



SLOVENSKI STANDARD

SIST EN 1384:1996

01-december-1996

Čelade za konjeniške aktivnosti

Helmets for equestrian activities

Schutzhelme für reiterliche Aktivitäten

Casques de protection pour sports hippiques

Ta slovenski standard je istoveten z: **EN 1384:1996**

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ICS:

13.340.20	Varovalna oprema za glavo	Head protective equipment
97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment

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EUROPEAN STANDARD

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Descriptors: sports, riding, sportswear, helmets, safety, accident prevention, operating requirements, equipment specifications, mechanical properties, tests, shock resistance, marking, labelling

English version

Helmets for equestrian activities

Casques de protection pour sports hippiques

Schutzhelme für reiterliche Aktivitäten

This European Standard was approved by CEN on 1996-08-30. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

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FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 158 ‘Head protection’, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by March 1997, and conflicting national standards shall be withdrawn at the latest by March 1997.

This European Standard 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 standard.

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

INTRODUCTION

The protection offered by the helmet depends on the circumstances of the accident; the wearing of a protective helmet will not always prevent death or long term disability.

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1 Scope

This European Standard specifies requirements for protective helmets, that may or may not have a peak, for people involved in equestrian activities.

It gives safety requirements that include methods of test and levels of performance for shock absorption, for resistance to penetration and for the strength and effectiveness of the retention system and the deflection of a peak if fitted.

2 Normative References

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative reference 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 960	Headforms for use in the testing of protective helmets.
ISO 4892-1 : 1994	Plastics - Methods of exposure to laboratory light sources Part 1 : General guidance
ISO 4892-2 : 1994	Plastics - Methods of exposure to laboratory light sources Part 2 : Xenon-arc-sources
ISO 6487 : 1987	Road vehicles - Measurement techniques in impact tests - Instrumentation

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3 Definitions

For the purposes of this European Standard the following definitions apply.

- 3.1 shell:** The material that provides the hard outer case of the helmet.
- 3.2 protective padding:** Padding material provided to absorb impact energy.
- 3.3 comfort padding or size padding:** Padding material provided to ensure comfortable and correct fit.
- 3.4 cradle:** The headband or other head fitting and those internal parts of the helmet other than the padding, which are in contact with the head.
- 3.5 retention system:** The complete assembly by means of which the helmet is maintained in position on the head, including any devices for adjustment of the system or to enhance the wearer's comfort.
- 3.6 draw-lace:** A lace used by the wearer for making adjustments to the fit of the cradle on the head.
- 3.7 chin strap:** Part of the retention system consisting of a strap that passes under the wearer's jaw to keep the helmet in position.
- 3.8 chin cup:** A cup mounted on the retention system to locate the strap on the point of the wearer's chin.
- 3.9 helmet type:** A category of helmets which do not differ in such essential respects as the materials or dimensions of the shell, of the retention system or of the protective padding.
- 3.10 peak:** An extension from the basic form of the helmet above the eyes.

4 Construction

4.1 General

The helmet may be constructed either with or without a shell, and with or without means of ventilation. If a shell is used, then protective padding shall be securely fastened to it. The helmet shall not be fitted with nor have a chin cup.

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4.2 Materials

The characteristics of the materials used in the manufacture of helmets shall be not generally known to undergo substantial reduction in protective ability under the influence of ageing, or during the circumstances of use to which the helmet is normally subjected.

For those parts of the helmet coming into contact with the skin, the materials used shall be not generally known to undergo reduction in protective ability arising from the effects of sweat or of toiletries. The manufacturer shall not use materials generally known to cause skin disorders of a non-allergic type.

4.3 Finish

All edges shall be smooth and rounded. There shall be no rigid projections on the inside of the helmet. Any external projection shall not exceed 5 mm or shall be smoothly faired to the adjacent surface, except for a button on the top of the helmet and a peak.

4.4 Retention system

A retention system shall be permanently fixed to the helmet and shall incorporate a chin strap not less than 15 mm wide. The system shall be permanently fitted with fastening and adjustment devices which may be combined. The retention system shall be freed by deliberate action only.

The fastening and adjusting devices shall have no sharp edges.

NOTE 1 : It is recommended that the part of the device intended to be operated by the wearer to cause the device to open is coloured orange or red.

NOTE 2 : It is permissible for the system to include padding or other means of enhancing comfort to the wearer.

The chin strap (see 3.7) shall not have a chin cup.

