



# SLOVENSKI STANDARD SIST EN 893:2000

01-julij-2000

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## Gorniška oprema - Dereze - Varnostne zahteve in preskusne metode

Mountaineering equipment - Crampons - Safety requirements and test methods

Bergsteigerausrüstung - Steigeisen - Sicherheitstechnische Anforderungen und Prüfverfahren

Equipement d'alpinisme et d'escalade - Crampons - Exigences de sécurité et méthodes d'essai

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### ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment
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ICS 97.220.40

English version

## Mountaineering equipment - Crampons - Safety requirements and test methods

Équipement d'alpinisme et d'escalade - Crampons -  
Exigences de sécurité et méthodes d'essai

Bergsteigerausrüstung - Steigeisen - Sicherheitstechnische  
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 21 August 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational 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 March 2000, and conflicting national standards shall be withdrawn at the latest by March 2000.

The text is based on UIAA-Standard S (Union Internationale des Associations d'Alpinisme), which has been prepared with international participation.

This standard is one of a series of standards for mountaineering equipment, see annex A.

This European Standard supports essential requirements of EU Directive.

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

Annexes A and ZA of this European Standard are for information only.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## 1 Scope

This standard specifies safety requirements and test methods for crampons for use in mountaineering on snow and ice including climbing mixed terrain.

## 2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 565

Mountaineering equipment – Tape – Safety requirements and test methods

EN 10109-1

Metallic materials – Hardness test – Part 1: Rockwell test (scales A, B, C, D, E, F, G, H, K) and Rockwell superficial test (scales 15N, 30N, 45N, 15T, 30T and 45T)

ISO 9523

Touring ski-boots for adults – Interface with ski-binding

## 3 Definitions

For the purposes of this standard, the following definitions apply (see figure 1):

**3.1 crampon:** Device fitted with spikes, which is intended to cover the sole of a boot, from toe to heel and from one side to the other, so as to provide grip on snow, ice and mixed terrain and which has a system of attachment to the boot.

**3.2 frame:** Part or parts of the crampon which bears the spikes.

**3.3 front spikes:** Forward pointing spikes intended for use when climbing steep terrain.

**3.4 downward spikes:** Spikes other than front spikes usually, but not necessarily, pointing vertically downward.

**3.5 binding:** System of attachment to the boot.

**3.6 clip-on binding:** Particular binding which uses a lever mechanism for rapid attachment of a crampon to a boot.

**3.7 bail:** Stirrup-shaped part or parts of a binding used to connect the crampon to the toe and/or to the heel of the boot.

**3.8 attachment rings or eyes:** Rings or eyes which are threaded by a part of the binding when fitted in accordance with the manufacturers instruction.

**3.9 adjustment system:** System for adjusting the crampon to fit the boot.

**3.10 retaining system:** System which prevents the climber from losing the crampon if the binding fails.

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## 4 Safety requirements

### 4.1 Shape and design

4.1.1 Each crampon shall have a system of attachment to the boot.

4.1.2 Each crampon shall have at least 8 spikes.

4.1.3 Each crampon shall have at least 6 downward spikes, which

- a) shall be at least 20 mm long (see figure 2), and
- b) when walking normally on flat and smooth ice, shall touch the surface of the ice.

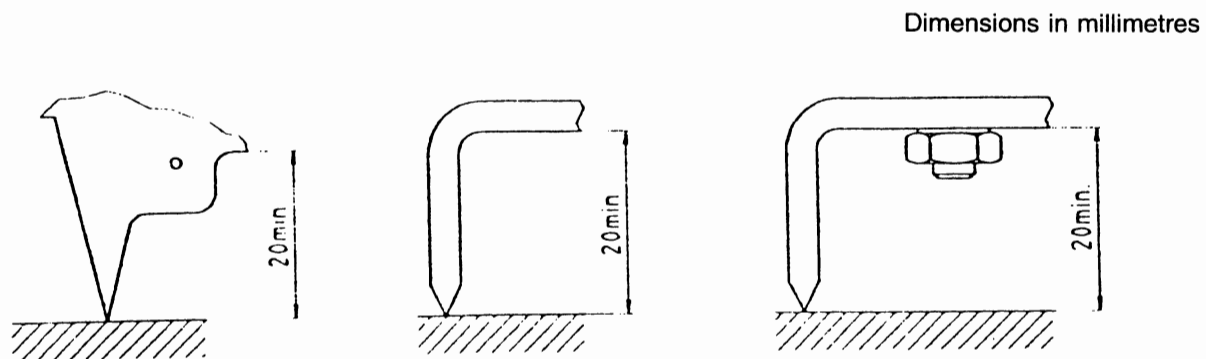


Figure 2: Length of spikes

4.1.4 All edges with which the users hands can come into contact shall be free from burrs.

4.1.5 If the crampon has a clip-on binding it shall be fitted with a retaining system.

### 4.2 Strength

#### 4.2.1 Hardness

Each part of the crampon, which contains a spike or spikes, shall have a hardness of at least 70 HRB.

Testing in accordance with 5.4.1.3.

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#### 4.2.2 Bending and breaking strength of spikes

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When tested in accordance with 5.4.2, the maximum deformation under load and the permanent deformation after removing the load, measured at the point of application, shall not be more than shown in table 1. The breaking strength shall be at least as shown in table 1.

