International Standard

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Protective equipment for use in ice hockey —

Part 3: Face and eye protectors for skaters

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

Partie 3: Protections faciales et oculaires pour les patineurs

Reference number
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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 document 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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 5, *Ice hockey equipment and facilities,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 158, *Head protection,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 10256-3:2016), which has been technically revised.

The main changes are as follows:

— Clause 3 has been edited and re-ordered and new definitions have been added;

— Clause 4 has been revised;

— Clause 5 has been revised and clarified to reflect the changes in Clause 4;

— Clause 7 has been revised to include Ice Hockey designation;

— Clause 8 has been expanded to provide more information regarding assembly and use;

— Table 2 has been expanded and Table 3 has been added, to include the protocol and sequencing of all tests for the eye and face protectors;

— Figures 1, 2, 4, 6 and 7 have been revised for clarity and Figures 9 and 10 have been added.

A list of all parts in the ISO 10256 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Ice hockey is a high-speed, collision sport in which there is a risk of injury. By playing this sport, participants accept the risk of serious injury, paralysis, or death.

The intention of eye and face protectors is to reduce the frequency and severity of localized injuries to the eyes and face.

Protectors can consist of eye or face protectors worn in conjunction with an ice hockey head protector.

Two types of face protector and one type of eye protector are designated.

Protective equipment for use in ice hockey —

Part 3:
Face and eye protectors for skaters

1 Scope

This document specifies performance requirements and test methods for eye and face protectors for use in ice hockey only.

This document is applicable to eye and face protectors worn by ice hockey players other than goalkeepers and by referees.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 10256-1:2024, *Protective equipment for use in ice hockey — Part 1: General requirements*

ISO 10256-2:2024, *Protective equipment for use in ice hockey — Part 2: Head protectors for skaters*

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

ISO 13468-2:2021, *Plastics — Determination of the total luminous transmittance of transparent materials*

ISO 14782:2021, *Plastics — Determination of haze for transparent materials*

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

ASTM D 2240-15, *Test Method for Rubber Property—Durometer Hardness*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10256-1:2024 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
eye protector
visor
device intended to reduce the risk of injury to the eyes of ice hockey participants

3.2
face protector
device intended to reduce the risk of injury to the eyes and face of ice hockey participants

3.3
dioptre
measure of the power of a lens equal to the reciprocal of its focal length expressed in metres

3.4
field of vision
extent of vision through the *eye protector* (3.1) or *face protector* (3.2) in the "as worn" position

Note 1 to entry: See Figure 1.

3.5
combination
unit of an *eye protector* (3.1) or *face protector* (3.2) placed on a hockey head protector with which it is intended to be used

Note 1 to entry: The head protector shall be compliant with ISO 10256-2:2024.

3.6
fracturing
condition in which there is a complete separation of any part of the protector into pieces

3.7
chip
readily visible particle missing from the *eye protector* (3.1) or *face protector* (3.2) with an area > 9 mm^2

3.8
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 Figure 4.

3.9
crack
condition in which there is a break in the protector through the full thickness of the material without complete separation of parts

3.10
luminous transmittance
ratio of the luminous flux (light) transmitted through the *eye protector* (3.1) or *face protector* (3.2) to the flux (light) incident upon it

3.11
haze
percentage of transmitted light that, in passing through the specimen, deviates from the incident beam by forward scattering

3.12
primary position of gaze
horizontal line running forward from the centre of the pupil parallel to the median plane

3.13
resolving power
resolution
ability of an optical system to distinguish two points at their minimum separation

3.14
prismatic power
measure of the angular change in direction of light rays passing through a prism expressed in prism *dioptres* (3.3)

Note 1 to entry: One prism dioptre equals a deviation of 1 cm per meter of path length of light.

3.15
prismatic imbalance
situation in which 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

3.16
model
category of protector with the same essential characteristics that can come in several sizes

Note 1 to entry: Essential characteristics include:

a) materials;

b) construction;

c) retention system;

d) protective padding.

3.17
helmet positioning index
HPI
vertical distance measured at the median plane, from the front edge of the head protector to the reference plane, when the head protector is placed on the reference headform

3.18
puck accelerator
device that can give a hockey puck a specific velocity, direction, with minimal rotation

Note 1 to entry: See Figure 8.