4.5 Headforms

The headforms shown in table 1 shall be used for helmet sizing, extent of protection, retention effectiveness and retention strength.

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Table 1: Headforms for sizing, extent of protection, retention effectiveness and retention strength

Circumference of headform in mm	
Helmet sizing	Extent of protection, retention effectiveness and retention strength
500	500
510	500
520	520
530	520
540	540
550	540
560	560
570	560
580	580
590	580
600	600
610	600
620	620
630	620
640	640

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5 Performance Requirements

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5.1 Shock absorption

When tested by the method in 6.4 the acceleration shall not exceed 250 g at any time, and the total time during which it exceeds 150 g shall not be greater than 5 ms. The helmet shall remain on the headform and the retention system shall remain fastened.

5.2 Penetration

When tested by the method described in 6.5, the point of the striker shall not leave visible indentation on the test block.

5.3 Retention system strength

When tested by the method described in 6.6, using a drop height of (250 ± 5) mm between the facing surfaces of the drop-weight and anvil, the dynamic extension of the retention system, including slippage of the buckle, as measured by displacement of the simulated chin, shall not exceed 35 mm and the residual extension, with the drop-weight at rest on the anvil, shall not exceed 25 mm. Without load on the system any damage to the retention system shall still permit release of the buckle.

5.4 Retention system effectiveness

When the helmet is fitted to an appropriate size headform and is subjected to the test described in 6.7, the helmet shall remain on the headform.

5.5 Peak deflection

Where the helmet has a peak, when the peak is tested by the method described in 6.8, the deflection at the lateral mid-point of the front edge of the peak shall be greater than 6.0 mm.

6 Testing

6.1 Assessment of extent of the area of cover and marking of test area

The helmet is placed on a headform of appropriate size. A vertical load of 50 N is applied to the crown of the helmet to stabilize the helmet on the headform. If the normal wearing position of the helmet is stated by the manufacturer the helmet is so positioned. If no details are provided the helmet is adjusted to what is considered to be the normal wearing position.

The helmet is marked up as follows:

- a) A horizontal line at the level of the A-A' plane of the headform
- b) A rear point F' on the projected longitudinal vertical plane of the headform and 12.7 mm below the line marked in a) above. Point F' is the horizontal projection of the headform point F.
- c) The helmet is then tilted down at the front until the line drawn in stage a) is angled at 10° relative to its horizontal position and a line R-F' is drawn around the helmet starting from the point F' marked on the rear of the helmet.

A typical example is shown in figure 1.

The test area is defined as the area above the line R-F'.

6.2 Test sequence and time schedule

For each helmet type at least twelve helmets shall be tested.

For each helmet type select three helmets of the largest size (set 1) and three helmets of the smallest size (set 2). Additionally select one helmet from each other available helmet size. If, using this selection procedure, less than twelve helmets are selected then the remainder shall be selected by the manufacturer to produce a total sample of twelve helmets.

After assessment of the extent of the area of protection of the helmet as described in 6.1, carry out the peak deflection test in 6.8 followed by the effectiveness of retention system test in 6.7.

The helmets shall then be conditioned using the following method. Helmets in set 1 shall be conditioned, one helmet by high temperature conditioning in 6.3.1, one helmet by low temperature conditioning in 6.3.2 and one helmet by ultra-violet radiation and moisture conditioning in 6.3.3. This method is repeated for helmets in set 2. Each of the remaining helmets are conditioned in the sequence: one helmet high temperature conditioning, one helmet low temperature conditioning, one helmet moisture conditioning (no ultra-violet radiation). This sequence is repeated until all the helmets have been conditioned by one of the three methods.

After the helmet has been conditioned subject it to the shock absorption test in 6.4 such that the first impact takes place within 30 to 90 s of conditioning and the second impact within 240 s of conditioning. Condition the helmet at an ambient temperature of (20 ± 5) °C for a minimum of 4 h and then subject it, while maintaining ambient temperature, to the penetration test in 6.5 and the strength of retention test in 6.6.

If during sequential testing the helmet exhibits substantial damage such that the test house considers it may not pass the effectiveness of retention test in 6.7, then the helmet shall be tested to 6.7. If it fails this additional test then the helmet type shall not comply with this European Standard.

NOTE: If the helmet is supplied with a removable cover then the tests should be conducted with this cover removed.

6.3 Conditioning before testing

6.3.1 High temperature conditioning

Expose the helmet to a temperature of (50 ± 2) °C for not less than 4 h and not more than 6 h.

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