**Table 1: Strength of spikes**

Types of spikes	Applied load N	Deformation under load mm	Permanent deformation mm	Minimum breaking strength N
Downward spikes	900 ± 20	15	7	1 200
Front spikes (if more than one)	1 200 ± 30	15	7	1 500
Single front spike (mono-spike)	1 600 ± 40	15	7	2 000

#### **4.2.3 Transverse strength of bails of clip-on bindings**

When tested in the operating position and in accordance with 5.4.3, the bails of clip-on bindings shall not break and shall not come out of the frame of the crampon. Permanent deformation is acceptable.

#### **4.2.4 Strength of binding parts other than bails**

When tested in accordance with 5.4.4, each part shall not break.

#### **4.2.5 Strength of attachment rings and eyes and of the appropriate part of the binding**

When tested in accordance with 5.4.6, attachment rings and eyes and the appropriate part of the binding shall not break.

#### **4.2.6 Longitudinal strength of the frame**

When tested in accordance with 5.4.7, the frame including the longitudinal adjustment system shall not break.

### **5 Test methods**

#### **5.1 Test samples**

The tests shall be carried out on the following number of test samples:

- a) If the left and the right crampon are of identical shape: 2 test samples (one test sample for the tests in 5.4.2 and one test sample for the tests in 5.4.1 and 5.4.3 to 5.4.7).
- b) If the left and the right crampon are of different shapes: 2 pairs (one pair for the tests in 5.4.2 and one pair for the tests in 5.4.1 and 5.4.3 to 5.4.7).

#### **5.2 Test conditions**

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**5.2.1** All tests shall be carried out at a room temperature of  $(23 \pm 5)$  °C.

**5.2.2** For any strength test involving non-metallic parts the test samples shall be conditioned for 1 h in clean water of domestic supply and then for 4 h at a temperature of  $(-30 \pm 5)$  °C. The test samples shall be conditioned in the operating position. The test shall then begin within three minutes from removal from conditioning.

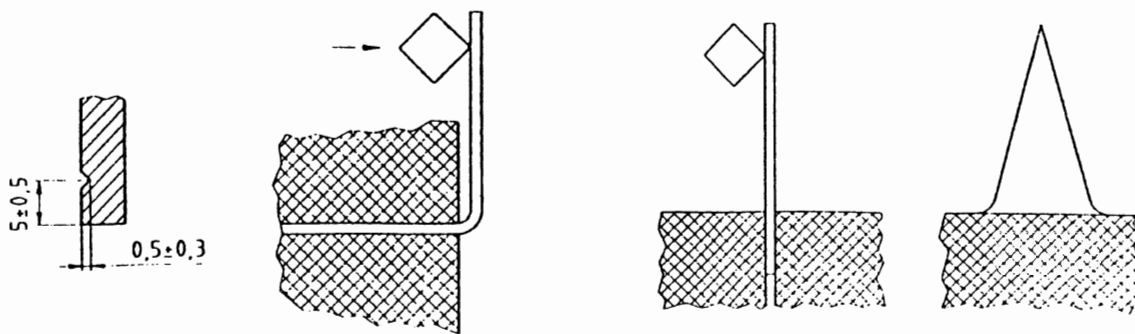
#### **5.3 Apparatus**

##### **5.3.1 Load bar for bending test on downward spikes and front spikes**

The load bar shall be prism-shaped, and the spikes shall be provided with a groove, as shown in figure 3.

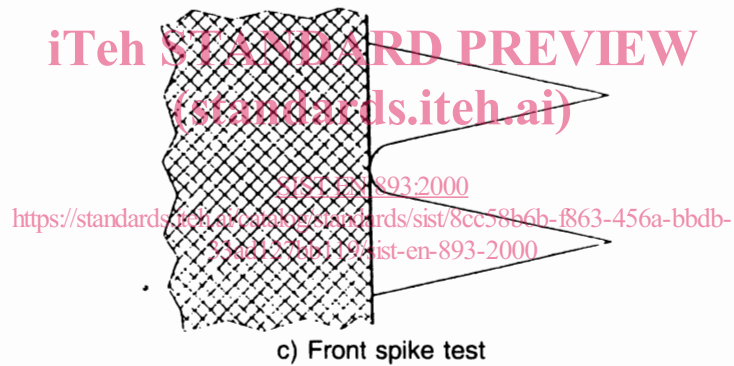
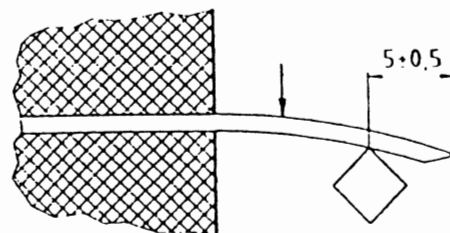


Dimensions in millimetres



a) Frame with horizontal structure

b) Frame with vertical structure



c) Front spike test

Figure 3: Load bar for bending test

## 5.4 Test procedure

### 5.4.1 Shape, design and hardness

5.4.1.1 Check by visual examination and measurement, where appropriate, that the requirements according to 4.1.1, 4.1.2, 4.1.3 a), 4.1.4 and 4.1.5 are met.