3.19
optical quality test area
area on a transparent *eye protector* (3.1) or *face protector* (3.2) determined by the outline of a cone whose apex is centred on each pupil

Note 1 to entry: Its axis projects along the primary position of the gaze and extends 30° (radius of fixation) (see Figure 3), excluding an area 10 mm from the edge of the protector.

3.20
glabella
g
most prominent midline point between the eyebrows

Note 1 to entry: See Figure 5 and Figure 7.

3.21
subnasale
Sn
deepest point on the concavity of the anterior surface of the maxilla in the midline within 3 mm of the floor of the nose

Note 1 to entry: See Figure 5 and Figure 7.

3.22
pupillary distance
distance between the circular opening in the eyes (pupils) of the referenced headform

Note 1 to entry: See Figure 10.

4 Requirements

4.1 Types of eye or face protectors

The types of eye or face protectors shall be as follows:

— Type B1 — A face protector intended for use by persons other than goalkeepers.

— Type B2 — A face protector intended for use by persons ≤ 10 years of age, other than goalkeepers.

— Type C — An eye protector intended for use by persons ≥ 18 years of age, other than goalkeepers.

4.2 Ergonomics

ISO 10256-1:2024, 4.1 shall apply.

4.3 Innocuousness

4.3.1 Materials

ISO 10256-1:2024,4.2.1 shall apply.

4.3.2 Design

4.3.2.1 General requirements

ISO 10256-1:2024, 4.2.2 shall apply to all types.

4.3.2.2 All types

4.3.2.2.1 Welded wire components

When inspected in accordance with 5.3.2.2, all wire ends shall terminate at the perimeter of the wire component.

4.3.2.2.2 Obstruction of vision

When inspected in accordance with 5.3.2.2, and except for wires, there shall be no obstruction within the field of vision.

Dimensions of the wire shall meet the following requirements.

— The maximum dimension on the cross section shall be ≤ 6 mm.

— Where wires cross each other within the field of vision, the diagonal dimension shall be ≤ 8,5 mm.

4.3.2.2.3 Attachment fastening system and airway access

The attachment fastening system of an eye or face protector to a head protector shall be designed so that:

a) the eye or face protector can be attached to the head protector with the help of simple tools (e.g. screwdriver);

b) immediate access to the wearer's airway is possible without the use of tools and without moving the head.

Inspection shall be in accordance with 5.3.2.2.

4.3.2.3 Types B1, B2

4.3.2.3.1 Maximum distance (headform to face protector)

When inspected in accordance with 5.3.2.3, the distance measured on the median plane and parallel to the basic plane between the inside of the face protector and points g and Sn on the facially featured headform shall not exceed 60 mm (see Figure 5).

4.3.2.3.2 Overlap

When inspected in accordance with 5.3.2.3, the face protector shall overlap the lower edge of the head protector (forehead area) by ≥ 6 mm when viewed perpendicular to the median and the mid-frontal planes.

4.3.2.3.3 Minimum load bearing area

The face protector shall have a minimum load-bearing area in the chin region as shown in Figure 6.

4.3.2.3.4 Maximum combined mass Type B2 with head protector

For type B2 face protectors, the combined mass of the face protector and head protector (with required hardware) shall be ≤ 0,9 kg.

4.3.2.4 Type C

4.3.2.4.1 Maximum distance (headform to eye protector)

When inspected in accordance with 5.3.2.4, the distance measured on the median plane, parallel to the basic plane between the inside of the eye protector and points g and Sn on the facially featured headform shall not exceed 60 mm (see Figure 7).

4.3.2.4.2 Overlap

The eye protector shall overlap the lower edge of the eye or face protector (forehead area) by ≥ 6 mm when viewed perpendicular to the median and the mid-frontal planes.

4.3.2.4.3 Maximum distance (head protector to eye protector)

The maximum distance between the head protector and the eye protector shall be ≤ 20 mm as shown in Figure 7.

4.4 Markings and information

ISO 10256-1:2024, 4.3 and Clauses 7 and 8 of this document shall apply.

