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Railway applications - Design for PRM use - Equipment and components onboard rolling stock - Part 1: Toilets

Bahnanwendungen - Gestaltung für die Nutzung durch PRM - Ausstattung und Bauteile in Schienenfahrzeugen - Teil 1: Toiletten

Applications ferroviaires - Conception destinée à l'usage par les PMR - Equipements et éléments à bord du matériel roulant - Partie 1 : Toilettes

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English Version

Railway applications - Design for PRM use - Equipment and components onboard rolling stock - Part 1: Toilets

Applications ferroviaires - Conception destinée à
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du matériel roulant - Partie 1 : Toilettes

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PRM - Ausstattung und Bauteile in Schienenfahrzeugen
- Teil 1: Toiletten

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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Contents	Page
European foreword	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	6
4 Symbols and abbreviations	7
5 Requirements and assessment	8
5.1 General.....	8
5.2 Standard and universal toilets, common parameters	8
5.3 Standard toilet	9
5.4 Universal toilet	10
5.5 Baby nappy changing table.....	18
5.6 Interface of the call for aid device.....	19
6 Assessment methodologies.....	19
6.1 Lateral or side approach	19
6.1.1 Introduction.....	19
6.1.2 Assessment for a lateral or side approach.....	20
6.2 Frontal or diagonal approach.....	21
6.2.1 Introduction.....	21
6.2.2 Assessment for a frontal or diagonal approach.....	22
Annex A (normative) Engineering limits for an interoperable wheelchair transportable by train	24
A.1 Engineering limits.....	24
A.2 Characteristics	24
Annex B (normative) Simplified wheelchair profile and occupants reach range.....	27
Annex C (informative) Wheelchair accessible toilet guidance and good practice	29
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive (EU) 2016/797 aimed to be covered	33
Bibliography	35

European foreword

This document (prEN 16585-1:2022) 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 CEN Enquiry.

This document will supersede EN 16585-1:2017.

In comparison with the previous edition, the following technical modifications have been made:

- The document template has been updated
- This document has been revised generally for document references and editorial issues with grammar etc
- Scope modified
- Normative references updated
- Terms and definitions revised
- References updated
- Annex C “EC verification - Interoperability constituents” removed
- Annex D “Summary of testing requirements” removed
- Annex E “Wheelchair accessible toilet guidance and good practice” is now Annex C
- Annex ZA updated
- Bibliography updated

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 EU Directive(s) / Regulation(s).

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

prEN 16585-1:2022 (E)**Introduction**

This document is part of a suite of four 'Design for PRM use' standards that have in total nine parts:

- EN 16584 is a standard that covers both infrastructure and rolling stock — Railway applications — Design for PRM use — General requirements:
 - Part 1: Contrast (EN 16584-1)
 - Part 2: Information (EN 16584-2)
 - Part 3: Optical and friction characteristics (EN 16584-3).
- EN 16585 is a standard that covers rolling stock — Railway applications — Design for PRM use — Equipment and components onboard rolling stock:
 - Part 1: Toilets (EN 16585-1)
 - Part 2: Elements for sitting, standing and moving (EN 16585-2)
 - Part 3: Clearways and internal doors (EN 16585-3).
- EN 16586 is a standard that covers rolling stock — Railway applications — Design for PRM use — Accessibility of persons with reduced mobility to rolling stock:
 - Part 1: Steps for access and egress (EN 16586-1)
 - Part 2: Boarding aids (EN 16586-2).
- EN 16587 is a standard that covers infrastructure — Railway applications — Design for PRM use — Requirements for obstacle-free routes for infrastructure.

These standards aim to clarify the requirements (with clear and consistent terms and definitions) and to define the associated criteria and, where appropriate, methodologies to allow a clear pass/fail assessment.

1 Scope

This document describes the specific 'Design for PRM use' requirements applying to rolling stock and the assessment of those requirements. The following applies to this document:

- The definitions and requirements describe specific aspects of 'Design for PRM use' required by persons with disabilities and persons with reduced mobility as defined in the PRM TSI
- This document defines elements which are universally valid for obstacle-free travelling including toilets, elements for sitting, standing and moving and clearways and internal doors. The definitions and requirements of this document are to be used for rolling stock applications
- This document only refers to aspects of accessibility for PRM passengers; it does not define non-PRM related requirements and definitions.
- This document assumes that the rolling stock is in its defined operating condition
- Where minimum or maximum dimensions are quoted these are absolute NOT nominal requirements.
- This document is not specifically intended for Urban Rail, however these standards or clauses from these standards can be adopted by Urban Rail projects should they choose to do so.

The 'Equipment and Components' standard is written in three parts:

- This document is Part 1 and contains:

- Toilets

- Part 2 contains:

- Handholds

- Seats

- Wheelchair spaces

- Part 3 contains:

- Clearways

- Internal doors.

