



SLOVENSKI STANDARD
SIST EN 1077:1996

01-december-1996

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Helmets for alpine skiers

Helme für alpine Skiläufer

Casques pour skieurs de ski alpin

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Ta slovenski standard je istoveten z: EN 1077:1996

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ICS:

13.340.20	Varovalna oprema za glavo	Head protective equipment
97.220.20	Oprema za zimske športe	Winter sports equipment

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EUROPEAN STANDARD

EN 1077

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1996

ICS 13.340.10; 97.220.00; 97.220.20

Descriptors: sports, alpine skis, helmets, accident prevention, definitions, equipment specifications, field of visibility, shock resistance, fastenings, tests, penetration tests effectiveness, durability, marking

English version

Helmets for alpine skiers

Casques pour skieurs de ski alpin

Helme für alpine Skiläufer

This European Standard was approved by CEN on 1995-11-12. 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publication of an identical text or by endorsement, at the latest by September 1996, and conflicting standards shall be withdrawn at the latest by September 1996.

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 intention of helmets is to reduce the risk of injury to the skull and part of the head surrounded by the helmet.

The protection given by a helmet depends on the circumstances of the accident and wearing a helmet cannot always prevent death or long term disability.

A proportion of the energy of an impact is absorbed by the helmet, thereby reducing the force of the blow sustained by the head. The structure of the helmet may be damaged in absorbing this energy and any helmet that sustains a severe blow should be replaced even if damage is not apparent.

To achieve the performance of which it is capable, and to ensure stability on the head, a helmet should be as closely fitting as possible consistent with comfort. In use it is essential that the helmet is securely fastened, with any chin strap under proper tension at all times.

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1 Scope

This European Standard is applicable to minimum performance requirements and tests for helmets for alpine skiers, including children and participants in competitions.

Requirements and the corresponding methods of test, where appropriate, are given for the following:

- construction including field of vision;
- shock absorbing properties;
- resistance to penetration;
- retention system properties;
- marking and information.

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 960	Headforms for use in the testing of protective helmets
ISO 4892-1 : 1994	Plastics - Method of exposure to laboratory light sources Part 1 : General guidance
ISO 4892-2 : 1994	Plastics : Method 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

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For the purpose of this standard the following definitions apply.
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- 3.1 protective helmet:** An item to be worn on the head, intended to absorb the energy of a foreseeable impact thus reducing the risk of injury to the head.
- 3.2 shell:** The outer layer which provides part of the whole general form of the helmet.

3.3 helmet type: Category of helmets which does not differ in such essential respects as the materials or dimensions or construction of the helmet, of the retention system, or of the protective padding.

NOTE: Helmet type may include a range of helmet sizes, provided that the thickness of the protective padding in each size in the range is at least equal to that in the helmet which when subjected to the tests satisfies the requirements of this standard.

3.4 padding:

protective padding: A material used to absorb impact energy;

comfort padding: A liner material provided for the wearer's comfort;

sizing padding: A liner material used for adjustment of the helmet size.

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 chin-strap: part of the retention system consisting of a strap that passes under the wearer's jaw to keep the helmet in position.

3.7 basic plane of the human head: a plane at the level of the external ear opening (external auditory meatus) and the lower edge of the eye sockets (orbits).

3.8 basic plane of a headform: the plane relative to the headform that corresponds to the basic plane of the human head.

3.9 reference plane: A construction plane parallel to the basic plane of the headform at a distance from it which is a function of the size of the headform.

4 Requirements

4.1 Materials

For those parts of the helmet coming into contact with the skin the material used shall be known not to undergo appreciable alteration from contact with sweat or with substances likely to be found in toiletries. Materials shall not be used which are known to cause skin disorders.

4.2 Construction

4.2.1 General

The helmet normally consists of means of absorbing impact energy and means of retaining the helmet on the head even in an accident.

The helmet should have good durability and withstand normal handling.

The helmet shall be so designed and shaped that parts of it (visor, rivets, ventilators, edges, fastening device and the like) are not likely to injure the user in normal use.

NOTE: Helmets should

- have low weight;
- be easy to put on and take off;
- be usable with spectacles;
- not significantly interfere with the ability of the user to hear;
- have good durability and withstand normal handling;
- permit cleaning.

4.2.2 Retention system

4.2.2.1 General

Means shall be provided for retaining the helmet on the wearer's head. All parts of the retention system shall be securely attached to the system or to the helmet.

NOTE 1: It is recommended that the opening mechanism be marked with red or orange colour.

NOTE 2: The colour of any part of the retention system should not be green, as green is used for helmets with an emergency release system.

4.2.2.2 Chin straps

The chin strap shall not include a chin cup.

Any chin strap shall be not less than 15 mm wide.