4.5 Protected area

4.5.1 Type B1 and B2 — Face protectors

When tested in accordance with 5.5.1, the area protected by the face protector and head protector combination shall extend temporally and vertically around the headform at least to the continuous line G-HL-Z-HR-G (HR not shown) in Figure 5 as viewed perpendicular to the median and mid-frontal planes, when the face protector is assembled and mounted on the appropriate protector in accordance with the manufacturer's instructions and when placed and adjusted on a facially featured headform as described in 5.1.5.1 and 5.1.5.2.

Where the head protector provides protection in front of the line G-HL-Z-HR-G (HR not shown), the face protector does not need to extend back to the G-HL-Z-HR-G line (HR not shown), provided that the face

protector overlaps the head protector by at least 6 mm in any direction, as viewed perpendicular to the median plane and mid-frontal plane.

4.5.2 Type C — Eye protectors

When tested in accordance with 5.5.2, the area protected by the eye protector and the head protector combination shall extend temporally and vertically around the headform at least to the continuous line G-HL-Sn-HR-G (HR not shown) in Figure 7, as viewed perpendicular to the median and mid-frontal planes when the eye protector is assembled and mounted on the appropriate head protector in accordance with the manufacturer's instructions, and placed and adjusted on a facially featured headform as described in 5.1.5.1 and 5.1.5.3.

Where the head protector provides protection in front of the line G-HL-Sn-HR-G (HR not shown), the eye protector does not need to extend to the G-HL-Sn-HR-G (HR not shown) line, provided the eye protector overlaps the head protector by at least 6 mm in any direction when viewed perpendicular to the median plane and mid-frontal plane.

4.6 Penetration (test blade)

When tested in accordance with 5.6, there shall be no contact with the bare headform by the test blade within the protected area.

4.7 Puck impact resistance

4.7.1 Types B1, B2

4.7.1.1 Contact test

When tested in accordance with 5.7 the following requirements shall be met.

a) Neither the face protector nor the puck shall touch the facially featured headform within the no-contact zone (see Figure 4).

b) The shock-absorbing material at the load-bearing area shall remain securely attached to the face protector.

c) There shall be no:

   1) fracturing or cracking of any component of the face protector;

   2) chips;

   3) failure of the face protector's fastening system to the head protector.

Weld separations that are not wire terminals are permitted.

Cracking of surface coatings is permitted.

4.7.1.2 Toughness test

When tested in accordance with 5.7:

a) there shall be no fracturing or cracking of any component of the face protector;

c) there shall be no failure of the face protector's fastening system to the head protector;

b) the shock-absorbing material at the load-bearing area shall remain securely attached to the face protector.

Weld separations that are not wire terminals are permitted.

4.7.2 Type C

4.7.2.1 Contact test

When tested in accordance with 5.7:

a) neither the eye protector nor the puck shall touch the facially featured headform within the no-contact zone (see Figure 4);

b) there shall be no:

1) fracturing or cracking;

2) chips;

3) failure of the eye protector's fastening system to the head protector.

Weld separations that are not wire terminals are permitted.

Cracking of surface coating is permitted.

4.7.2.2 Toughness test

When tested in accordance with 5.7, there shall be no:

a) fracturing or cracking;

b) failure of the eye protector's fastening system to the head protector.

Weld separations that are not wire terminals are permitted.

4.8 Field of vision

When tested in accordance with 5.8, under ambient conditions, the eye or face protector shall have no obstruction of vision (see 4.3.2.2.2) within the field bounded by the following planes:

a) superior - a plane tilted 25° upwards from the centre of the pupils;

b) inferior – a plane tilted 60° downward from the centre of the pupils;

c) temporal (sideway) – a plane parallel to the mid-frontal plane from the centre of the pupils.

4.9 Optical quality

4.9.1 Visual inspection

When tested in accordance to 5.9.1 a transparent protector shall have no scratches, greyness, bubbles, cracks, pits, watermarks in the field of vision.

4.9.2 Luminous transmittance

When tested in accordance with 5.9.2, within the field of vision, clear transparent protectors shall have a luminous transmission of ≥ 80 % and tinted protectors shall have a luminous transmission of ≥ 20 %.