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 12183, *Manual wheelchairs - Requirements and test methods*

EN 12221-1:2008+A1:2013, *Child use and care articles - Changing units for domestic use - Part 1: Safety requirements*

EN 12221-2:2008+A1:2013, *Child use and care articles - Changing units for domestic use - Part 2: Test methods*

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prEN 16585-1:2022 (E)

EN 12790, *Child use and care articles - Reclined cradles*

EN 14752, *Railway Applications - Bodyside Entrance Systems for Rolling Stock*

prEN 16584-1:2022, *Railway applications - Design for PRM use - General requirements - Part 1: Contrast*

prEN 16584-2:2022, *Railway applications - Design for PRM use - General requirements - Part 2: Information*

prEN 16585-2:2022, *Railway applications - Design for PRM use - Equipment and components on board rolling stock - Part 2: Elements for sitting, standing and moving*

prEN 16585-3:2022, *Railway applications - Design for PRM use - Equipment and components on board rolling stock - Part 3: Clearways and internal doors*

3 Terms and definitions

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

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1**clear width****clear usable width**

unobstructed width of an open door or clearway to allow all passengers, including PRM, to pass through

3.2**clearway**

unobstructed space with defined widths and heights to allow movement within a vehicle

3.3**gap**

distance between a platform and the closest point on the rolling stock at the passenger door where passengers traverse from one to the other (both vertical and horizontal)

3.4**handrail**

continuous element with round cross section for passengers to use to aid personal stability by gripping around

3.5**manual door**

unpowered door which the passenger has to physically open and/or close

3.6**palm operable**

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.

3.7**proximity sensor**

sensor that can be used to control facilities without the control device being physically touched

3.8**semi-automatic door**

powered door which opens and/or closes following operation of a control device by a passenger

3.9**sharp edge**

thin edge capable of cutting or an abrupt end or discontinuity of a surface which has the potential to injure a passenger in normal use

3.10**standard toilet**

toilet not designed to be accessible to a passenger in a wheelchair

3.11**universal toilet**

toilet designed to be used by all passengers including passengers in wheelchairs

3.12**wheelchair**

wheeled personal mobility device

Note 1 to entry: Wheelchair characteristics are defined in Annex A.

3.13**wheelchair space**

designated space in the passenger compartment for the wheelchair users and their wheelchairs

Note 1 to entry: Space can be designed for two wheelchairs, one beside the other (dual).

4 Symbols and abbreviations**Table 1 — Abbreviations**

Abbreviation	Designation
EN	European Standard (Euronorm)
PRM	Persons with disabilities and persons with reduced mobility
TSI	Technical Specification for Interoperability

Table 2 — Symbols

Symbol	Designation	Unit
%ile	Percentile	
kg	Weight	kilogram
mm	Length	millimetre
N	Force	Newton
°	measurement of angles	Degree

prEN 16585-1:2022 (E)

5 Requirements and assessment

5.1 General

- 1) All dimensions in the figures are in millimetres (mm) unless otherwise stated.
- 2) When toilets are fitted in a train, a universal toilet shall be provided that is accessible from the wheelchair space and, if provided, the sleeping compartment.
- 3) The standard toilet shall be compliant with the requirements of 5.2 and 5.3.
- 4) The universal toilet shall be compliant with the requirements of 5.2 and 5.4.

5.2 Standard and universal toilets, common parameters

- 1) The centre of any door handle, lock or door control device on the exterior or interior of the toilet compartment shall be located at a minimum of 800 mm and a maximum of 1 100 mm above the toilet door threshold.

— Assessment: this shall be measured vertically above the door threshold.

- 2) A visual and tactile (or audible) indication shall be given inside and outside the toilet to indicate when a door has been locked.

— Assessment: visual, tactile, and audible information shall be according to prEN 16584-2:2022.

— Assessment: Indication inside the toilet shall be provided by two distinct physical positions of the “lock” device and/or provision of audible indication.

NOTE 1 Current good practice and solutions are shown in prEN 16584-2:2022, Annex M.

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- 3) Any door control device and other equipment inside a toilet compartment (except for baby nappy change facilities and call for aid devices) shall be operable by exerting a force not exceeding 20 N.

— Assessment of force required to operate a control device shall be by pulling or pushing the device depending on its normal mode of operation with e.g. a “force gauge” or “force meter” until the device or equipment is operated or activated.

— This requirement does not refer to the force required to open or close a manual door itself (this is described in prEN 16585-3:2022).

- 4) Any control device, including flushing system, shall contrast to the background surface, and shall be identifiable by touch.

— Assessment shall be according to prEN 16584-1:2022 and prEN 16584-2:2022.

NOTE 2 For systems that are operated by proximity sensors this requirement does not apply.

NOTE 3 For hygiene reasons it is good practice to have the flush control logically positioned that is close to the toilet so a blind or visually impaired passenger can locate it.

- 5) Clear, precise information for the operation of any control device shall be provided, making use of pictograms and shall be tactile.

— Assessment shall be according to prEN 16584-2:2022.

