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Varovalna oprema za borilne športe - 3. del: Dodatne zahteve in preskusne metode za ščitnike trupa

Protective equipment for martial arts - Part 3: Additional requirements and test methods for trunk protectors

Schutzausrüstung für den Kampfsport - Teil 3: Zusätzliche Anforderungen und Prüfverfahren für den Oberkörperschutz

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13.340.10	Varovalna obleka	Protective clothing
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EUROPEAN STANDARD

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English Version

Protective equipment for martial arts - Part 3: Additional requirements and test methods for trunk protectors

Équipement de protection pour les arts martiaux - Partie 3 : Exigences et méthodes d'essai complémentaires relatives aux protège-torses

Schutzausrüstung für den Kampfsport - Teil 3: Zusätzliche Anforderungen und Prüfverfahren für den Oberkörperschutz

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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 (EN 13277-3:2013) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, 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of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.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 13277-3:2000.

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.

This standard is composed of the following parts:

— EN 13277-1, *Protective equipment for martial arts — Part 1: General requirements and test methods*

— EN 13277-2, *Protective equipment for martial arts — Part 2: Additional requirements and test methods for instep protectors, shin protectors and forearm protectors*

— EN 13277-3, *Protective equipment for martial arts — Part 3: Additional requirements and test methods for trunk protectors* (the present document)

— EN 13277-4, *Protective equipment for martial arts — Part 4: Additional requirements and test methods for head protectors*

— EN 13277-5, *Protective equipment for martial arts — Part 5: Additional requirements and test methods for genital protectors and abdominal protectors*

— EN 13277-6, *Protective equipment for martial arts — Part 6: Additional requirements and test methods for breast protectors for females*

— EN 13277-7, *Protective equipment for martial arts — Part 7: Additional requirements and test methods for hand and foot protectors*

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 requirements and test methods for trunk protectors used in unarmed martial arts such as taekwondo, karate, kick-boxing and similar disciplines.

It also applies to breast protectors for men.

For general requirements and test methods for protective equipment for martial arts, see EN 13277-1.

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 13277-1:2000, *Protective equipment for martial arts - Part 1: General requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13277-1:2000 apply.

4 Requirements

4.1 Sizing

The manufacturer shall indicate in centimetres the range of the wearer's height for which this protector is designed.

4.2 Combinations

Trunk protectors can be used in combination with other protectors for martial arts.

In the case of combined use, the requirements specified for the individual protectors are also to apply.

Possible combinations shall be indicated in the information supplied by the manufacturer.

If combined use is not permitted by the manufacturer, this restriction shall be indicated in the information supplied by the manufacturer.

4.3 Restraint

A restraint system shall be supplied by the manufacturer which enables the user to attach trunk protectors with the support of no more than one assistant.

For karate, the fixing systems shall be only textiles. They shall never consist of metal, plastic or similar hard materials.

4.4 Zone of protection

Location and dimensions of the zone of protection, see Figure 1 and Table 1.

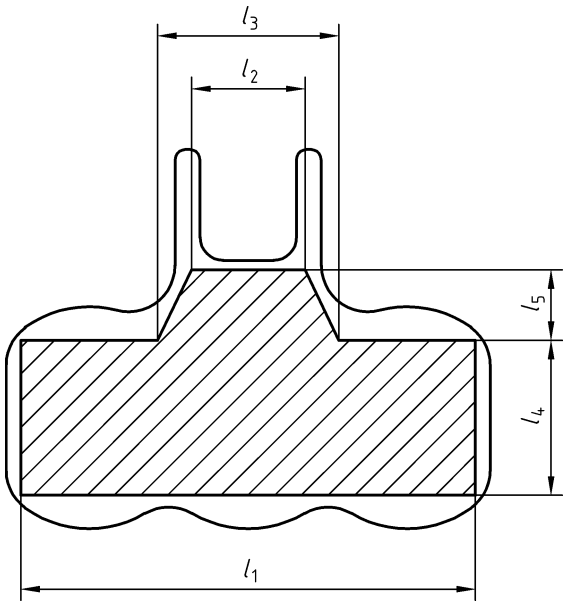


Figure 1 — Location of the zone of protection of trunk protectors

Table 1 — Zone of protection of trunk protectors

Dimensions in millimetres

Wearer's height	l_1 min.	l_2 min.	l_3 min.	l_4 min.	l_5 min.
< 1 340	610	140	170	150	90
1 340 to 1 520	660	150	190	160	100
> 1 520 to 1 700	710	160	210	175	110
> 1 700 to 1 880	760	180	230	190	130
> 1 880	810	200	250	210	150

4.5 Impact performance

Trunk protectors comply with this standard if the worst result after testing in accordance with 5.5 meets the following requirements:

— impact energy: 12 J;

— impact energy for karate: 2,6 J;

— peak force: max. 3 kN;

— positions to be tested: min. 3.

