BS EN 12270:2013

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Mountaineering equipment — Chocks — Safety requirements and test methods

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National foreword

This British Standard is the UK implementation of EN 12270:2013. It supersedes BS EN 12270:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136/5, Sports, Playground and other Recreational Equipment - Mountaineering 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.

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Mountaineering equipment - Chocks - Safety requirements and test methods

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Bergsteigerausrüstung - Klemmkeile - Sicherheitstechnische Anforderungen und Prüfverfahren

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Foreword

This document (EN 12270:2013) 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of an identical text or by endorsement, at the latest by May 2014, and conflicting national standards shall be withdrawn at the latest by May 2014.

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 12270:1998.

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(s).

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

In comparison with the previous edition EN 12270:1998, the following significant changes have been made:

a) editorial revision;

b) new Annex A “Protection provided by chocks” added;

c) updated Annex B.

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 safety requirements and test methods for chocks for use in mountaineering including climbing.

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 564, *Mountaineering equipment - Accessory cord - Safety requirements and test methods*

EN 565, *Mountaineering equipment - Tape - Safety requirements and test methods*

EN 892, *Mountaineering equipment - Dynamic mountaineering ropes - Safety requirements and test methods*

EN 1891, *Personal protective equipment for the prevention of falls from a height - Low stretch kernmantel ropes*

EN ISO 139, *Textiles - Standard atmospheres for conditioning and testing (ISO 139)*

ISO 7000, *Graphical symbols for use on equipment - Registered symbols*

3 Terms and definitions

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

3.1
chock
non-adjustable body, which is intended to be wedged in cracks or cavities in the rock and which, due to its shape and orientation in the rock, can withstand a load

Note 1 to entry: See Annex A for protection provided by chocks.

3.2
means of attachment
part of a chock which allows the attachment of a connector

Note 1 to entry: Applies to connectors in accordance with EN 12275.

3.3
holding force
force necessary to cause the chock or its means of attachment to break or to be pulled through the test apparatus

Note 1 to entry: The force is determined in the strength test according to 5.4.2.

4 Requirements

4.1 Design

4.1.1 Chocks may be fitted with a means of attachment by the manufacturer.

4.1.2 If a chock is not fitted with a means of attachment, the chock shall be designed such that a means of attachment consisting of tape (according to EN 565) or accessory cord (according to EN 564) or rope (according to EN 892 or EN 1891) can be affixed.

4.1.3 If there is a textile means of attachment, whose strength is dependent on the integrity of the stitching, then the stitching shall contrast with the background in colour or surface appearance.

4.1.4 Any means of attachment shall be large enough to accommodate a pin with a diameter of (15 ± 0,1) mm.

4.1.5 All edges of the chock and/or the means of attachment that can come into contact with fingers or combinable components shall be free from burrs.

4.2 Strength

When tested according to 5.4.2, the holding force shall be at least the one(s) marked on the chock (see Clause 6 b)) and be not less than 2,0 kN.

5 Test methods

5.1 Test samples

For the test, as many test samples shall be provided as there are different chock orientations indicated by the manufacturer in the instructions for use. If a chock model is manufactured in different sizes, each size shall be tested.

5.2 Test apparatus for strength test

5.2.1 Layout

The apparatus consists of two round steel supporting jaws with a radius R = (65 ± 2) mm for the chock and by means of a loading bar with a diameter of (10 ± 0,1) mm for the means of attachment, see Figure 2 and Figure 6.

An apparatus consisting of two round steel supporting jaws with a radius R = (25 ± 1) mm shall be used for testing chocks where b_{max} of the tested position < 10 mm (see Figure 1).

The surface of the supporting jaws shall have a maximum surface roughness of R_{max} = 50 µm.

