SLOVENSKI STANDARD
SIST EN 13781:2012

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Varovalne čelade za voznike in potnike motornih snežnih sani in bobov

Protective helmets for drivers and passengers of snowmobiles and bobsleighs

Schutzhelme für Fahrer und Mitfahrer von Schneemobilen und Bobs

Casques de protection pour conducteurs et passagers de motoneiges et bobsleighs

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13.340.20	Varovalna oprema za glavo	Head protective equipment
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Foreword

This document (EN 13781:2012) 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of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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This document supersedes EN 13781:2001.

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.

Annex B provides details of significant technical changes between this European Standard and the previous edition.

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, 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.

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.

1 Scope

This European Standard specifies requirements and test methods for protective helmets for drivers and passengers of snowmobiles and bobsleighs.

Additional requirements for eye protectors and face shields are specified in EN 13178.

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 352-1, *Hearing protectors — General requirements — Part 1: Ear muffs*

EN 960:2006, *Headforms for use in the testing of protective helmets*

EN 13087-6:2012, *Protective helmets — Test methods — Part 6: Field of vision*

EN 13178, *Personal eye-protection — Eye protectors for snowmobile users*

ISO 6487, *Road vehicles — Measurement techniques in impact tests — Instrumentation*

3 Terms and definitions

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

3.1
protective helmet for user of snowmobile and of bobsleigh (abbreviated to "helmet" below)
helmet primarily intended to protect the wearer's head against impact, which may provide additional protection such as protection against cold and noise

3.2
shell
hard part of the helmet that gives it its general shape

3.3
protective padding
material used to absorb impact energy

3.4
comfort padding
material provided for the wearer's comfort

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 consisting of a strap that passes under the wearer's jaws to keep the helmet in position

3.7
chin cup
accessory of the chin strap that fits round the point of the wearer's chin

3.8
peak
extension of the shell above the eyes

3.9
lower face cover
detachable part of the helmet covering the lower part of the face

3.10
chin guard
integral part of the helmet covering the lower part of the face and designed to protect against impact

3.11
neck curtain
part of the helmet attached to the lower edge designed to protect against adverse weather conditions, dirt and small stones

3.12
visor
transparent protective screen integral with the helmet extending over the eyes and covering part of the face

3.13
eye protectors
tansparent protectors that enclose and cover the eyes

3.14
face shield
protective device extending over the eyes and covering part of the face

3.15
basic plane of the human head
plane at the level of the opening of the external auditory mastus (external ear opening) and the lower edge of the orbits (lower edge of the eye sockets)

3.16
basic plane of the headform
plane which corresponds to the basic plane of the human head

3.17
reference plane
construction plane parallel to the headform at a distance from it which is a function of the size of the headforms

3.18
central vertical axis
line relative to a human head or headform or helmet that lies in the plane of symmetry, and that is normal to the basic plane at a point equidistant from the front and back of the headform or (for helmets) of headform that simulates the head that the helmet is intended to fit

3.19
longitudinal vertical median plane
vertical plane of symmetry of a human head or headform or of a helmet as it is intended to be worn on the head

[Equivalent to EN 960:2006, 2.8 “vertical longitudinal plane”.]

3.20
central transverse vertical median plane
plane at right angles to the longitudinal vertical median plane and passing through the central vertical axis

[Equivalent to EN 960:2006, 2.9 “vertical transverse plane”.]

3.21
size (of a helmet)
size of a reference headform defined in EN 960:2006

3.22
protective helmet type
category of protective helmets which do not differ in such essential respects as the trade name or mark, or the materials or dimensions of the shell, of the retention system or of the protective padding

Note 1 to entry: A protective 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 protective helmet which when subjected to the tests satisfied the requirements of this European Standard.

3.23
snowmobile
off-road vehicle moved on the snow by a track driven by a gasoline engine and which is steered by turning front skies

3.24
bobsleigh
sports equipment without any inside or outside driving power, for using in downhill gliding in ice channels

4 Requirements

4.1 Construction

4.1.1 The basic construction of the helmet shall be in the form of a shell, containing means of absorbing impact energy, and a retention system. The helmet usually has also connection systems for accessories.

4.1.2 The helmet may be fitted with accessories such as a communication system, hearing protectors, eye protectors, face shield or a lower face cover. It may also have a detachable peak.

4.1.3 The design of the helmet shall be such that the temperature in the space between the head and the helmet does not rise or decrease inordinately. Ventilation holes or other means may be provided in the shell.

4.1.4 The outer surface of the shell shall be perfectly smooth. Above the reference plane, the shape shall be in the form of a continuous convex curve, except where shaping is provided for functional purposes. Below the reference plane, irregularities in the curve shall be smoothly faired. The shell shall not incorporate an integral peak but may incorporate an integral lower face cover.

4.1.5 There shall be no permanently fixed external projections greater than 5 mm above the outer surface of the shell. Any external projections other than press-fasteners shall be smooth and adequately faired. Rivet heads shall be radiused and shall not project more than 2 mm above the outer surfaces of the shell.