Chin straps may be fitted with means of enhancing comfort for the wearer.

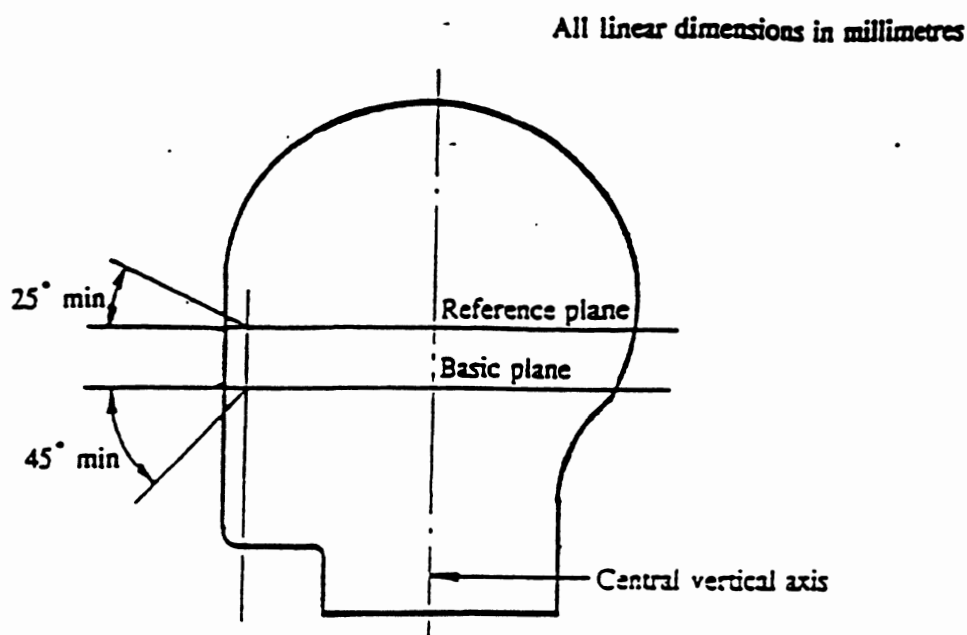
4.2.2.3 Fastening devices

Any chin strap shall be fitted with a device to adjust and maintain tension in the strap.

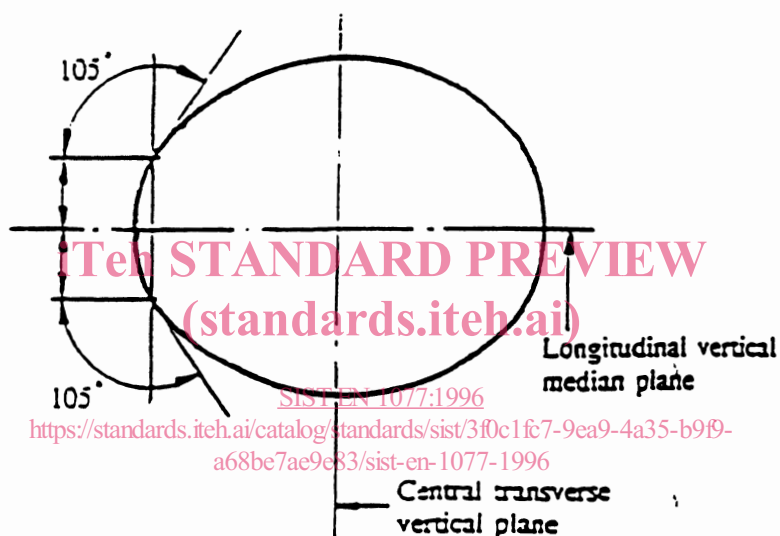
4.2.3 Field of vision

When tested in accordance with 5.3 there shall be no occultation in the field of vision bounded by angles as follows (see figure 1):

- horizontally 105°
- upwards 25°
- downwards 45°



Section of headform in longitudinal vertical plane



Section of headform in reference plane

Figure 1: Field of vision

4.3 Extent of coverage

When tested in accordance with 5.3 the helmet shall cover at least the area above the line BCDEA' in figure 2. Measurements for different headform sizes are given in the Table in Figure 2.