4.9.3 Haze

For transparent protectors, when tested in accordance with 5.9.3, within the field of vision, the haze shall be ≤ 3 %.

4.9.4 Optical power requirements

4.9.4.1 Optical resolving power

For transparent eye or face protectors, when tested in accordance with 5.9.4.1, within the optical quality test area, the optical resolving power shall possess adequate definition to permit the resolution of 240 arcseconds as represented by the 240-s ring.

4.9.4.2 Optical prismatic power and imbalance

When tested in accordance with 5.9.4.2, within the optical quality test area, the transparent eye or face protector's optical prismatic power and imbalance shall meet the requirements of Table 1.

Table 1 — Optical prismatic power and imbalance requirements

	Prismatic power	Prismatic imbalance		
		Vertical	Horizontal	
			Base-in	Base-out
prism dioptres (Δ)	≤ 0,5	≤ 0,5	≤ 0,50	≤ 1,00

5 Test methods

5.1 General

5.1.1 Tolerances

Unless otherwise specified in this document, ISO 10256-1:2024, Clause 6 shall apply.

5.1.2 Sampling

5.1.2.1 Samples

Only new, eye or face protectors as offered for sale shall be tested and assessed together with the head protector or head protectors for which the eye or face protector is intended.

5.1.2.2 Quantity

The number of samples for testing and assessment of eye or face protectors of a type is provided in Tables 2 and 3 and labelled 1 to 5 and 1 to 3 respectively. The sample numbers corresponding to those in Tables 2 and 3 shall be of the same size and model.

Eye or face protectors shall be assembled and mounted on the appropriate head protectors in accordance with the instructions of the protector's manufacturer.

5.1.2.3 Eye or face protector/head protector combinations

For eye or face protectors intended to fit several models and sizes of head protectors, one such combination shall be tested completely, and for compatibility with other head protectors, only the tests specified in 5.5, 5.6, 5.7 and 5.8 for ambient conditioning shall be conducted.

5.1.3 Determination of mass

For B2 face protector/head protector combinations fitting EN 960:2006 headform size 535 or smaller, determine the mass for all sizes of the head protector/face protector combinations (of the same model) submitted for testing by:

a) weighing all samples of same size and model;

b) calculating the average mass and rounding it off to the highest 10 g.

Record the results.

5.1.4 Conditioning

For testing at ambient and low temperatures, eye or face protector samples shall be assembled on the appropriate head protectors and conditioned in accordance with ISO 10256-1:2024, Clause 7.

Once conditioned, the samples shall be tested in accordance with 5.7 within 40 s of removal from the refrigeration chamber.

5.1.5 Placing and adjusting head protectors

5.1.5.1 Helmet positioning index

The HPI and the head protector size or size range shall be specified and provided by the manufacturer.

5.1.5.2 Placing and adjusting head protectors with face protectors (Type B1 and B2)

The combination shall be placed and adjusted on the largest facially featured headform (see CSA Z262.6-14) for its size range in accordance with the manufacturer's instructions so that the chin portion of the face protector rests on the load-bearing area of the headform (see Figure 6) and the head protector fits as close as possible to the HPI.

5.1.5.3 Placing and adjusting head protectors with eye protectors (Type C)

The combination shall be placed and adjusted on the largest facially featured headform (see CSA Z262.6-14) for its size range in accordance with the manufacturer's instructions using the HPI.

5.2 Ergonomics

The eye or face protector shall be tested in accordance with ISO 10256-1:2024, 5.1.

5.3 Innocuousness

5.3.1 Materials

The eye or face protector shall be tested in accordance with ISO 10256-1:2024, 5.2.1.

5.3.2 Design

5.3.2.1 General

The eye or face protector shall be tested in accordance with ISO 10256-1:2024, 5.2.2 and, in this document, 5.3.2.2 to 5.3.2.4.

5.3.2.2 All types

Inspect the eye or face protector to determine if it meets the requirements in 4.3.2.2. Where necessary, measure the diameter of the wires of the eye or face protector with calipers and record the results.

5.3.2.3 Type B1 and B2

When placed and adjusted in accordance with 5.1.5.2, the face protector shall meet the requirements in 4.3.2.3.

