ table/figure (standar	ds.iteh.ai)	
General	Figures renumbered due to adding a figure to 4.1.6	
Clause 2 Normative References itehai/catalog/star	Some references updated and dated	
3.2 Bridging plate eefdc35bf9c8/s	Reference to PRM standard	
3.12 First step	Reference to PRM standard	
3.19 Palm operated	Reference to PRM standard	
3.25 Slip resistant	Reference to PRM standard	
3.27 Technical Specification	Reworded	
4.1.1.1 Minimum width	Reference to manual or semi-automatic ramps added	
4.1.5 Train surfing	Reference to crew access needs added	
4.1.6 Door windows	Details for step downwards added, Fig. enhanced	
4.2.1.5 Vibration and shock	Design and testing separated	
4.2.2 Step mechanical strength	Fig. improved	
5.1.6.1 Door out of service	Operation from inside no more mandatory, defined in specification	
5.2.1.3.1 Closing and opening signal - general	Amended to read:under the supervision of the train crew or in the case of:	
5.2.1.3.2.3 Release/Opening door signal	Reference to obsolete TSI RST deleted	
5.2.1.3.3.1 General	Provisions for LED strps added	
5.2.1.3.3.2 Visual signal	Duration becomes mandatory (shall)	

5.2.1.3.4 Visual signals of door buttons	Moved from 4.3.1.7.1 in former edition	
5.2.1.4.1 Sensitivity of obstacle detection	Mode of inserting test bar modified	
5.2.1.4.3 Obstacle removal force	Mode of inserting test bar modified	
5.2.1.4.2.2 Closing force	Reference to "traffic regularity" added, peak force definition modified, see also Annex D	
5.2.1.5 Anti drag	Figure 16, Diameter corrected to 20 mm Table 1 test 2 dynamic –pulling from outside added	
5.2.2.2 Stepand traction interlock system	In case of no interlock need for gauge infringement definition added	
5.3.2 Limitationof opening	Disabling of opening in case of central closing added	
5.5.1.8 Protection against accidential operation	Signal to train system after first action added	
6.2 Type tests	Additional test at a cant of 3°	
B.2 and B.3 Watertesting	Testing arrangement and procedure amended	
D.2.4 Force graph and D.3.3 Measuring Method Peak force definition amended		
D.3.1 Condition of measurement	Reference to non contact detection added	
D.3.3 Measuring Method iTeh STA	Reference to further attempts added	
Annex F Load requirements (Sta)	Order and wording changed due to TSi requirements	
Annex K Migration Rule	Deleted	
Annex ZA Relationship with TSI	SISTEN 14752:2020 Updated alogystandards/sist/02e34252-f07c-4c58-9e5e-	
Bibliography	Some references updated	
NOTE The technical changes referred to include the significant technical changes from the EN revised but are not an exhaustive list of all modifications from the previous edition.		

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document specifies the minimum requirements for construction and operation of railway passenger access systems to ensure:

- safe access and egress from passenger trains through body side doors and steps;
- usability for persons with reduced mobility;
- a minimum risk of injury to persons as a result of door and step operation;
- that the doors and moveable steps, ramps, bridging plates remain closed when the vehicle is in motion; and
- safe maintenance of the entrance systems.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 14752:2020</u> https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-eefdc35bf9c8/sist-en-14752-2020

1 Scope

This document applies to passenger body side entrance systems of all newly designed railway vehicles such as tram, metro, suburban, mainline and high-speed trains that carry passengers. The requirements of this document also apply to existing vehicles undergoing refurbishment of the door equipment, as far as it is reasonably practicable.

This document also specifies the requirements for testing of entrance systems.

This document makes reference to manual and power operated entrance systems. For manual doors, clauses referring to power operation are not applicable.

This document does not apply to the following:

- entrance systems for equipment access, inspection or maintenance purposes and for crew only use;
- doors on freight wagons; and
- doors or hatches specifically provided for escape under emergency conditions.

