BS EN 1176-11:2014

BSI Standards Publication

Playground equipment and surfacing

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

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 1176-11:2014. It supersedes BS EN 1176-11:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/65, Children's playground equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 79999 0

ICS 97.200.40

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2014.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1176-11

August 2014

ICS 97.200.40

Supersedes EN 1176-11:2008

English Version

Playground equipment and surfacing - Part 11: Additional specific safety requirements and test methods for spatial network

Équipements et sols d'aires de jeux - Partie 11: Exigences de sécurité et méthodes d'essai complémentaires spécifiques des filets à grimper tridimensionnels

Spielplatzgeräte und Spielplatzböden - Teil 11: Zusätzliche besondere sicherheitstechnische Anforderungen und Prüfverfahren für Raumnetze

This European Standard was approved by CEN on 4 July 2014.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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

Ref. No. EN 1176-11:2014 E

Contents

Page

Foreword

This document (EN 1176-11:2014) 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 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 February 2015 and conflicting national standards shall be withdrawn at the latest by February 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1176-11:2008.

The main technical changes compared to EN 1176-11:2008 are:

a) Figure 5 revised;

b) Clarification of the requirements for converging parts;

c) Standard editorially revised.

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.*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies additional safety requirements for spatial networks intended for permanent installation for use by children.

This European Standard is not applicable to artificial climbing structures, which are used for training for sports activities, e.g. alpinism.

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1176-1:2008 and the following apply.

3.1
spatial network
climbing equipment as geometric 3-dimensional assembly of flexible elements, which by its design will yield

Note 1 to entry: Flexible elements can be e.g. ropes, chains, etc.

Note 2 to entry: See Figure 1 for examples.

Note 3 to entry: Because of the way in which climbing equipment is used (see EN 1176–1:2008, 3.2) if the user were to fall, this would be a vertical downward fall into the structure. Therefore, structural elements outside the net are not considered to be in the falling space.

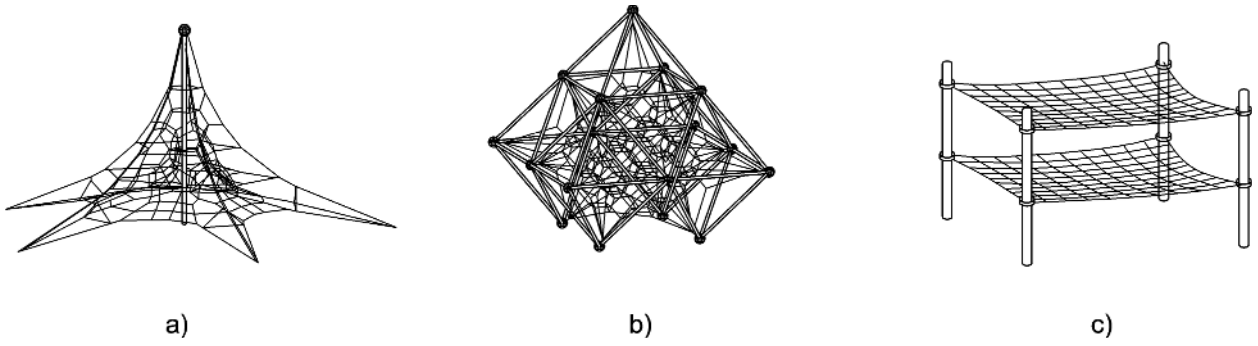


Figure 1 — Examples of spatial network

3.2
3-dimensional arranged planar nets
3-dimensional assembly of two or more planar nets one above the other

3.3
converging parts
any two linear elements, i.e. not flat surfaces, the distance between which diminishes along their length

4 Safety requirements

4.1 Protection against falling in spatial network

The meshes of a spatial network shall not be so large as to allow an imaginary cylindrical body in a vertical position, with a diameter of 650 mm and a height of 1 800 mm, to be introduced into the cellular structure and to pass through, see Figures 2 and 3.

If the cylindrical body passes through, the falling height and the shock absorbing surface shall conform to EN 1176-1.

NOTE The dimensions of the imaginary cylinder are derived from anthropometric data and have been selected to ensure that a secure hold can be achieved by the user from any point within the net structure.

