SLOVENSKI STANDARD
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Playground equipment and surfacing - Part 4: Additional specific safety requirements and test methods for cableways

Spielplatzgeräte und Spielplatzböden - Teil 4: Zusätzliche besondere sicherheitstechnische Anforderungen und Prüfverfahren für Seilbahnen

Équipements et sols d'aires de jeux - Partie 4 : Exigences de sécurité et méthodes d'essai complémentaires spécifiques aux téléphériques

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97.200.40 Igrišča Playgrounds

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Playground equipment and surfacing - Part 4: Additional specific safety requirements and test methods for cableways

Équipements et sols d'aires de jeux - Partie 4 : Exigences de sécurité et méthodes d'essai complémentaires spécifiques aux téléphériques

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 136.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (prEN 1176-4:2015) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1176-4:2008.

EN 1176, *Playground equipment and surfacing* consists of the following parts:

— *Part 1: General safety requirements and test methods*

— *Part 2: Additional specific safety requirements and test methods for swings*

— *Part 3: Additional specific safety requirements and test methods for slides*

— *Part 4: Additional specific safety requirements and test methods for cableways*

— *Part 5: Additional specific safety requirements and test methods for carousels*

— *Part 6: Additional specific safety requirements and test methods for rocking equipment*

— *Part 7: Guidance on installation, inspection, maintenance and operation*

— *Part 10: Additional specific safety requirements and test methods for fully enclosed play equipment*

— *Part 11: Additional specific safety requirements and test methods for spatial network*

This part of EN 1176 should not be used in isolation, but in conjunction with EN 1176-1, EN 1176-7 and EN 1177.

For inflatable play equipment see:

EN 14960, *Inflatable play equipment - Safety requirements and test methods*

The principal changes from the previous edition of this part of EN 1176 are as follows:

a) revised requirements for the different types of grips and seats;

b) revised requirements for seated and hanging types of equipment;

c) test methods have been improved in the light of experience.

1 Scope

This European Standard is applicable to cableways whereby children travel on or along a cable by the use of gravity. This standard specifies additional safety requirements for cableways intended for permanent installation for use by children.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1176-1:2008, *Playground equipment and surfacing - Part 1: General safety requirements and test methods*

prEN 1176-2:2014, *Playground equipment and surfacing - Part 2: Additional specific safety requirements and test methods for swings*

prEN 1176-6:2014, *Playground equipment and surfacing - Part 6: Additional specific safety requirements and test methods for rocking equipment*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
cableway
item of children's playground equipment whereby children can travel on or along a cable under the force of gravity

Note 1 to entry: See Figure 1.

3.2
hanging type cableway
cableway equipped with a suspension assembly which includes a grip for hanging cableway

3.3
seating type cableway
cableway equipped with a suspension assembly which includes a seat

3.4
starting point
area in which the user can reach the grip or seat and set the equipment in motion

3.5
area of travel
area in which the user can travel freely

3.6
terminus
area furthest away from the starting point that the user can reach by travelling across the area of travel

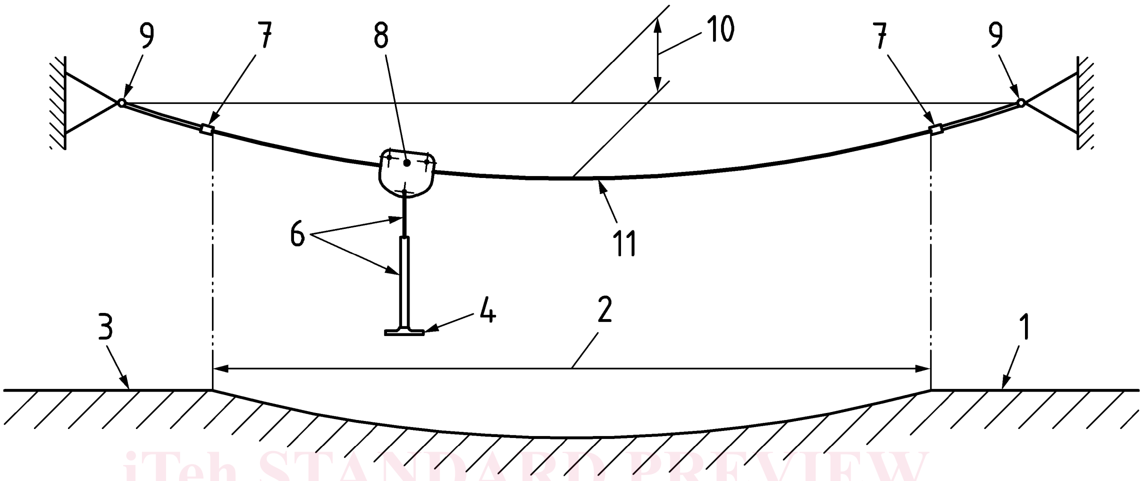
3.7
traveller
moving part that, by influence of gravity, moves the user along the cable

Note 1 to entry: See Figure 1.