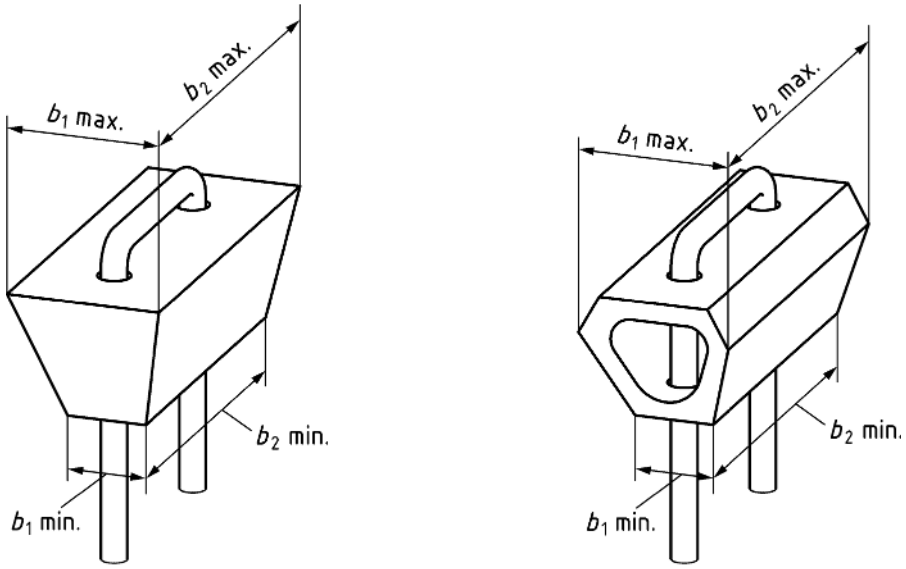
The supporting jaws shall not rotate during the test.

When testing chocks fitted with textile slings, the surface of the steel bar shall have an arithmetical mean deviation of the profile of R_a = 0,8 µm and a maximal surface roughness of R_{max} = 6,3 µm. There are no surface roughness requirements when testing chocks with a means of attachment made of other than textile material.

For chocks with a horizontal non-parallel cross-section according to Figure 3, the supporting jaws shall have a groove adapted to the cross-section of the chock.

For cam-type chocks (according to Figure 4) which attain their wedging effect by swinging to one side when loaded and therefore cannot be clamped into the round steel supporting jaws, the force is transmitted by two plane-parallel steel supporting jaws, one having a step (according to Figure 5) (position 1) and by a loading bar. The surface roughness of the plane-parallel supporting jaws shall be the same as that of the round steel supporting jaws.

When cam-type chocks are used in position 2, test according to Figure 6.

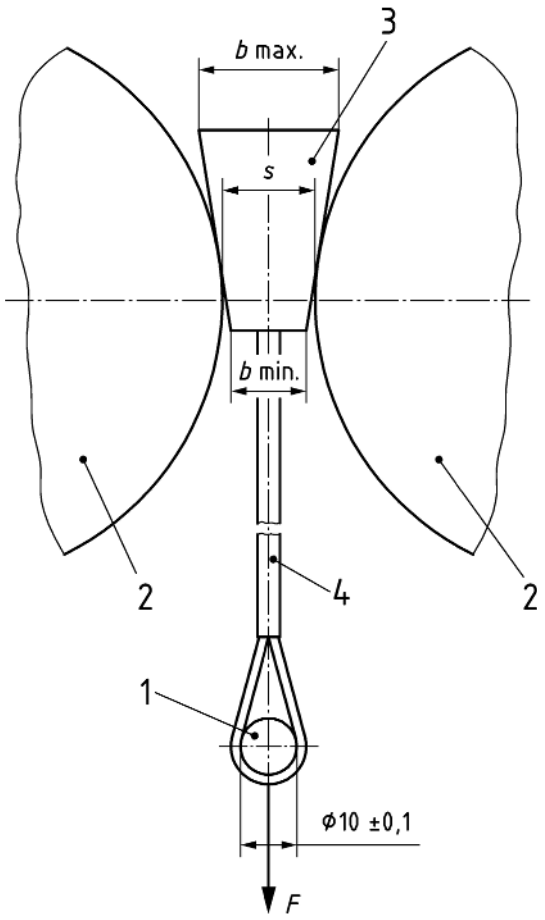


Key

b_{1min}	minimum chock width
b_{2min}	minimum chock length
b_{1max}	maximum chock width
b_{2max}	maximum chock length

