



SLOVENSKI STANDARD
SIST EN 1077:2007

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Helmets for alpine skiers and snowboarders

Helme für alpine Skiläufer und für Snowboarder

Casques pour skieurs de ski alpin et de surf nes neiges

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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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English Version

Helmets for alpine skiers and snowboarders

Casques pour skieurs de ski alpin et de surf nes neiges

Helme für alpine Skiläufer und für Snowboarder

This European Standard was approved by CEN on 17 February 2007.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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

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Foreword

This document (EN 1077:2007) 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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

This document supersedes EN 1077:1996.

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 89/686/EEC.

For relationship with EU Directive, 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.

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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.

Although the experience of the existing standard for alpine skiers is very good, it has become more and more obvious that there is a need for an alternative standard that can meet the demand from skiers and snowboarders who desire more ventilation and better hearing. This has resulted in two classes of helmets, class A and class B. Compared to class B, class A protects a larger area of the head and offers a higher degree of protection from penetration.

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1 Scope

This European Standard is applicable to performance requirements and tests for two classes of helmets for alpine skiers, snowboarders and for similar groups, including children and participants in competitions. The standard comprises two different classes of protection, class A and class B.

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

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 960, *Headforms for use in the testing of protective helmets*

EN 13087-2:2000, *Protective helmets — Test methods — Part 2: Shock absorption*

EN 13087-3:2000, *Protective helmets — Test methods — Part 3: Resistance to penetration*

EN 13087-4:2000, *Protective helmets — Test methods — Part 4: Retention system effectiveness*

EN 13087-5:2000, *Protective helmets — Test methods — Part 5: Retention system strength*

EN 13087-6, *Protective helmets — Test methods — Part 6: Field of vision*

3 Terms and definitions

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

3.1 protective helmet
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
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, or of the retention system

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

3.4.1 protective padding

material used to absorb impact energy

3.4.2 comfort padding

liner material provided for the wearer's comfort

3.4.3 sizing padding

liner material used for adjustment of the helmet size

3.5 retention system

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 that passes under the wearer's jaw to keep the helmet in position

3.7 basic plane of the human head

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

plane relative to the headform that corresponds to the basic plane of the human head

3.9 reference plane

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 not be subject to any known 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 or other adverse effects on health. For a material not in general use advice as to its suitability shall be sought before its introduction.

Examples for documents which can be presented as evidence of chemical innocuousness are given in the NOTE.

NOTE The following list of documents is given for information and as examples of documents to be examined:

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- a) materials specifications;
- b) safety data sheets relating to the materials;
- c) information relating to the suitability of the materials for use with food, in medical devices, or other relevant applications;
- d) information relating to toxicological, allergenic, carcinogenic, toxic to reproduction or mutagenic investigations on the materials;
- e) information relating to ecotoxicological and other environmental investigations on the materials.

The examination should determine whether the claim that the materials are suitable for use in the protective helmet is justified. Particular attention needs to be paid to the presence of plasticisers, unreacted components, heavy metals, impurities and the chemical identity of pigments and dyes.

All metallic materials which could come into prolonged contact with the skin (e.g. buckles, fittings) are recommended to be tested according to EN 1811 for emission of nickel.

4.2 Construction

4.2.1 General

The helmet shall be so designed and shaped that parts of it (for example visor, rivets, ventilators, edges, fastening device etc.) are not likely to injure the user. This can be verified in accordance with 5.2.

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.

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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, so it would not come off during its use. This can be verified in accordance with Clauses 5.7 and 5.8

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

The colour of any part of the retention system shall not be green.

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. This can be verified in accordance with 5.2.

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

4.2.2.3 Fastening devices

Any retention system shall be fitted with a device to adjust and maintain tension in the system. The strength in the system shall be in accordance with 4.7.1.

4.3 Field of vision

When tested in accordance with EN 13087-6, there shall be no occultation in the field of vision bounded by angles as follows:

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

4.4 Extent of coverage

4.4.1 Class A

For Class A, when positioned in accordance with EN 13087-6 on a headform of appropriate size, the helmet shall cover at least the area above the line BCDEA' in Figure 1. No parts of the coverage may be detachable. Examples of different headform sizes are given in Table 1.

Those parts covering the area below the reference plane (shaded in Figure 1) shall be designed to give some protection against mechanical risks like abrasion. This can be verified in accordance with 5.2. Smaller openings for better hearing and/or ventilation are allowed.

4.4.2 Class B

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For Class B, when positioned in accordance with EN 13087-6 on a headform of appropriate size, the helmet shall cover at least the area above the line BCA' in Figure 1.

Parts below the AA' plane (shaded part in Figure 1) are optional and may be detachable and/or removable. Examples of different headform sizes are given in Table 1.