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 12663-1:2010+A1:2014, Railway applications — Structural requirements of railway vehicle bodies — Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)

EN 13032-1:2004+A1:2012, Light and lighting Measurement and presentation of photometric data of lamps and luminaires — Part 1: Measurement and file format_{st/02e34252-f07c-4c58-9e5e-}

eefdc35bf9c8/sist-en-14752-2020 EN 13272:2012, Railway applications — Electrical lighting for rolling stock in public transport systems

EN 14067 (all parts), *Railway applications* — *Aerodynamics*

EN 16116-1:2013, Railway applications — Design requirements for steps, handrails and associated access for staff — Part 1: Passenger vehicles, luggage vans and locomotives

EN 45545-2:2013+A1:2015, Railway applications — Fire protection on railway vehicles — Part 2: Requirements for fire behaviour of materials and components

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

EN 50125-1:2014, Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment

EN 50126 (all parts), Railway applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)

EN 50153:2014, Railway applications — Rolling stock — Protective provisions relating to electrical hazards

EN 50155:2017, Railway applications — Rolling stock — Electronic equipment

EN 50215:2009, Railway applications — Rolling stock — Testing of rolling stock on completion of construction and before entry into service

EN 50657:2017, Railways Applications — Rolling stock applications — Software on Board Rolling Stock

EN 60077-1:2002, Railway applications — Electric equipment for rolling stock — Part 1: General service conditions and general rules (IEC 60077-1:1999, modified)

EN 61373:2010, Railway applications — Rolling stock equipment — Shock and vibration tests (IEC 61373:2010)

EN ISO 4762:2004, *Hexagon socket head cap screws (ISO 4762:2004)*

EN ISO 10140-2:2010, Acoustics — Laboratory measurement of sound insulation of building elements — Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010)

EN ISO 12567-1:2010, Thermal performance of windows and doors — Determination of thermal transmittance by the hot-box method — Part 1: Complete windows and doors (ISO 12567-1:2010)

DIN 5032-7:2017, Photometry — Part 7: Classification of illuminance meters and luminance meters

DIN 7340:2011, Tubular rivets cut from the tube

UIC 566:1990, Loadings of coach bodies and their components ()

UIC 660:2002, Measures to ensure the technical compatibility of high-speed trains

3 Terms and definitions <u>SIST EN 14752:2020</u>

https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-

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

access device

operating element used to unlock a locked door in order to allow for door opening from outside when the door is not available for normal operation

3.2

bridging plate

retractable device integrated into the vehicle as close as possible to the door threshold level that enables access for wheelchair users, fully automatic and activated/controlled in conjunction with the door opening/closing sequences or semi-automatic on demand from passenger or staff

Note 1 to entry: It retains its strength without support on the station platform when extended.

[SOURCE: EN 16586-1:2017, 3.2]

3.3

central closing

powered closing of the door by remote command without intervention by the passenger

3.4

contrast

perception of a difference visually between one surface or element of a building/rail vehicle and another by reference to their light reflectance values (LRV)

[SOURCE: EN 16584-1:2017, 3.5]

3.5

door

body side panel available for passenger access and egress, including its components

3.6 (standards.iteh.ai)

door button

device to initiate door opening or closing command EN 14752:2020

https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-eefdc35bf9c8/sist-en-14752-2020

door/step out-of-service

door or step which is locked and not available for use

3.8

3.7

door/step isolated

door and/or step to which the pneumatic and/or electric power supply is isolated

3.9

door operation

all door operating sequences

3.10

emergency egress device

operating element used to unlock a locked door in order to allow for manual opening of the door from inside in case of an emergency

3.11

entrance system

system to facilitate passenger entrance to vehicles including door, step/ramp/bridging plates and the related drive and control devices

3.12

first step

step that is the first step for a passenger to use, to overcome a height change

Note 1 to entry: For the external access/egress steps this will normally be the step that is closest to the platform edge (it may be a fixed or a movable step), therefore this is the first step when boarding and the last step when alighting.

Note 2 to entry: In the context of steps for internal height changes (other than the external access/egress steps) this means the first usable step when ascending and the edge of the walking floor when descending.

