SLOVENSKI STANDARD
SIST EN 12278:2007

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Nadomeġļa:
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Gorniška oprema - Škripci - Varnostne zahteve in preskusne metode

Montaineering equipment - Pulleys - Safety requirements and test methods

Bergsteigerausrüstung - Seilrollen - Sicherheitstechnische Anforderungen und Prüfverfahren

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

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Montaineering equipment - Pulleys - Safety requirements and test methods

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

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This European Standard was approved by CEN on 26 April 2007.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 12278:2007) has been prepared by the 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of an identical text or by endorsement, at the latest by November 2007, and conflicting national standards shall be withdrawn at the latest by November 2007.

This document supersedes EN 12278:1998.

It is one of a series of standards for mountaineering equipment, see Annex A.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to support Essential Requirements of EU Directive 89/686/EEC.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies safety requirements and test methods for pulleys for use in mountaineering including climbing.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
pulley
one or more sheaves mounted in a block or a body, which can be used to link a rope (in accordance with EN 892 and EN 1891) or an accessory cord (in accordance with EN 564) to a connector (in accordance with EN 12275) to safeguard a mountaineer, and which reduces the friction while the rope or accessory cord is moving under load

NOTE Typical examples of use are load reduction systems, tyrolian travers, zip wires and top rope belay.

3.2
sheave
grooved wheel to locate the rope

4 Safety requirements

4.1 Design

4.1.1 Pulleys shall have a means for attachment of a connector which is large enough to accommodate a pin of diameter 12 mm. Testing shall be in accordance with 5.2.1.

4.1.2 The pulley, particularly its sheaves, shall be large enough to accommodate a rope or an accessory cord of such diameter as marked on the pulley. Testing shall be in accordance with 5.2.2.

4.1.3 All edges of the pulley, which come into contact with fingers, shall be free from burrs and the like which could cause irritation or injuries. Testing shall be in accordance with 5.2.3.

4.1.4 If any sheave axle is secured by nuts or screws, the nuts and/or screws shall be locked and secured by means other than friction.

4.2 Strength

4.2.1 When tested in accordance with 5.3.2, the sheave(s) shall be capable to rotate ten times in either direction under a force of 2 kN, applied to each sheave individually.

4.2.2 When tested is accordance with 5.3.2, the pulley shall not show signs of damage or deformation, which could affect its function.

4.2.3 When tested in accordance with 5.3.2, the pulley shall be capable of withstanding a static force of at least 15 kN, applied to each sheave individually, without completely releasing either the rope or the steel U-bar.

5 Test methods

5.1 Sampling

For the tests the number of test samples required is determined by the number of sheaves, their size and the material from which they are made to ensure that each size/material-combination is tested.

5.2 Design

5.2.1 Test the means for attachment in accordance with 4.1.1, with the pin of (12 ± 0,1) mm diameter.

5.2.2 Test each sheave in accordance with 4.1.2, with the pin of (1 ± 0,1) diameter greater than the maximum diameter on the pulley. The pin shall touch the bottom of the groove (see Figure 1).

a) b)

Key

a) right

b) wrong

Figure 1 — Testing the groove

5.2.3 Check by visual examination and handling that the requirements in accordance with 4.1.3 are met.

5.2.4 If any sheave axle is secured by nuts or screws in accordance with 4.1.4 check by visual examination that the requirements specified in 4.1.4 are met.

5.3 Determination of strength

5.3.1 Apparatus

The principle of the apparatus transmitting the force F is shown in Figure 3. The force F is to be transmitted

a) by means of the U-bar in accordance with Figure 2 in the attachment point of the pulley and

b) with a rope with nominal diameter equal to the maximum diameter on the pulley threaded through the sheaves of the pulley according to the instructions for use.

Dimensions in millimetres

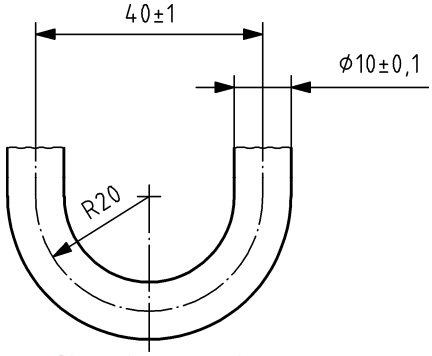
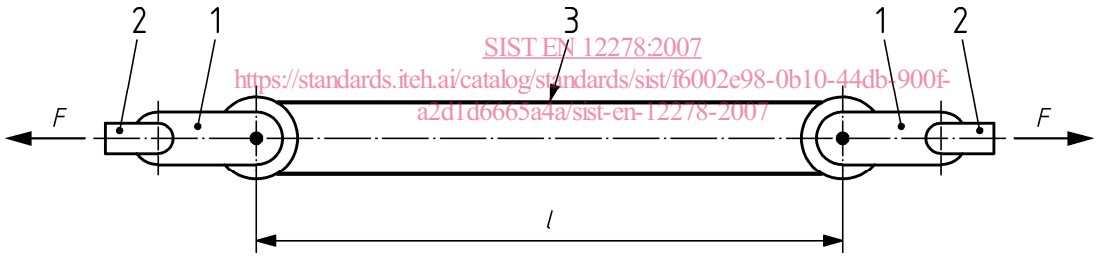


Figure 2 — Steel U-bar



Key
1 identical test samples
2 steel U-bar
3 rope
l 500 mm < l < 1 000 mm
F force

Figure 3 — Strength test apparatus

5.3.2 Procedure

5.3.2.1 Each sheave shall be tested separately on a different test sample in accordance with 5.1.

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

5.3.2.3 Rate of loading shall be (100 ± 50) mm/min.

5.3.2.4 Under a force of (2 ± 0,05) kN pull the rope such that the sheave of the test sample rotates continuously ten times in each direction, or until it ceases to rotate.

5.3.2.5 After the test according to 5.3.2.4, check by visual examination that the requirements according to 4.2.2 are met.

5.3.2.6 After the examination according to 5.3.2.5, increase the force until breakage and check that the requirements according to 4.2.3 are met.

5.3.2.7 Repeat the test sequence in accordance with 5.3.2.2 to 5.3.2.6 for each sheave with a different size or material on different test samples.

6 Marking

Pulleys shall be marked clearly, indelibly and durably with at least the following items:

a) name of the manufacturer or its representative in the European Community;

b) maximum diameter of the rope in mm with which the pulley can be used;

c) pictorial representation showing the maximum loads in kN which can be applied between any sheave and the attachment points, which the manufacturer ensures; the marked strength shall be a whole number of kN;

d) year of the manufacture.

7 Information supplied by the manufacturer

The pulley shall be supplied with an explanatory leaflet, and written in at least the official language(s) of the state of destination within the European Community containing at least the following items:

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

b) number of this European Standard, i.e. EN 12278;

c) identification of the model, if more than one model is available;

d) meaning of any marks on the product;

e) advice on the use of the product, especially the maximum diameter of the rope with which the pulley can be used, on how to pass the rope through the pulleys;

f) maximum strength in kN guaranteed by the manufacturer;

g) advice how to choose other components for use in the system;

h) advice how to maintain/service the product;

i) effects of chemical reagents;

j) lifespan of the product or how to assess it and that after a serious damage the product should be withdrawn from use as soon as possible;

k) influence of wet and icy conditions;

l) influence of storage and ageing due to use.