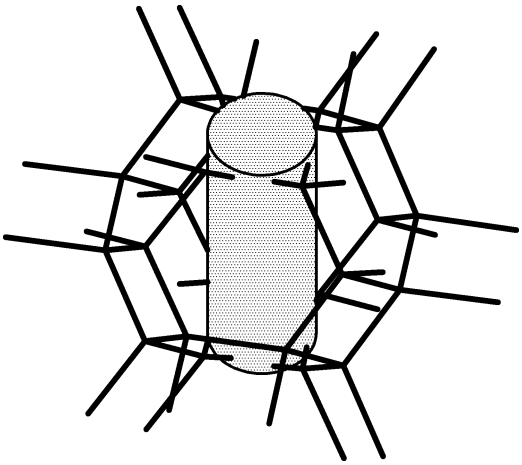
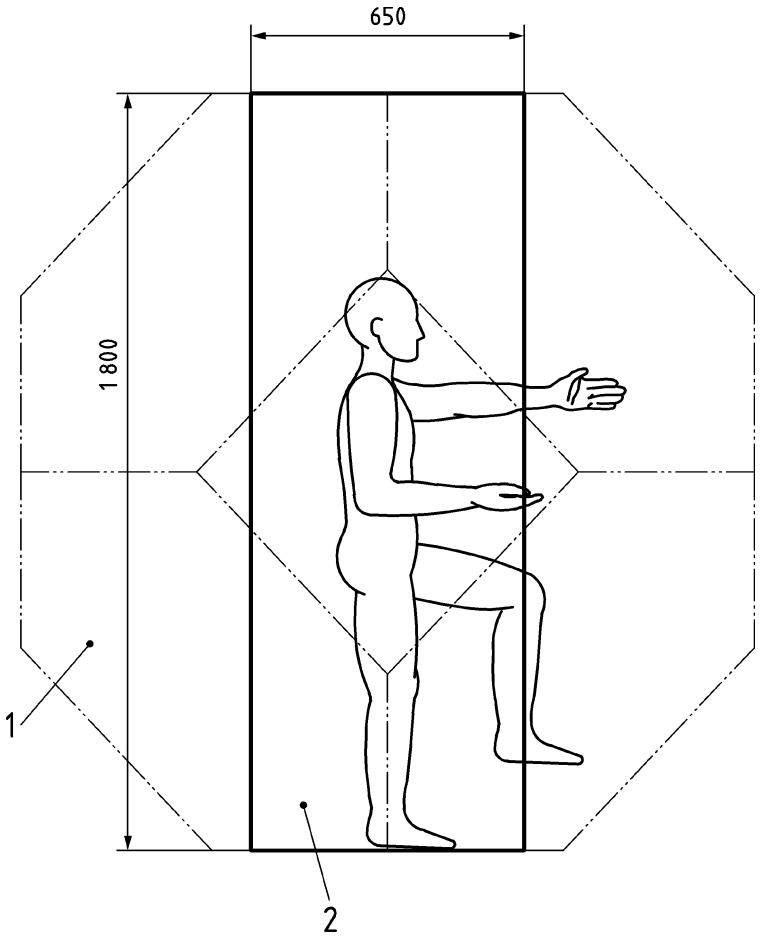


Figure 2 — Cylindrical body

Dimensions in millimetres



Key

1 spatial network

2 cylindrical body

Figure 3 — Achievement of secure hold

4.2 Additional requirements for mesh size in 3-dimensional arranged planar nets

If a 3-dimensional assembly is an arrangement of planar nets (see Figure 1 c)) with a vertical separation greater than 1 000 mm, the diameter of the largest circle that can be inscribed in all net openings shall be not greater than 420 mm when unloaded, see Figure 4.

Where the arrangement of planar nets has a lower net with mesh size greater than 420 mm circular inner diameter, the impact attenuating surface below the lower of the nets shall have a critical fall height appropriate for the highest planar net with a mesh size greater than 420 mm circular inner diameter.

NOTE The mesh size of planar nets has been reduced to 420 mm to compensate for the reduction in grip opportunities within a 2-dimensional net structure.

Dimensions in millimetres

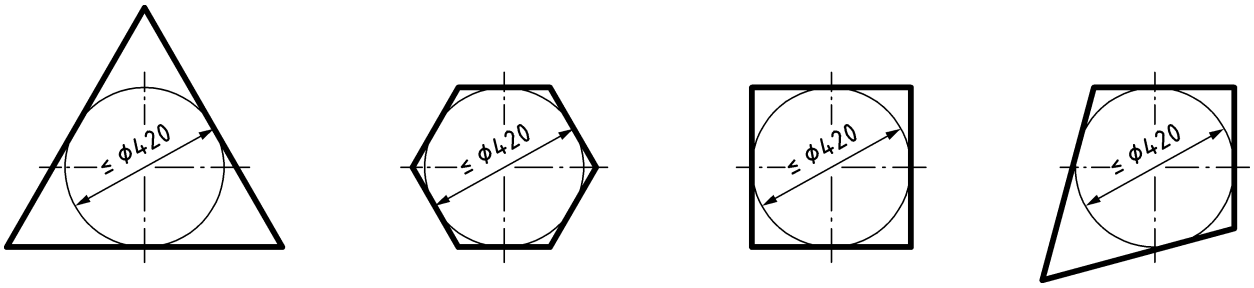
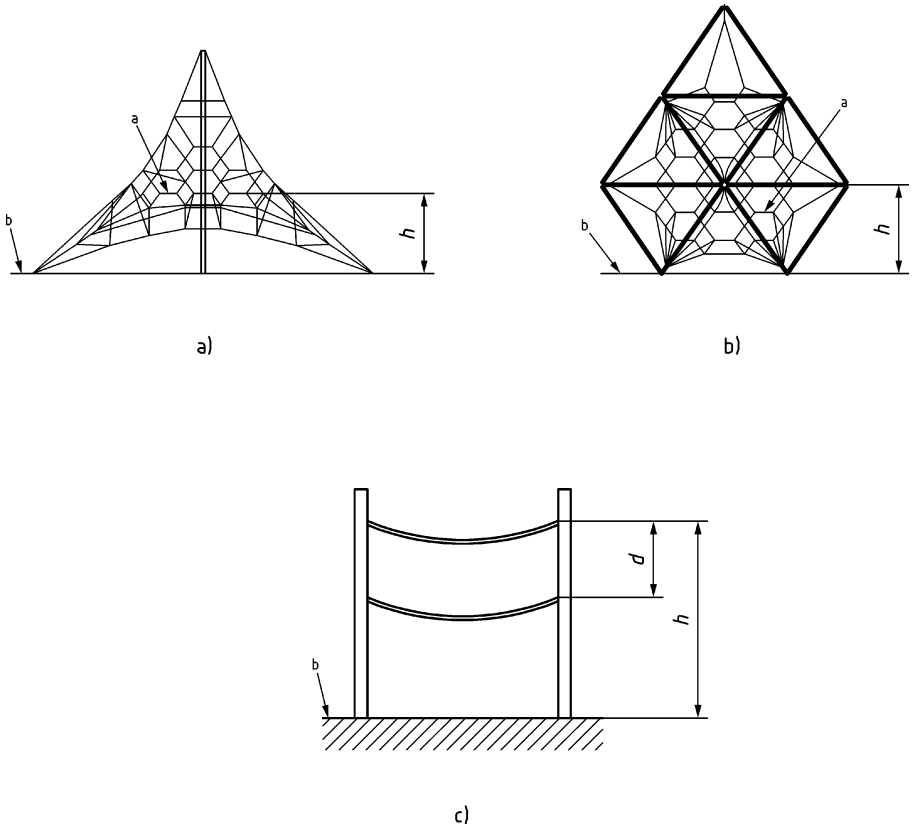