4.1.6 There shall be no inward-facing sharp edges on the inside of the helmet.

4.1.7 The integrated components of the helmet which are intended to protect the head of the user shall be assembled such that they shall not become easily detached or move when tested in accordance with 5.1.

4.1.8 Where means for attaching eye protectors are not provided, the profile at the front edge shall not prevent the wearing of goggles.

Testing shall be in accordance with 5.1.

4.2 Compatibility with additional devices

No component or device may be fitted to or incorporated in the protective helmet unless it is designed in such a way that it will not cause injury. When the component or device is fitted to or incorporated in the helmet, the helmet shall still comply with the requirements of this European Standard.

4.3 Protected area

The shell shall cover all areas above plane AA′ in Figure 1, and shall extend downwards at least as far as the lines CDEF on both sides of the headform.

4.4 Retention system

4.4.1 The helmet shall be held in place on the wearer's head by means of a retention system which is secured under the lower jaw. All parts of the retention system shall be permanently attached to the system or to the helmet. Testing shall be in accordance with 5.1.

4.4.2 If the retention system includes a chin strap the strap shall be no less than 20 mm wide under a load of (150 ± 5) N applied in accordance with 5.6.2. The chin strap shall not include a chin cup.

4.4.3 The device to open the retention system shall not be capable of opening other than as a result of a deliberate act. In the case of a press-fastener opening device, the press-fastener shall be recessed, the surface to which the pressure is applied shall be fitted with a fairing about its whole periphery so that opening does not occur when the surface is pressed with a sphere of 100 mm diameter. Testing shall be in accordance with 5.1.

4.4.4 If a retention system includes a quick-release mechanism, then the method of release of this mechanism shall be self-evident. Any levers, tabs, buttons or other components which need to be operated to release the mechanism shall be coloured red, those parts of the rest of the system which are visible when closed shall not be similarly coloured, and the mode of operation shall be permanently indicated. Testing in accordance with 5.1.

4.4.5 The retention of the helmet on the head by the retention system shall be verified in accordance with 5.6. When a helmet type includes a range of sizes, the helmet subjected to the test shall be that presenting the least favourable conditions (such as the thickest padding).

4.5 Materials

4.5.1 The characteristics of the materials used in the manufacture of helmets shall be known not to undergo appreciable alteration under the influence of ageing or of the circumstances of use to which the helmet is normally subjected, such as exposure to sun, extremes of temperature and rain.

For those parts of the helmet coming into contact with the skin, the materials used shall be known not to undergo appreciable alteration through the effect of perspiration or of toilet preparations. The manufacturer shall not use materials known to cause skin troubles. The suitability of a proposed new material shall be established by the manufacturer.

4.5.2 After the performance of one of the prescribed tests, the protective helmet shall not break or deform in a way which is dangerous to the wearer.

4.6 Field of vision

A helmet size shall be selected from among the existing sizes of a helmet type which is likely to yield the least favourable result. The helmet shall be placed on the appropriate size of headform according to the procedure specified in EN 13087-6:2012, 5.4.

There shall be no occultation in the field of vision given in Figure 2.

a) horizontally: two segments of dihedral angles symmetrical in relation to the median longitudinal vertical plane of the headform and situated between the reference and the basic planes.

   Each of these dihedral angles is defined by the longitudinal vertical median plane of the headform and the vertical plane forming an angle of no less than 105° with the median longitudinal vertical plane and whose edge is the straightline L K;

b) upwards: a dihedral angle defined by the reference plane of the headform and a plane forming an angle of no less than 7° with the reference plane and whose edge is the straight line L_1, L_2 the points L_1 and L_2 representing the eyes;

c) downwards: a dihedral angle defined by the basic plane of the headform and a plane forming an angle of no less than 45° with the basic plane and whose edge is the straight line K_1 K_2.

4.7 Face shields

4.7.1 The helmet, fitted with the face shield being tested, shall be placed on a test headform of appropriate size, selected from those listed in Table 3.

4.7.2 When the face shield is in the raised position, the angle between the secant MN shown in Figure 3 and the horizontal shall be at least 5°, with the point M situated below the horizontal plane passing through point N.

4.8 Face-shields and eye protectors

Face-shields and eye protectors used with the helmet shall fulfil the requirements of EN 13178.

4.9 Energy absorption efficiency

The absorption efficiency shall be considered sufficient where the resultant acceleration measured at the centre of gravity of the headform at no time exceeds 275 g and the Head Injury Criterion does not exceed 2400, when tested in accordance with 5.4.

4.10 Mass

The mass of the helmet should be as light as possible, and the mass given by the manufacturer shall be verified.

4.11 Conspicuity marking (optional)

4.11.1 General

The helmet may be provided with reflective materials, which contribute to the conspicuity of the user both during the daytime and at night from the front, from the rear, from the right and from the left. These reflective materials shall not be removable from the helmet and shall fulfil the requirements of 4.11.2 to 4.11.4.