5.3.2.4 Type C

When placed and adjusted in accordance with 5.1.5.3, the eye protector shall meet the requirements in 4.3.2.4.

5.4 Markings and information

ISO 10256-1:2024, 5.3 shall apply.

5.5 Protected area

5.5.1 Type B1 and B2

When placed and adjusted in accordance with 5.1.5.1 and 5.1.5.2, the face protector and head protector shall meet the requirements in 4.5.1.

5.5.2 Type C

When placed and adjusted in accordance with 5.1.5.1 and 5.1.5.3, the eye protector and head protector shall meet the requirements in 4.5.2.

5.6 Penetration (test blade)

5.6.1 Test apparatus

The apparatus consists of the following:

a) Facially featured headform, in accordance with CSA Z262.6-14 marked with the protected area in accordance with Figure 5 of this document;

b) Steel test blade, in accordance with ISO 10256-2:2024, Figure 5.

5.6.2 Procedures

5.6.2.1 Penetration test — Types B1, B2

When placed and adjusted in accordance with 5.1.5.1 and 5.1.5.2, the face protector and head protector shall meet the requirements in 4.6.

Attempt to contact the headform in the protected area (see Figure 5) by trying to enter, at any angle, any part of the test blade end through all the openings without force. Record whether contact with the bare headform surface is made.

5.6.2.2 Penetration test — Type C

When placed and adjusted in accordance with 5.1.5.1 and 5.1.5.3, the eye protector and head protector shall meet the requirements in 4.6.

Attempt to contact the headform in the protected area (see Figure 7) by trying to enter, at any angle, any part of the test blade end, from the front and side (and not from above or below) without force.

Record whether contact with the bare headform surface is made.

5.7 Puck impact resistance

5.7.1 Test apparatus

5.7.1.1 Puck accelerator

A puck accelerator (see Figure 8) capable of achieving a puck velocity between 10 $m \cdot s^{-1}$ and 36 $m \cdot s^{-1}$ with an accuracy of ±1 $m \cdot s^{-1}$ shall be used.

The puck shall be directed toward the impact site with as little rotation as possible. The distance between the impact site on the sample and the end of the puck accelerator shall be ≤ 600 mm.

5.7.1.2 Headform base

The test apparatus shall include a flat horizontal base for a facially featured headform. The headform shall be aligned vertically on and attached to the flat horizontal base.

5.7.1.3 Facially featured headform

Facially featured headforms shall be in accordance with CSA Z262.6-14.

5.7.1.4 Puck

The hockey puck shall be in ambient condition and in accordance with the requirements in Annex A.

5.7.1.5 Velocity measurement

The velocity shall be measured no more than 600 mm from the site of impact. The equipment for measuring and recording the velocity of the puck shall be capable of measuring the velocity with a tolerance of ±1 $m \cdot s^{-1}$ (see Figure 8).

5.7.1.6 Contact indicating paste

To indicate contact with the facially featured headform during testing, a suitable contact indicative paste such as modelling clay or pressure-sensitive paste shall be used.

5.7.2 Procedures

5.7.2.1 General

When placed and adjusted in accordance with 5.1.5, the eye or face protector shall meet the requirements in 4.7.

The test shall be carried out in accordance with Tables 2 and 3.

Impact sites shall include the following, if applicable:

a) eye impact – a horizontal impact, 25° to the median plane directed at the centre of the eye;

b) mouth impact – a horizontal impact in the median plane directed to the centre of the mouth;

c) side impact – a horizontal impact midway between the eye and mouth level and 25° to the median plane and directed to the central vertical axis.

NOTE Figure 8 shows an example of the apparatus.

5.7.2.2 Assembly

Assemble the eye or face protector with the appropriate head protector in accordance with the instructions of the manufacturer.

5.7.2.3 Contact indicator

Apply contact indicator paste (see 5.7.1.6) over the no-contact zone of the headform to a maximum thickness of 1 mm.

5.7.2.4 Placement of headform with head and eye or face protector

The eye or face protector and head protector, having been placed and adjusted on the facially featured headform in accordance with 5.1.5, shall be placed in front of the puck accelerator so that the centreline of the path of the puck coincides with the site to be impacted.