Figure 1 — Examples of chocks

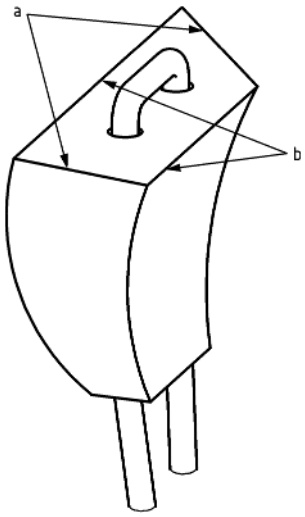
Dimensions in millimetres



Key

1 loading bar
2 supporting jaws *R* (65 ± 2) mm or *R* (25 ± 1) mm
3 chock
4 means of attachment
s space between the supporting jaws
F force

Figure 2 — Layout and adjustment of apparatus

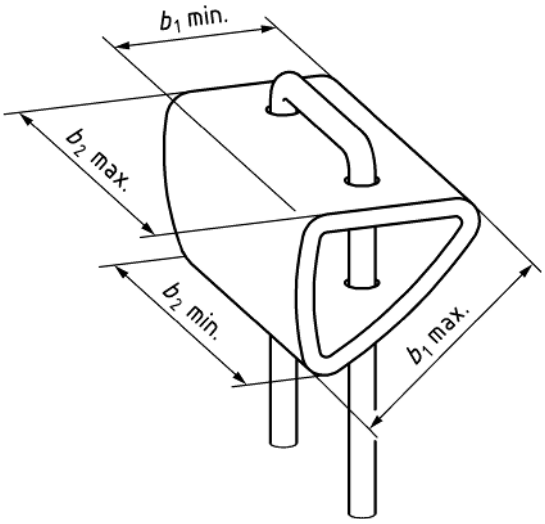


Key

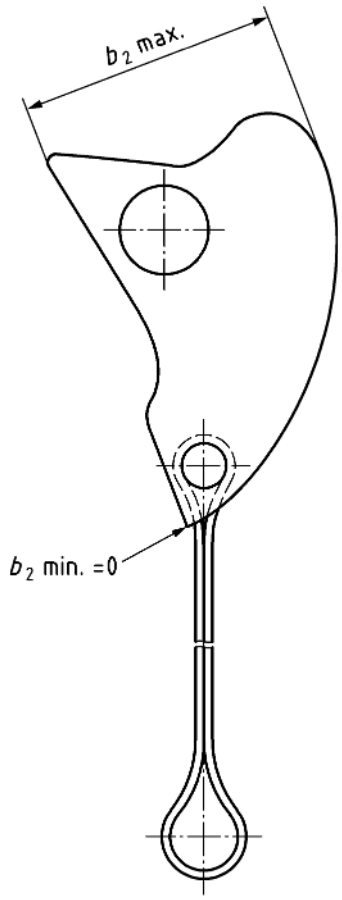
a non-parallel
b parallel

Figure 3 — Example of a chock with a horizontal non-parallel cross-section

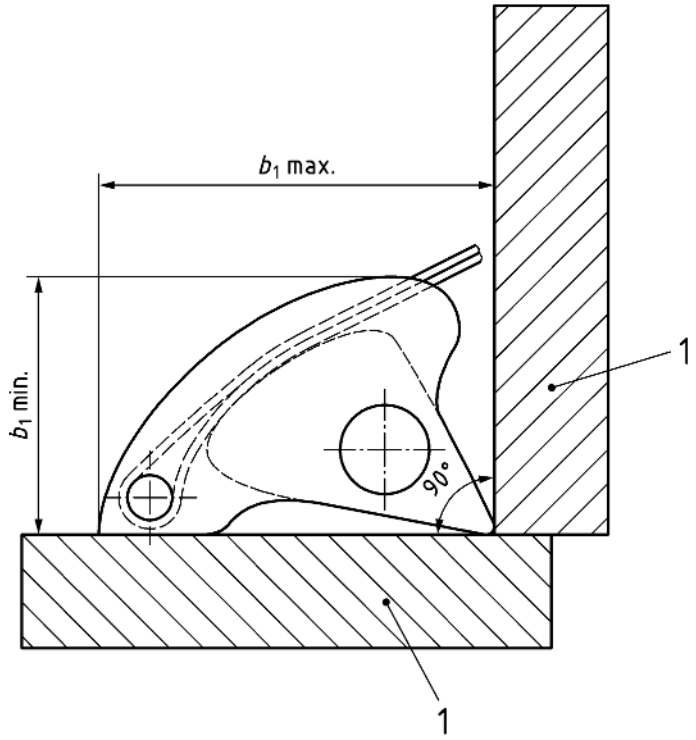
Dimensions in millimetres



a) cam-type chock



b) cam-type chock showing $b_{2\ min}$ and $b_{2\ max}$ (width for position 2)



