
**Protective equipment for use in ice
hockey —**

**Part 3:
Face protectors for skaters**

*Équipements de protection destinés à être utilisés en hockey sur
glace —*

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Partie 3: Protections faciales pour les skateurs
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ISO 10256-3:2016

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 5, *Ice hockey equipment and facilities*.

This first edition of ISO 10256-3, together with ISO 10256-1, ISO 10256-2, ISO 10256-4, ISO 10256-5, and ISO 10256-6 cancels and replaces the ISO 10256:2003, which has been technically revised.

ISO 10256 consists of the following parts, under the general title *Protective equipment for use in ice hockey*:

- Part 1: *General requirements*
- Part 2: *Head protection for skaters*
- Part 3: *Face protectors for skaters*
- Part 4: *Head and face protection for goalkeepers*
- Part 5: *Neck laceration protection for ice hockey players*

The following parts are under preparation:

- Part 6: *Lower leg protectors for ice hockey players*

Introduction

Ice hockey is a high speed, collision sport in which there is a risk of injury. The object of this part of ISO 10256 is to specify requirements for face protectors, taking into account the risks inherent in participating in the sport, many of which cannot be eliminated by protective equipment. By playing this sport, participants accept the risk of serious injury, paralysis, or death.

The intention of face protection is to reduce the frequency and severity of localized injuries to the head and that part of the face surrounded by the protector. The protective function is such that the force from impacts against the protector is distributed and dampened and the penetration of objects is counteracted.

Face protectors can consist of eye protectors (visors) or full face protectors. They are always worn in conjunction with an ice hockey helmet. Face protectors are tested and assessed together with the helmet or helmets for which the face protector is intended.

To achieve the performance of which it is capable, and to ensure stability on the head, a helmet and associated face protector is intended to be as closely fitting as possible consistent with comfort. In use it is essential that the helmet and associated face protector are securely fastened, with any chin strap or neck strap adjusted according to manufacturer's instructions.

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Protective equipment for use in ice hockey —

Part 3: Face protectors for skaters

1 Scope

This part of ISO 10256 specifies performance requirements and test methods for face protectors (including visors) for use in ice hockey and is intended to be used in conjunction with ISO 10256-1.

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

- a) construction and area of coverage;
- b) resistance to puck impact;
- c) penetration;
- d) field of vision;
- e) geometric (visual) optics and acuity;
- f) transmittance and haze;
- g) marking and information.

This part of ISO 10256 applies to face protectors worn by
— players other than goalkeepers, and
— certain functionaries (e.g. referees).

NOTE 1 The requirements of a Clause take precedent over a figure.

NOTE 2 The intent is to reduce the risk of injury to the face without compromising the form or appeal of the game.

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.

ISO 10256-1:2016, *Protective equipment for use in ice hockey — Part 1: General requirements*

ISO 10256-2:2016, *Protective equipment for use in ice hockey — Part 2: Head protection for skaters*

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

ASTM D 1003, *Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics*

CSA Z262.6-14, *Specifications for facially featured headforms*

3 Terms and definitions

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

3.1

CIE standard illuminants

illuminants A and D65 defined by the CIE in terms of relative spectral power distributions

Note 1 to entry: See ISO 11664-2 developed with the International Commission on Illumination (CIE).

3.2

chin cup

protective component which covers the load bearing area

Note 1 to entry: As defined in [Figure 5](#).

3.3

chip

readily visible particle missing from the protector with an area bigger than 9 mm²

3.4

collimated light source

ratio of the visible light (380 nm to 780 nm) transmitted by a medium to the incident light

Note 1 to entry: As referenced to CIE Standard Illuminant A and a standard photopic observer.

3.5

combination

combined unit of a full-face protector or visor placed on a hockey helmet with which it is designed to be used

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3.6

diopetre

unit of focusing power, expressed in reciprocal metres (m⁻¹), of a lens or surface, or of the vergence (refractive index divided by the radius) of a wavefront

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3.7

face protector

protector, specially adapted to a helmet that is designed to protect the wearer's face against injury

3.7.1

full-face protector

device intended to reduce the risk of injury to the face of ice hockey participants

Note 1 to entry: As defined in [5.9.1](#).

3.7.2

visor

device intended to reduce the risk of injury to the eyes of ice hockey participants

Note 1 to entry: As defined in [5.9.2](#).

3.8

field of vision

<optical quality> extent of vision through the mounted protector in the "as worn" position measured with reference to the entrance pupil of the stationary eye when the protector is placed on the appropriate headform

Note 1 to entry: See [Figure A.1](#).

3.9 field of vision directions

3.9.1

inferior

downward

angle in the vertical plane measured downwards from the horizontal

3.9.2**nasally**

angle in the horizontal plane measured from the primary position of gaze to the left for the right eye and from the primary position of gaze to the right for the left eye

3.9.3**superior
upward**

angle in the vertical plane measured upwards from the horizontal

3.9.4**temporally**

angle in the horizontal plane measured from the primary position of gaze to the right for the right eye and from the primary position of gaze to the left for the left eye

3.10**fracture**

full thickness crack, breaking, or complete separation of material

3.11**glabella**

most prominent midline point between the eyebrows identical to the bony glabella of the frontal bone

3.12**goniometer**

positioning device that moves the headform such that the angular rotation and movement in reference to the corneal eye point in both the horizontal and vertical directions can be recorded

3.13**haze**

<wide angle scatter> percentage of transmitted light that, in passing through the specimen, deviates from the incident beam by forward scattering (total angle) as caused by imperfections in the ocular that reduce clarity of vision

3.14 impact sites for testing face protectors**3.14.1****impact site eye**

point in the horizontal plane 25° from the median plane and in the direction of the eye

Note 1 to entry: See [Figure 2](#).