5.7.2.5 Data recording

After each impact, the headform and the eye or face protector shall be inspected. If the eye or face protector or puck has touched the headform, record this and any damage (e.g. fracturing, breakage, chips, separation from the head protector, failure of the eye or face protector's point of fastening to the head protector).

For toughness tests, only damage to the eye or face protector shall be recorded.

5.8 Field of vision test

When placed and adjusted in accordance with 5.1.5, using a facially featured headform (in accordance with CSA Z262.6-14), and measuring from the centre of the pupils, the eye or face protector or head protector shall meet the field of vision requirements in 4.8.

The apparatus shall include:

a) a test headform in accordance with CSA Z262.6-14;

b) a load of 50 N;

c) a series of angle templates or other means of assessing angles of vision.

The testing laboratory may use any appropriate means for marking the field of vision on the transparent protector.

5.9 Optical quality

5.9.1 Visual inspection

Refer to Table 2 and Table 3 for sampling and sequencing.

Mark the field of vision on the transparent protector in accordance to 5.8.

Inspect the transparent protectors within the field of vision for physical defects (scratches, greyness, bubbles, cracks, pits, watermarks).

5.9.2 Luminous transmittance

Luminous transmittance in the visible range shall be tested within the field of vision (see 5.8) in accordance with the methods specified in ISO 13468-2:2021.

5.9.3 Haze

Haze shall be tested within the field of vision (see 5.8) in accordance with the procedure specified in ISO 14782:2021. The illuminant used shall be stated within the test report.

5.9.4 Optical power

5.9.4.1 Resolving power

The target for the test shall consist of white rings of various sizes on a black background, as illustrated in Figure 9. Each ring shall have an inside diameter equal to 1/3 of its outside diameter.

The effective size of each ring shall be designated by the arithmetic mean of the two diameters, as expressed in seconds of arc, subtended at the objective of the viewing telescope.

An 8x to 12x telescope shall be ≥10 m from the target and shall have a magnification sufficient to make negligible any effects of eye accommodation. The focus of the telescope shall be set before testing with no sample in place and the focus shall not be changed during testing. The clear aperture of the telescope objective shall be masked to 5 mm in diameter.

The system shall allow resolution of the 40-s ring. This resolution shall be maintained at every degree of image brightness of a telescope to be used in testing.

The eye or face protector to be tested shall be placed immediately in front of the telescope objective and normal to its axis.

A ring shall be considered resolved if it is identifiable as an unbroken bright ring with a single darker centre, even if the apparent relative widths of the ring and its centre are changed or the ring and its centre cease to appear circular.

The ring shall be considered not resolved if the ring is broken, if the dark centre is not seen, or if ≥2 dark centres that do not overlap are seen.

NOTE A magnification of 8x is usually suitable.

5.9.4.2 Prismatic power and imbalance

The protective device shall be placed in accordance with 5.1.5 on a facially featured headform (in accordance with CSA Z262.6-14) in the optical system (see example in Figure 10).

The pinhole aperture, P, is adjusted so that one image is formed in the image plane when no protector is on the headform. The position of that image should be marked or noted and will be identified as Po.

After the eye or face protector has been placed in the system, two images will usually be seen in the image plane.

In the case of a protector having zero prismatic imbalance, one image can be seen in the image plane, while in the usual case two images will be seen. By blocking the beam from each of the two eye positions, it can be determined which specific image comes from the left and right eye. The positions of these images will be identified as PL and PR.

The prismatic power in prism dioptres of the eye or face protector is one half the distance, in centimetres, between Po and either PL or PR, whichever is greater.

The horizontal distance between the two images, in centimetres, divided by 2 is the horizontal prismatic imbalance in prism dioptres, while the vertical separation of the two images, in centimetres, divided by 2 is the vertical prismatic imbalance.

The base of the horizontal prism imbalance is determined by looking at the prism displacement image on the target from the perspective of the test headform. If the rightmost image comes from the right eye of the headform then the horizontal imbalance is base out. If the leftmost image comes from the right eye, then the horizontal imbalance is base in.

6 Test report

In addition to the requirements of ISO 10256-1:2024, Clause 8, the test report shall include the test method to determine optical quality (see 5.9) and a reference to this document, i.e. ISO 10256-3:2024.