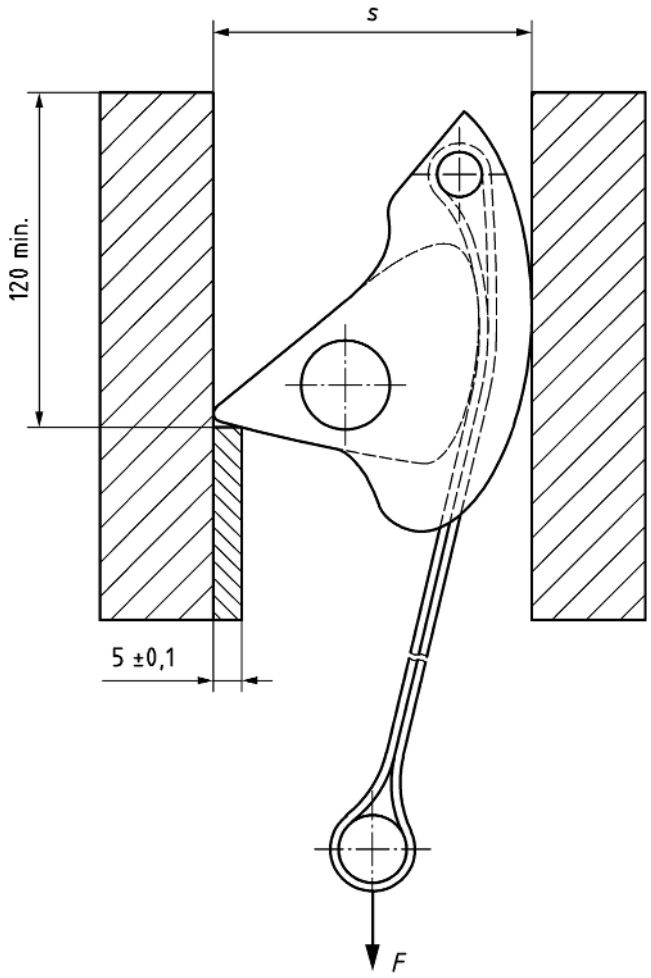
c) cam-type chock showing $b_{1\ min}$ and $b_{1\ max}$ (width for position 1)

Key

1 cross section reference plane

Figure 4 — Example of a cam-type chock

Dimensions in millimetres

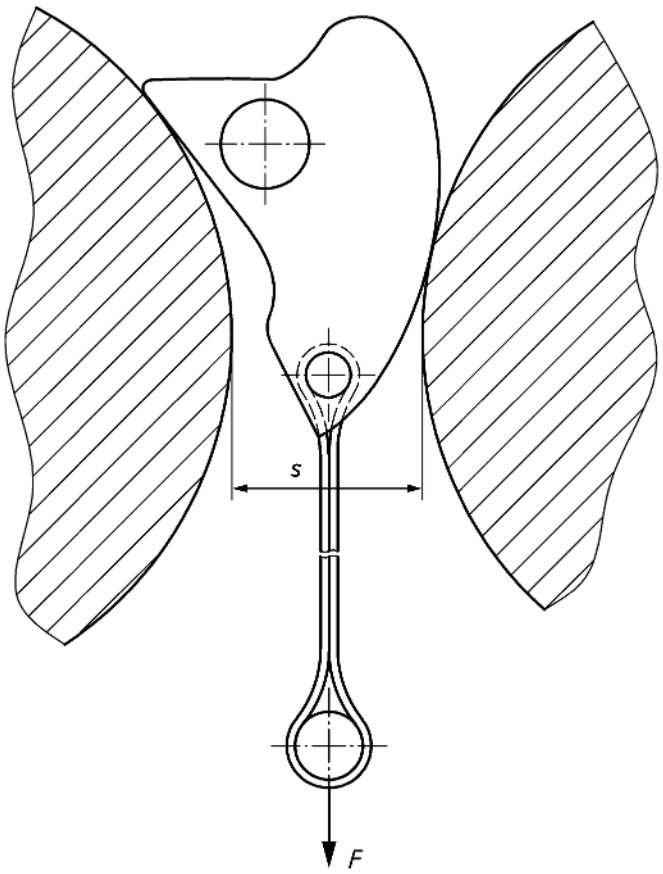


Key

s space between the supporting jaws

F force

Figure 5 — Layout of apparatus for cam-type chocks (position 1)