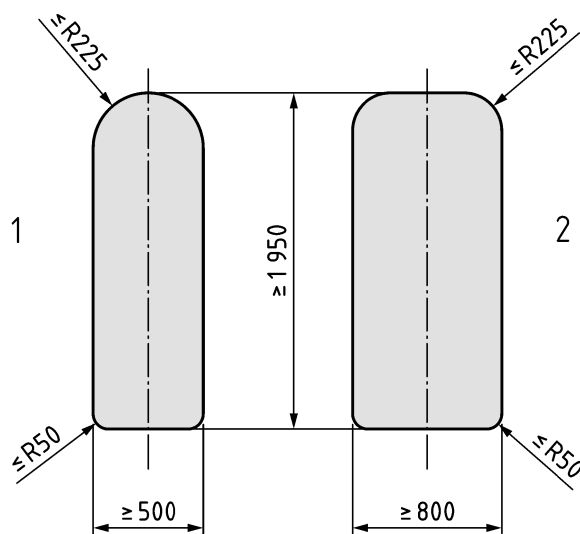
- 6) The toilet seat and lid shall contrast with the background.
- Assessment shall be according to prEN 16584-1:2022.
- 7) Door controls shall comply with the specifications of prEN 16585-3:2022, 5.2.1
- 8) If both open and closed door control devices are fitted one above the other: the top button shall always be the open control. (To be subject to this requirement the buttons do not need to be directly one above the other)
- 9) Internal automatic and semi-automatic doors shall incorporate devices that prevent passengers becoming trapped during operation of the doors.
- Assessment shall be according to method described in EN 14752
- 10) Handrails where provided shall:
- i. Contrast to the background surface.
 - Assessment shall be according to prEN 16584-1:2022.
 - ii. Comply with the geometric requirements described in the relevant clauses of prEN 16585-2:2022.
- 11) In all areas of double-deck vehicles the minimum height of 1 950 mm shall be replaced by the relative ceiling height provided in those areas. In those areas, reduced ceiling height is only accepted as a consequence of structural constraints (gauge, physical space).
- 12) The force required to open or close a manual door shall not exceed 60 N.
- Assessment of force required shall be by pulling or pushing the door relative to its normal mode of operation with a 'force gauge' or 'force meter' until the door is fully opened or fully closed. See prEN 16585-3:2022 for an example force meter.

NOTE 4 It is recommended that manual doors are not used for Universal toilet applications as the usability for a wheelchair user is very difficult.

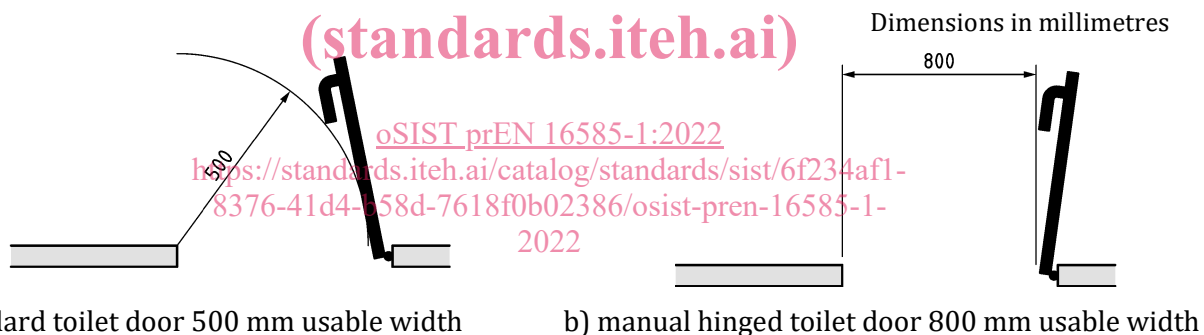
5.3 Standard toilet

- 1) A standard toilet is not designed to be accessible to a wheelchair user.
- 2) The minimum door usable width shall be 500 mm.
 - This shall be assessed according to Figures 1 and 2a
 - There are to be no protrusions into the minimum usable width of 500 mm in its open position, such as handles or other features, from the floor up to a minimum of 1 950 mm as shown in Figures 1 and 2. Also see 5.2, 11)
 - Minimum door usable width of a manual hinged door includes the swept envelope and should ensure that no part of the door shall be in that area when open. See Figure 2a.

Dimensions in millimetres

**Key**

- 1 clear width through the standard toilet door
- 2 clear width through the universal toilet door

Figure 1 — Toilet door clear usable width (standard and universal)**Figure 2 — Usable width of toilet doors**

- 3) A fixed vertical and/or horizontal handrail shall be provided adjacent to the toilet seat and the wash basin.

— Assessment: the handrail shall be according to point 5.2 (10).

5.4 Universal toilet

- 1) A universal toilet is a toilet designed to be used by ALL passengers including ALL persons with disabilities and persons with reduced mobility.
- 2) The area of use of a universal toilet is defined by:
 - i. Using 'method A' as described in Clause 6