Figure 4 — Principal measurement of effective diameter of mesh size

4.3 Protection against injuries in the falling space

The free height of fall (*h*) shall be as given in EN 1176-1:2008, 3.6, and shall be measured as shown in Figure 5.

NOTE 1 For spatial network this means the highest foot position giving an unimpeded fall.



Key

a mesh size smaller than the diameter of the imaginary cylindrical body (see 4.1)
b impact absorbing surface
d distance between the nets: *d* = max. 1,8 m for mesh size up to 420 mm × 420 mm
d = max. 1,0 m for mesh size bigger than 420 mm × 420 mm
h free height of fall

Figure 5 — Free height of fall

NOTE 2 Persons climbing on the outside of inclined 3-dimensional climbing structures (e. g. pyramids) do not fall to the outside, due to their orientation while climbing, but fall vertically downwards into the structure.

When non-flexible elements (e.g. support poles) are arranged in a slanted position and have a smooth surface, they have a deflecting character and the impact energy is reduced. The maximum internal height of fall can then be increased in accordance with Table 1.

Table 1 — Maximum internal height of fall

Deviation from horizontal °	**Factor**	**Height of fall equivalent to 600 mm vertical** mm
30	1,15	700
45	1,41	850
60	2,00	1 200
70	2,92	1 750
80	5,76	3 000 max.
NOTE This table shows mathematical ratios that relate only to the structure. Appropriate IAS (Impact Absorbing Surface) materials are required on any surrounding impact area.		

Rope structures which are designed to yield in use are not regarded as hard objects in the falling space.

4.4 Converging parts

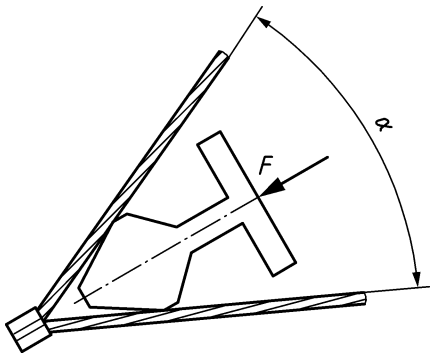
Converging parts within spatial networks shall be exempt from the requirements of EN 1176-1:2008, 4.2.7.2 b).

Where two linear elements converge at least one shall be flexible.

Above 600 mm from the ground the angle formed between converging parts with a lower edge above the horizontal shall be more than 55°.

The angle formed by two converging parts shall be measured by a measuring device, such as a protractor.

If the measurement device cannot be freely inserted in the opening use the test template according to Figure D.2 of EN 1176-1:2008 applying a force of (222 ± 5) N and re-measure the angle using the measuring device (see Figure 6).



Key

α angle ≥ 55°

F force of (222 ± 5) N

Figure 6 — Applying of the force to the test template

NOTE The minimum internal angle of platonic solids is 60°. To allow for the flexibility of the ropes an angle of 55° is acceptable.

5 Test reports

Test reports shall be in accordance with EN 1176-1:2008, Clause 5, in addition to the following:

a) test report regarding compliance with EN 1176-11;

b) certification of conformity with the relevant requirements of EN 1176-1 and EN 1176-11;

c) the number and date of this European Standard, i.e. EN 1176-11:2014.

6 Marking

Spatial networks shall be marked in accordance with EN 1176-1:2008, Clause 7.

This page deliberately left blank

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™