Key

s space between the supporting jaws

F force

Figure 6 — Layout of apparatus for cam-type chocks (position 2)

5.2.2 Adjustment

The spacing *s* between the supporting jaws shall be according to the following formula:

$$s = b_{\text{min}} + \left(\frac{b_{\text{max}} - b_{\text{min}}}{3} \right) \quad (1)$$

where

b_{min} is the minimum chock width in the position being tested;

b_{max} is the maximum chock width in the position being tested, see Figure 1.

5.3 Conditioning and test conditions

For the strength test according to 5.4.2, condition the chocks with textile means of attachment as described in EN ISO 139;

Carry out the strength test at a temperature of (23 ± 5) °C.

For chocks with textile means of attachment start the strength test within 3 min of removing them from the conditioning atmosphere.

5.4 Procedure

5.4.1 Design

5.4.1.1 Check by visual examination that the requirements according to 4.1.1 and 4.1.3 are met. Examine the manufacturer's instructions to check if the requirements of 4.1.2 are met.

5.4.1.2 Test the unloaded eye of the attachment according to 4.1.4, with a pin of (15 ± 0,1) mm diameter.

5.4.1.3 Check by visual examination and handling that the requirements according to 4.1.5 are met.

5.4.2 Strength

5.4.2.1 Rate of loading

— of 20 mm/min to 50 mm/min if the chock does not contain textile elements;

— of 50 mm/min to 200 mm/min if the chock contains a textile element, subjected to stress during the test.

5.4.2.2 Test a separate sample in each of the positions the manufacturer states in his instructions for use.

5.4.2.3 Apply a load to the means of attachment until it breaks or the chock is pulled through the test apparatus.

5.4.2.4 Chocks supplied without a means of attachment shall be tested with a means of attachment affixed according to the instructions for use provided by the manufacturer. If the manufacturer allows several different means of attachment, make a separate test with each one.

6 Marking

Chocks shall be marked clearly, indelibly and durably with at least the following information:

a) name of the manufacturer or its authorized representative;

NOTE For a definition of manufacturer and authorized representative see Regulation 765/2008 [1].

b) the minimum holding force in kN, which the manufacturer ensures. The marked force shall be expressed as a whole number of kN, e.g. “6 kN”. If the chock is claimed to have more than one operating position, the holding force for each position may be marked;

c) graphical symbol, which advises the user to read the information given by the manufacturer (see Figure 7, ISO 7000);

Figure 7 — Graphical symbol (according to ISO 7000, Symbol No. 1641)

d) year of manufacture, if the product contains non-metallic elements which are load bearing.

7 Information supplied by the manufacturer

The information supplied by the manufacturer shall contain at least the following elements:

a) name and address of the manufacturer or its authorized representative [1];

b) reference number of this European Standard: EN 12270;

c) advice that the product shall only be used by trained and/or otherwise competent persons or the user should be under the direct supervision of a trained and/or otherwise competent persons;

d) the model (if more than one model is available);

e) the size (if more than one size is available);

f) the meaning of any markings on the product;

g) the holding force in kN, which the manufacturer ensures. The value shall be expressed as a whole number of kN;

h) the use of the product and the protection which it can provide (see Annex A);

   1) selection of the correct model/size of chock;

   2) if chocks are supplied without means of attachment: information on the type of attachment to be used and how to affix it;

   3) how to choose other components for use in the system.

i) how to maintain and service the product;

j) lifespan of the product or how to assess it and factors that affect the lifespan;

k) effects of chemical reagents and temperature on the product;

l) influence of wet and icy conditions;

m) danger of sharp edges;

n) influence of storage and ageing.

Annex A
(informative)

Protection provided by chocks

Even when used correctly, the protection provided depends on the holding force of the chock, and where it is used (see Table A.1).

The holding force depends on the rock type and its surface condition, and on the direction of the shock load in the event of a fall. The holding force may also be affected by the presence of humidity, ice, mud or sand on the rock.