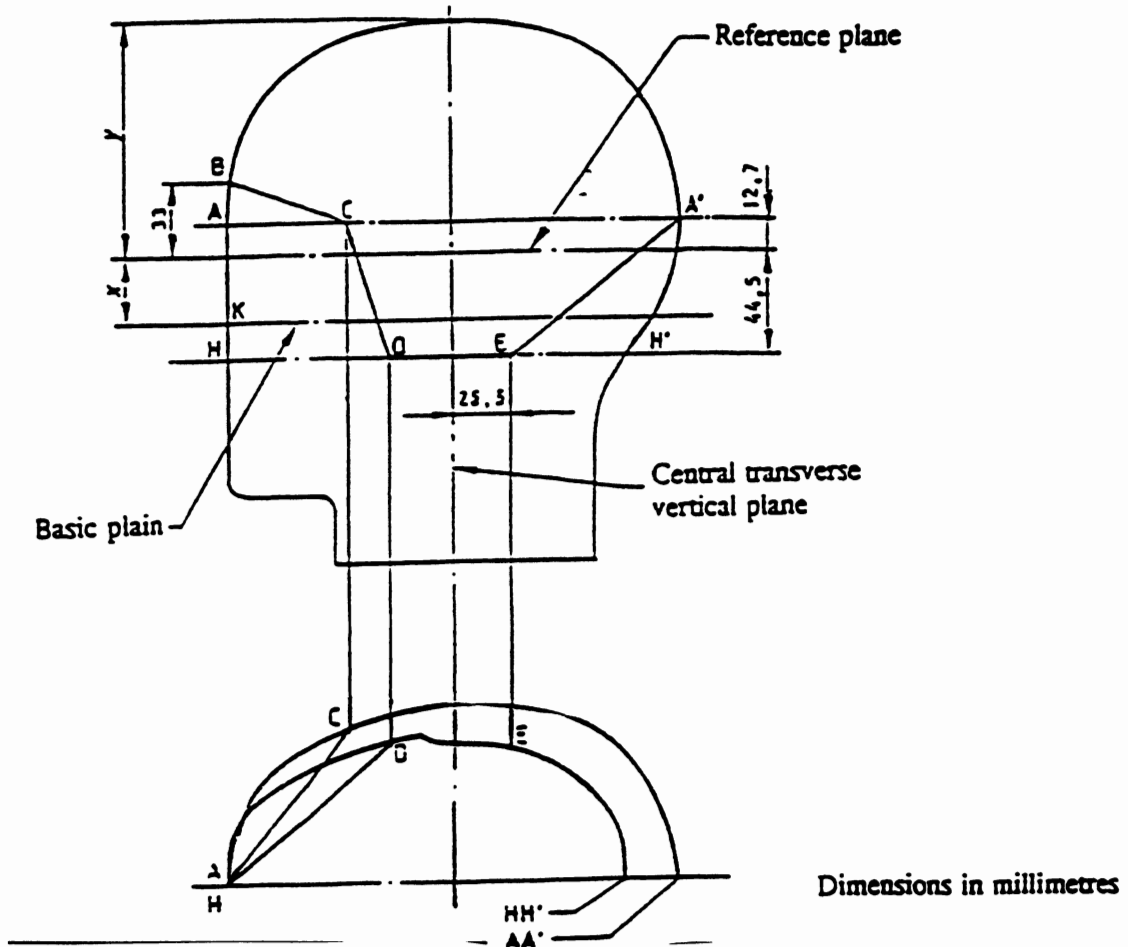


Figure 2: Minimum extent of coverage : Measurements for different headform sizes

Code letter (See EN 960)	Circumference of the headform at the basic plane	AC	HD	y	x
A	500	84	89	89,5	24
E	540	88,5	92	96	26
J	570	93	95	102,5	27,5
M	600	97,5	98	107	29
O	620	100	100	110	30

NOTE: The dimensions AC and HD correspond to the length of the chords measured with dividers.

4.4 Shock absorbing capacity

When tested in accordance with 5.5 the peak acceleration shall not, for each impact, exceed 250 g.

4.5 Resistance to penetration

When tested in accordance with 5.6 the point of the punch shall not touch the headform.

4.6 Retention system performance

4.6.1 Strength

When tested in accordance with 5.7, the dynamic extension shall not exceed 35 mm and the residual extension shall not exceed 25 mm. For this purpose, extension includes slippage of the fastening device. Following the test the retention system shall still permit the helmet to be released from the headform by normal operation of the release system.

Damage to the retention system shall be accepted provided that the above requirements are met.

NOTE: In this test, slippage of the fastening device may be measured and recorded separately from other contributions to the extension, but this is for information only and is not subject to separate requirement.

4.6.2 Effectiveness

When tested in accordance with 5.8 the helmet, selected to be of appropriate size, shall not come off the headform.

4.7 Durability

After being tested the helmet shall not show damage that would cause an additional injury to the wearer (sharp edges, points, etc.).

5 Testing

5.1 Sampling

Only new and complete helmets as offered for sale shall be tested.

The duration between the date of manufacture and the date of testing shall be not less than 6 days.

For complete testing and assessment of a helmet of a given make and type 12 helmets are required, 6 of the largest and 6 of the smallest size. The number of samples required per performance requirement are given in table 1.

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