7 Markings

In addition to the requirements of ISO 10256-1:2024, 4.3 and Clause 9, eye and face protectors shall have the following markings:

a) the designation "Ice Hockey Eye Protector" or "Ice Hockey Face Protector";

b) when a transparent plastic is used in the field of vision, tinted or filtered eye or face protectors shall be identified as such.

8 Information for users

In addition to the requirements of ISO 10256-1:2024, Clause 10, eye and face protectors shall have the following information for users:

a) instructions concerning the assembly of the eye or face protector to the head protector;

b) the head protectors with which the eye or face protector is intended to be used;

c) a warning that ice hockey is a sport in which there is a risk of injury. Certified eye or face protectors afford no protection from neck or spinal injuries. Severe head, brain or spinal injuries, including paralysis or death, can occur despite using a certified eye or face protector.

NOTE The precise wording of the warning is at the discretion of the party submitting the eye or face protector for testing.

d) in the case of Type B2 protectors, a warning that includes the following:

— Type B2 protectors are only intended for use by persons 10 years of age or younger (other than goalkeepers), playing with the appropriate age group;

e) in the case of Type C protectors, a warning that includes the following elements:

— eye protectors provide only partial protection for the eyes and no protection for the mouth, teeth, lower face and jaw;

— to minimize the risks of injury, use of a face protector is recommended;

— failure to follow this recommendation can result in serious or permanent injury.

Table 2 — Sampling and sequence for testing Type B1 and B2 face protectors

Sample no.	Test		Conditioning (see ISO 10256-1:2024, Clause 7)	Test Location	Puck velocity m/s (±1,0 m/s)	Referenced clauses and subclauses
Any	Ergonomics, innocuousness and marking		Ambient	Entire eye or face protector		4.2, 4.3.1, 4.3.2.1, 4.3.2.2, 4.3.2.3, 4.4
Any	Protected area					4.5.1
	Penetration			Protected area		4.6
	Field of vision			Field of vision		4.8
1	Puck impact resistance	Contact	Ambient	Eye	28 (Type B1) 15 (Type B2)	4.7.1.1
2				Mouth		
3				Side		
4		Toughness	Low	Eye, mouth, or side	33 (Type B1) 15 (Type B2)	4.7.1.2
5	Optical quality (transparent protectors only)	Visual inspection	Ambient	Field of vision		4.9.1
		Luminous transmittance				4.9.2
		Haze				4.9.3
		Resolving power		Optical quality test area (see Figure 3)		4.9.4.1
		Prismatic power and imbalance				4.9.4.2

Table 3 — Sampling and sequence for testing Type C face protectors

Sample no.	Test		Conditioning (see ISO 10256-1:2024, Clause 7)	Test Location	Puck velocity m/s (±1,0 m/s)	Referenced clauses and subclauses
Any	Ergonomics, innocuousness and marking		Ambient	Entire eye protector		4.2, 4.3.1, 4.3.2.1, 4.3.2.2, 4.3.2.4, 4.4
Any	Protected area					4.5.2
	Penetration			Protected area		4.6
	Field of vision			Field of vision		4.8
1	Puck impact resistance	Contact	Ambient	Eye	10	4.7.2.1
2		Toughness	Low		28	4.7.2.2
3	Optical quality (transparent protectors only)	Visual inspection	Ambient	Field of vision		4.9.1
		Luminous transmittance				4.9.2
		Haze				4.9.3
		Resolving power		Optical quality test area (see Figure 3)		4.9.4.1
		Prismatic power and imbalance				4.9.4.2