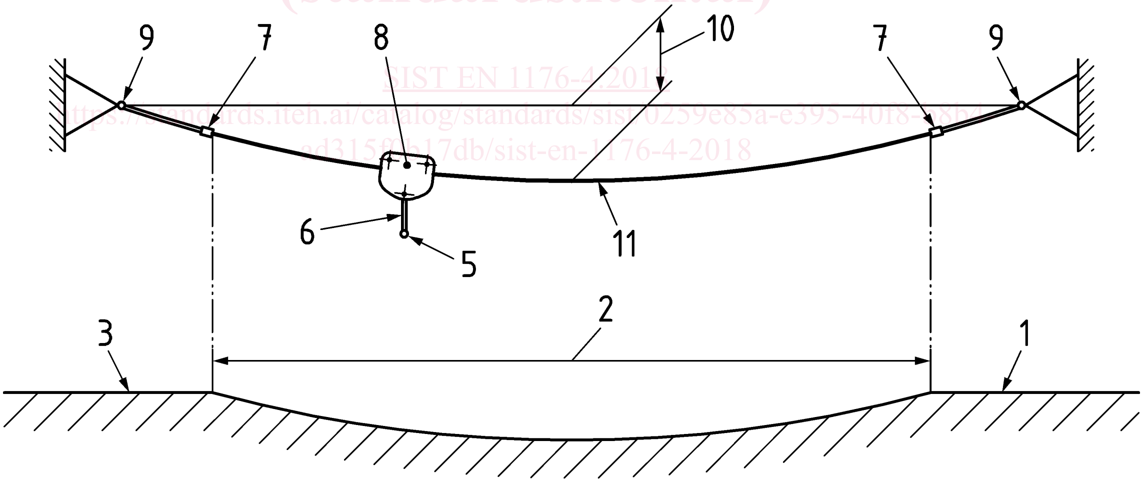
3.8
suspension element
part of the structure between the traveller and the seat or grip

3.9
suspension assembly
assembly of components hanging beneath the traveller

EXAMPLE Suspension elements, grips and/or seats.



a) Cableway terms (seated)



b) Cableway terms (hanging)

Key

1	terminus/starting point	7	stop
2	area of travel	8	traveller
3	terminus/starting point	9	cable fixing points
4	seat	10	sag
5	grip	11	cable
6	suspension element		

Figure 1 — Cableway terms

4 Safety requirements

4.1 General

Cableways shall conform to EN 1176-1 unless otherwise specified in this part of EN 1176.

4.2 Framework and fixing points for the cable

Framework and fixing points for the cable shall be designed to withstand the computed loads (static and dynamic) transmitted by the cable, in accordance with EN 1176-1.

There shall be an adjusting device so that the correct sag can be maintained for the life of the cable.

4.3 Calculation of forces acting on the cable of a cableway

The cable shall be designed so that it can withstand the forces acting upon it according to EN 1176-1:2008, Annex A.

4.4 Stops

When tested in accordance with Annex A, the stop at the terminus shall progressively slow down the traveller until it stops and the suspension element shall not swing through an angle of more than 45°, as shown in Figure 4.

NOTE This test includes an allowance for starting speed.

4.5 Traveller

The traveller shall be constructed so that it cannot slip out of place. Any openings in the traveller shall not allow the 8 mm finger rod (see EN 1176-1:2008, Figure D.10) to pass through

There shall be only one traveller on the same cable.

The traveller and suspension element shall be designed such that it does not cause damage to the cable during use.

4.6 Suspension assembly

For seating type cableways rigid suspension elements shall not be used.

If a flexible suspension element is used it shall be designed to prevent risk of strangulation.

If a pulling device for the traveller is provided it shall be designed to prevent risk of strangulation.

4.7 Cableways arranged in parallel

For cableways arranged in parallel, the distance between the cables shall be at least 2 000 mm.

4.8 Grips

For hanging type cableways the grip shall be constructed to ensure that the user can easily release their hold at all times. If the grip is an enclosed loop, it shall not be made from flexible material that could tighten around the user's arm or hand thus preventing the user from releasing their grip quickly. Enclosed loops shall conform to the entrapment requirements in EN 1176-1:2008, 4.2.7.

It shall not be possible to climb on the grip.

If the grip is rigid and does not form a loop, the ends of the grip shall conform to prEN 1176-6:2014, Annex E.

NOTE This is to reduce the risk of eye injury from the ends of projecting hand supports.

Suspension type cableways from which users will hang by the hands shall conform to EN 1176-1:2008, 4.2.4.6.

4.9 Seats

Seats shall be designed so that the user can leave the cableway quickly and at all times. Seats which form loops or circular rings shall not be used.

When tested in accordance with prEN 1176-2:2014, Annex C, peak values of acceleration shall be not greater than 50 g and the average surface compression shall not exceed 90 N/cm^2.

4.10 Speed

When tested in accordance with Annex B the maximum speed of the traveller shall not exceed 7 m/s.