3.14.2**impact site mouth**

point in the intersection between the horizontal plane and the median plane in the direction of the center of the mouth in the horizontal plane

Note 1 to entry: See [Figure 2](#).

3.14.3**impact site side**

point halfway between the mouth level and the eye level in the horizontal plane, 25° from the median plane, and in the direction of the central vertical axis

Note 1 to entry: See [Figure 2](#).

3.15**interpupillary distance****IPD**

distance in millimetres between the centres of the pupils of both eyes on the facially featured headform

3.16

laser

visible coherent light source type which can be utilized as a collimated light source

3.17

luminous transmittance

ratio of the (visible) light transmitted by a medium to the (visible) incident light

3.18

menton

lowest point on the mandibular symphysis

3.19

no-contact zone

designated zone of the headform in which contact is not permitted during the puck impact resistance test

Note 1 to entry: See [5.8](#) and [Figure 3](#).

3.20

optical clarity

sharpness of an image

3.21

orbitale

lower most point on the inferior margin of the orbit (infraorbital margin)

3.22

photosensor

sensor 5 mm in diameter centred in the pupils of the headform covered by a 5 mm translucent lens of 8 mm radius of curvature, convex forward

Note 1 to entry: Photosensors are cosine corrected, for example, provided with diffusing covers that are a means of correcting the light-sensitive surface for wide angles of incidence. Light contact with the sensors produces an electrical signal that is fed into a computer interface.

3.23

primary position of gaze

PPG

line running forward from the centre of the pupils as forward looking parallel to the median and horizontal planes

3.24

prism dioptre

unit used in measuring the deviating power of a prism

Note 1 to entry: Power in prism dioptres is $100 \times$ the tangent of the angle of deviation of a ray of light.

3.25

prism imbalance

when the direction of light passing through a lens and entering one eye deviates from the direction of light passing through the lens and entering the other eye

3.26

puck accelerator

device which can give a hockey puck a specific velocity, direction, and with minimal rotation

Note 1 to entry: See [Figure 7](#).

3.27

resolution

ability of an optical system to distinguish two points at their minimum separation

3.28**scan area**

oval, peripheral fields area specified by superior, temporal, inferior, and nasal directions

3.29**subnasale****Sn**

deepest point on the concavity of the anterior surface of the maxilla in the midline within 3,0 mm of the floor of the nose

Note 1 to entry: See [Figures 4](#) and [6](#).

3.30**threshold value**

value obtained when the collimated light beam has been centered on the midpoint between the pupils in the primary position of gaze and the headform is rotated 90° in the horizontal plane and the collimated light source contacts the pupillary sensor closest to the light source

4 Types of face protectors

Type B1 — a full-face protector intended for use by persons other than goalkeepers.

Type B2 — a full-face protector intended for use by persons, other than goalkeepers 10 years of age or younger.

Type C — a protector that only covers the eyes (visor).

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5 Requirements

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5.1 Innocuousness

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The manufacturer shall provide written documentation indicating that the materials used in the construction of the protector fulfil the requirements for innocuousness given in ISO 10256-1.

5.2 Ergonomics

Manufacturers shall provide documentation indicating that the protector shall meet the requirements for ergonomics given in ISO 10256-1.

5.3 Attachment

The protector shall be designed to allow it to be attached to the helmet without requiring the use of specialized tools.

5.4 Size and mass restriction (Type B2 only)

Type B2 protectors shall only be used with helmets intended to fit EN 960 headform sizes 535 and smaller and the mass of the helmet and face protector shall be no greater than 900 g.

5.5 Optical quality**5.5.1 Visual inspection**

5.5.1.1 Lenses shall be visually inspected for the below listed defects within the optical field of view (see [Figure 1](#)) according to [6.6](#):

- a) aberrations caused by waves, warpage, and so forth;

b) lens defects, such as scratches, greyness, bubbles, fractures, watermarks, and so forth.

5.5.1.2 If the above deficiencies are present, no further testing shall be conducted and the product is failed.

5.5.2 Test requirements

When testing according to 6.6 under ambient conditions (see ISO 10256-1), face protectors, except for those with wire cages, shall:

- a) have a minimum luminous transmittance of 80 % (clear);
- b) be specifically identified by the manufacturer as being tinted or intended for filtering;
- c) have a minimum luminous transmittance of 20 % throughout the lens area;
- d) have a haze reading that does not exceed 3 %;
- e) have no occultation in the field of vision as indicated in Figure 1;
- f) meet the minimum optical requirements of Class 1 or 2 per Table 1.

Table 1 — Optical class limits

Class	Residual refractive power errors		Prismatic power error	Prismatic imbalance		Resolving power
	Sphere	Astigmatism		Vertical	Horizontal	
1	0,125	0,060	0,5	0,250	0,25 BI/0,75 BO	≥90°
2	0,125	0,125	0,5	0,250	0,25 BI/1,0 BO	≥120°

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5.6 Field of vision

When tested under ambient conditions (see ISO 10256-1), the type C face protector shall not interfere with vision in the upward, down wards and horizontal directions as defined by the following angles:

- a) upwards: 35°;
- b) downwards: 60°;
- c) horizontally: 90°.

NOTE Several methods exist for measuring visual interference.

5.7 Penetration (Test blade)

When tested according to 6.7, there shall be no contact with the bare headform by the test blade within the protected areas.

5.8 Puck impact resistance

5.8.1 Types B1, B2

5.8.1.1 Contact test

When tested according to 6.8:

- a) neither the protector nor the puck shall touch the facially featured headform within the no-contact zone (see Figure 3);