4.6 Mass and thickness for trunk protectors for karate

For any size of trunk protectors for karate the total mass shall not exceed 250 g.

For any size of trunk protectors for karate the thickness shall not exceed 15 mm.

5 Testing

5.1 Sampling

Sampling shall be carried out according to EN 13277-1:2000, 5.1.

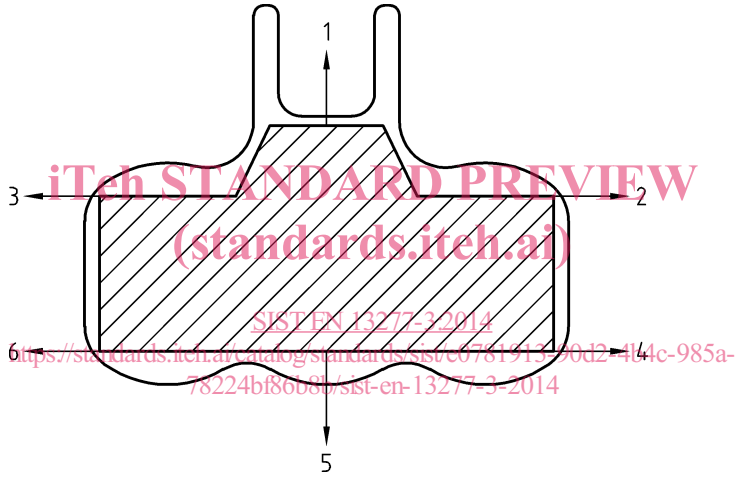
5.2 Conditioning

Conditioning shall be carried out according to EN 13277-1:2000, 5.2.

5.3 Restraint

Restraint testing shall be carried out according to EN 13277-1:2000, 5.4. When testing the restraint, the protector shall be attached to the trunk of a test person of an appropriate height in accordance with the information supplied by the manufacturer.

A test force of 50 N shall be applied at the edge of the zone of protection, in the directions and in the order shown on Figure 2, tangential to the surface of the body of the test person.



Key

1 to 6 directions and order of the tests

Figure 2 — Restraint test of trunk protectors

5.4 Zone of protection

When testing according to EN 13277-1:2000, 5.5, the protector shall be attached to a test person of an appropriate height in accordance with the information supplied by the manufacturer.

The gauge shall be placed onto the surface of the zone of protection.

When the position of best coverage of the gauge is found, the outline of the gauge shall be marked on the protector.

5.5 Impact performance

5.5.1 Apparatus

The principle of impact testing is shown in Figure 3.

A flat horizontal steel plate with a width of at least 300 mm, a length of at least 350 mm and a thickness of at least 20 mm shall be used as a support of the sample. In the centre of the flat plate there shall be a cylindrical hole with a diameter of (106 ± 2) mm.

A cylindrical anvil with a diameter of (100 ± 2) mm, a thickness of at least 20 mm with a flat upper surface shall be mounted on a load cell.

The surface of the anvil facing the striker shall be in level with the surface of the flat plate with a tolerance of ± 1 mm.

A compression ring made of steel with a mass of (10 ± 0,1) kg, (140 ± 0,1) mm internal and (260 ± 4) mm external diameter shall be used to fix the sample to the support.

The striker shall be able to fall free in the vertical axis of the anvil with a tolerance of ± 2 mm. The striker shall be guided in such a way, that it will always reach at least 95 % of the freefall velocity. A means of measuring the velocity of the striker at the point of impact shall be provided.

To measure the maximum peak force an electronic measurement device with the following characteristics shall be used:

— Measurement frequency: min. 2 000 Hz;

— Accuracy class of the load cell: 0,2;

— Maximum load: 10 kN.

5.5.2 Procedure

The trunk protector shall be placed on the flat support so that the test positions to be tested shall be above the centre of the anvil and shall be fixed with the compression ring.

The compression ring shall be placed so that the anvil is situated in the centre of the ring with a tolerance of ± 5 mm.

The trunk protector shall be moved on the support in order to reach every test position to be tested.

If it is not possible to press the trunk protector flat with the compression ring, the protector shall be cut, until it is possible to place it flat.

The test positions shall be selected so that they are not closer than 20 mm to the limit of the zone of protection. If the test position is closer to the edge of the zone of protection than 70 mm, and there is a gap between the protector and the compression ring, a part of the same protector or of another protector of the same construction shall be cut and placed in the gap.

The test positions shall be selected to include the positions on the protector where the worst test results are assumed to be likely.

Three impacts of the same energy level shall be carried out on each test position with an interval of (60 ± 10) s.

No other test position previously tested shall be within a circle of 80 mm around the test position to be tested. If positions are selected to be impacted less than 80 mm distant from each other, at least two protectors of the same type shall be selected for impact testing.