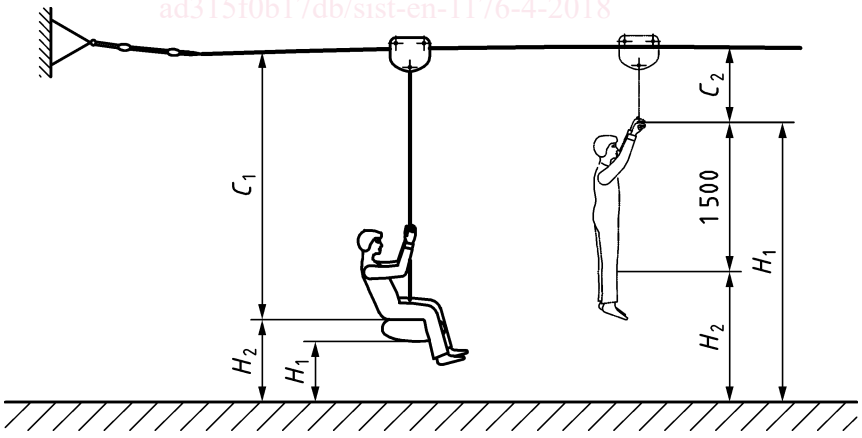
4.11 Free height of fall

The free height of fall, for all cableway types, shall be measured unloaded, and with the seat or hand grip hanging directly below the cable. In the sitting position the free height of fall, H_2, shall not exceed 2 000 mm.

In the hanging position the free height of fall shall be measured from the grip position minus 1 500 mm to the surface below, as the user should not be able to access the cable (see Figure 2). In the hanging position, the free height of fall, H_2, shall not exceed 1 500 mm (see Figure 2).

The sagging of the cable and thus the distance ground/cable, ground/grip and ground/seat are dependent on temperature. The minimum and maximum dimensions specified apply to a reference temperature of 15 °C.

Dimensions in millimetres



Key

C_1	cable height — seating type	H_1	ground clearance
C_2	cable height — hanging type	H_2	free height of fall

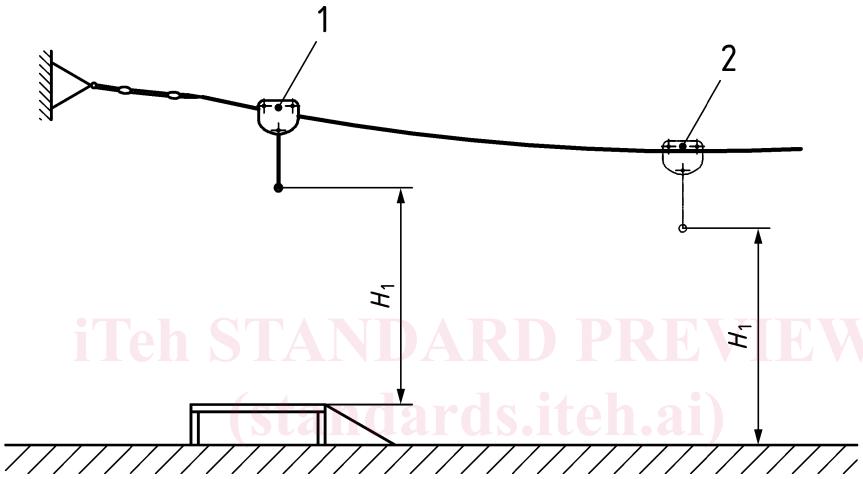
Figure 2 — Determination of cable height, ground clearance and free height of fall

4.12 Ground clearance

The ground clearance is the distance between the underside of the seat or the lowest point on the grip and the surface beneath (see Table 1).

Table 1 — Ground clearance

Type	Ground clearance
For seating type (see Figure 2)	400 mm minimum — measured loaded with 130 kg
For all hanging types, except rigid types (see Figure 3)	1 500 mm minimum at the starting point — measured unloaded 2 000 mm minimum in the running position — measured loaded with 69,5 kg
For rigid hanging types	2 000 mm minimum at the starting point and in the running position — measured loaded with 69,5 kg
NOTE For hanging type cableways where the traveller, suspension element and grip are all rigidly fixed together, a greater ground clearance is necessary to reduce the risk of head injury.	



Key

1 starting position

2 running position

H_1 ground clearance

Figure 3 — Hanging type cableway, determination of ground clearance

4.13 Cable height

The cable height of seating type cableways, C_1, shall be 2 100 mm minimum, when measured as shown in Figure 2, except that it may be reduced to 1 800 mm minimum if the moving parts of the traveller are enclosed, are not accessible by the user and there is no possibility of finger entrapment.

The cable height of hanging type cableways, C_2, shall be 300 mm minimum, when measured as shown in Figure 2.

4.14 Falling space and impact area

The falling space and impact area shall be free from obstacles that could cause injury and shall be as shown in Figure 4 and Figure 5. In addition to the requirements given in EN 1176-1, the falling space and impact area shall be provided to a distance of at least 2 000 mm to each side, when measured from the centre of the cable and to a distance of at least 2 000 mm beyond the end of the swinging position, (max 45°, end stop compressed) of the grip or seat. The impact area may reduce in width symmetrically from the end of travel to a minimum overall width of 2 000 mm (see Figure 4). The impact attenuating surface within the impact area shall at least conform to the minimum values for a critical fall height of 1 000 mm. For fall heights greater than 1 000 mm, the attenuating properties of the impact area shall be increased proportionately.