[SOURCE: EN 16586-1:2017, 3.6]

3.13

leading edge

edge of the door, leading during closing movement

3.14

local closing

powered closing by intervention of a person or by a local automatic device

3.15

locked door

closed door held closed by a mechanical device RD PREVIEW

3.16

(standards.iteh.ai)

eefdc35bf9c8/sist-en-14752-2020

manual door

door that is closed or opened exclusively by hand power

<u>SIS1 EN 14752:2020</u> https://standards.iteh.ai/catalog/standards/sist/02e34252-f07c-4c58-9e5e-

3.17

manual ramp
device designed for the passage from one level to another, which is compatible with the vehicle and which is supported on the station platform when extended

Note 1 to entry: Deployment by train crew or platform staff is manual.

Note 2 to entry: The purpose of the manual ramp is to facilitate wheelchair access.

Note 3 to entry: See EN 16586-2 for further details.

3.18

moveable step

retractable device integrated into the vehicle forming a step with the threshold, fully automatic and activated/controlled in conjunction with the door opening/closing sequences to reduce the gap in width and height between vehicle and platform

Note 1 to entry: The moveable step retains its strength without support on the station platform.

3.19

palm operated

operable by the palm or any part of the hand, not requiring fingers to be unclenched

Note 1 to entry: The design need is that passengers with painful conditions, which affect their joints such as arthritis, may be unable to (and are likely to experience discomfort or pain if they do) exert any force with the tip of a single finger. Many may not be able to unclench their fingers to do this or perform any pulling action.

[SOURCE: EN 16585-1:2017, 3.7, modified — The original term was "palm operable".]

3.20

power operated door system

door system which operates doors in opening and closing direction by machine power

3.21

released door

door in a state in which it may be opened by a member of the public or train crew by operating the door buttons

3.22

RIC-KEY

key according to the agreement on mutual use of vehicles for persons and goods in international transport (RIC = International coach regulations)

Note 1 to entry: See Annex H.

See Annex H. iTeh STANDARD PREVIEW (standards.iteh.ai)

3.23

routine test

SIST EN 14752:2020

test to which each entrance system equipment is subjected during or after manufacturing or assembly to the vehicle

eefdc35bf9c8/sist-en-14752-2020

3.24

semi-automatic ramp

device designed for the passage from one level to another, which is integrated into the vehicle and which is supported on the station platform when extended

Note 1 to entry: Deployment is locally activated and supervised.

Note 2 to entry: The purpose of the semi-automatic ramp is to facilitate wheelchair access.

Note 3 to entry: See EN 16586-2 for further details.

3.25

slip resistant

surface finish that is sufficiently rough or otherwise specially formulated so that friction between the surface and a person's footwear or mobility aid is maintained at an acceptable level in both wet and dry conditions

Note 1 to entry: Snow and ice are outside this definition and this standard, therefore other special measures (e.g. operational) should be taken for steps and platforms, etc. that are exposed to these weather conditions.

[SOURCE: EN 16584-3:2017, 3.5]

3.26

tactile

appertaining to touch

Note 1 to entry: Tactile signs or controls may include raised pictograms, raised characters or Braille lettering.

Note 2 to entry: See also EN 16584-1.

[SOURCE: EN ISO 9241-910:2011, 2.5, modified — Both Notes 1 and 2 to entry were added.]

3.27

Technical Specification

document describing specific parameter and/or product requirements as an addition to the requirements of this standard

3.28

train crew

persons authorized to carry out the duties for door operation

3.29

type test

test of one entrance system and its components to prove that the design meets the standard and the relevant specifications

iTeh STANDARD PREVIEW

3.30

unlocked door

(standards.iteh.ai)

door with mechanical door locking released

SIST EN 14752:2020

4 Constructional requirementsog/standards/sist/02e34252-f07c-4c58-9e5e-eefdc35bf9c8/sist-en-14752-2020

4.1 Door design

4.1.1 Door throughway design

4.1.1.1 Minimum width

Doors shall have an unrestricted clear usable width (1) of 800 mm minimum to allow unimpeded access and egress of passengers (Figure 1 shows two examples of doors). On trains where there is no step between the threshold of a dedicated wheelchair access door and the adjacent vestibule, usable without manual or semi-automatic ramps as defined in 4.11, that door shall have a minimum clear useable width of 1 000 mm when open.