The behaviour of a chock in rock, when loaded dynamically, is not fully predictable. At least two independent anchor points should always be used, each capable of providing adequate protection.

The user of this standard is allowed to copy this table for the means of information supplied by the manufacturer.

Table A.1 — Protection provided by chocks

Holding force S	At a Stance	As a Running Belay
S ≥ 20 kN	If used correctly, sufficiently strong to withstand the highest conceivable forces generated in a fall.	If used correctly, sufficiently strong to withstand the highest conceivable forces generated in a fall.
20 > S ≥ 12 kN	If used correctly, sufficiently strong to withstand the highest conceivable forces generated in a fall.	If used correctly, sufficiently strong to withstand the highest conceivable forces generated in a fall, provided a dynamic belay is in use and effective.
12 > S ≥ 7 kN	Not recommended for use on its own, since it will not withstand the highest conceivable force. It may be used as one component of a belay system where the force of a fall is shared between the components.	If used correctly, sufficiently strong to withstand typical forces generated in a fall, provided a dynamic belay is in use and effective. It cannot be relied upon to withstand the highest forces that could be generated in a fall.
S < 7 kN	Only to be used as part of a multicomponent belay system where the force of a fall will be shared between several components.	Even if used correctly, and with a dynamic belay in use, it cannot be relied upon to withstand typical forces generated in a fall. Wherever possible, it should be backed up with one or more devices of similar strength, in such a way as to share the load.
General	The behaviour of a chock in rock, when loaded dynamically, is not fully predictable. At least two independent anchor points should always be used, each capable of providing protection as above.	

Annex B
(informative)

Standards on mountaineering equipment

Table B.1 — List of standards on mountaineering equipment

No	Document	Title
1	EN 564	*Mountaineering equipment — Accessory cord — Safety requirements and test methods*
2	EN 565	*Mountaineering equipment — Tape — Safety requirements and test methods*
3	EN 566	*Mountaineering equipment — Slings — Safety requirements and test methods*
4	EN 567	*Mountaineering equipment — Rope clamps — Safety requirements and test methods*
5	EN 568	*Mountaineering equipment — Ice anchors — Safety requirements and test methods*
6	EN 569	*Mountaineering equipment — Pitons — Safety requirements and test methods*
7	EN 892	*Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*
8	EN 893	*Mountaineering equipment — Crampons — Safety requirements and test methods*
9	EN 958	*Mountaineering equipment — Energy absorbing systems for use in klettersteig (via ferrata) climbing — Safety requirements and test methods*
10	EN 959	*Mountaineering equipment — Rock anchors — Safety requirements and test methods*
11	EN 12270	*Mountaineering equipment — Chocks — Safety requirements and test methods*
12	EN 12275	*Mountaineering equipment — Connectors — Safety requirements and test methods*
13	EN 12276	*Mountaineering equipment — Frictional anchors — Safety requirements and test methods*
14	EN 12277	*Mountaineering equipment — Harnesses — Safety requirements and test methods*
15	EN 12278	*Mountaineering equipment — Pulleys — Safety requirements and test methods*
16	EN 12492	*Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods*
17	EN 13089	*Mountaineering equipment — Ice-tools — Safety requirements and test methods*
18	EN 15151–1	*Mountaineering equipment — Braking devices — Part 1: Braking devices with manually assisted locking, safety requirements and test methods*
19	EN 15151–2	*Mountaineering equipment — Braking devices — Part 2: Manual braking devices, safety requirements and test methods*

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 89/686/EEC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 89/686/EEC

Clause(s)/sub-clause(s) of this EN	**Essential Requirements (ERs) of Directive 89/686/EEC**	**Qualifying remarks/Notes**
4.1.5	1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user	
4.2	1.3.2 Lightness and design strength	
Clause 6, Clause 7	1.4 Information supplied by the manufacturer	
Clause 7j), Clause 7k), Clause 7n)	2.4 PPE subject to ageing	
Clause 7c)	2.8 PPE for use in very dangerous situation	
Clause 6, Clause 7f)	2.12 PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety	
4.2	3.1.2.2 Protection against falls from heights	Chocks according to this standard are only one part of the safety chain and should be used in conjunction with other compatible equipment.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Bibliography

[1] Regulation 765/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93

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