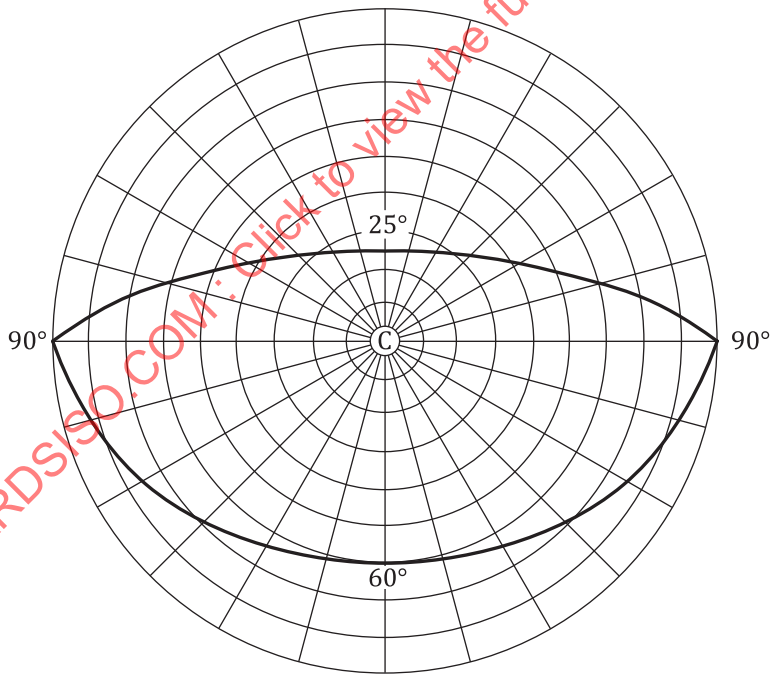
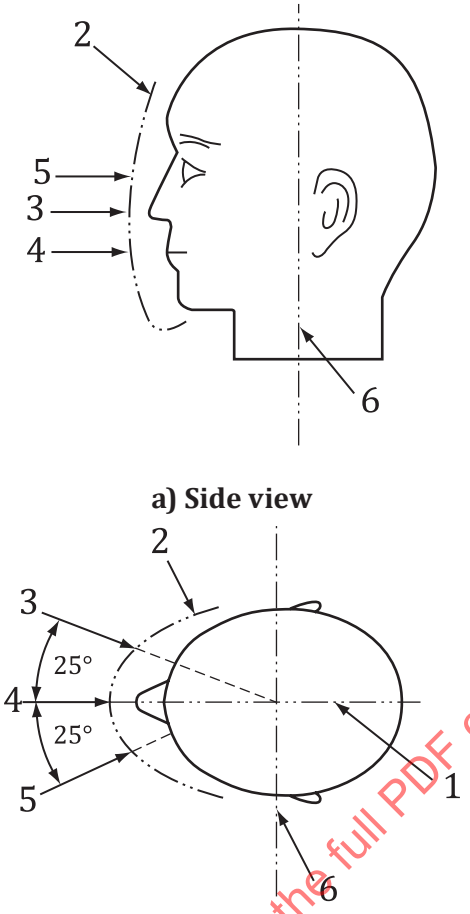


Figure 1 — Field of vision



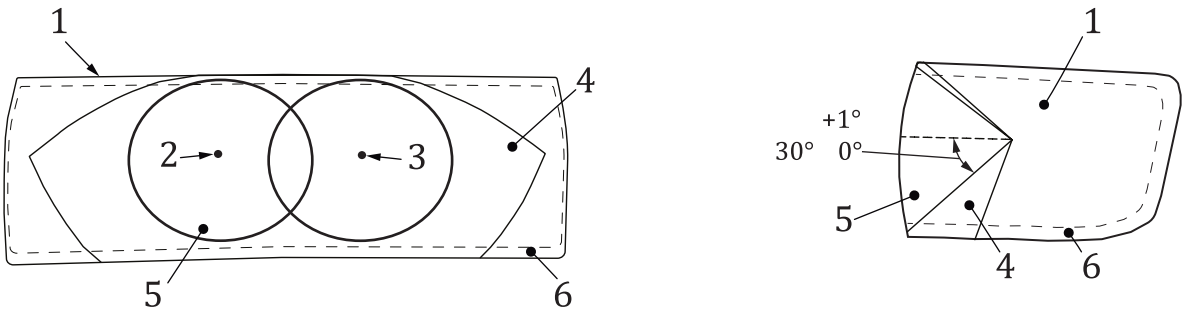
a) Side view

b) Top view

Key

1 median plane
2 protector
3 side impact
4 mouth impact
5 eye impact
6 mid-frontal plane

Figure 2 — Puck impact sites for testing eye and face protectors

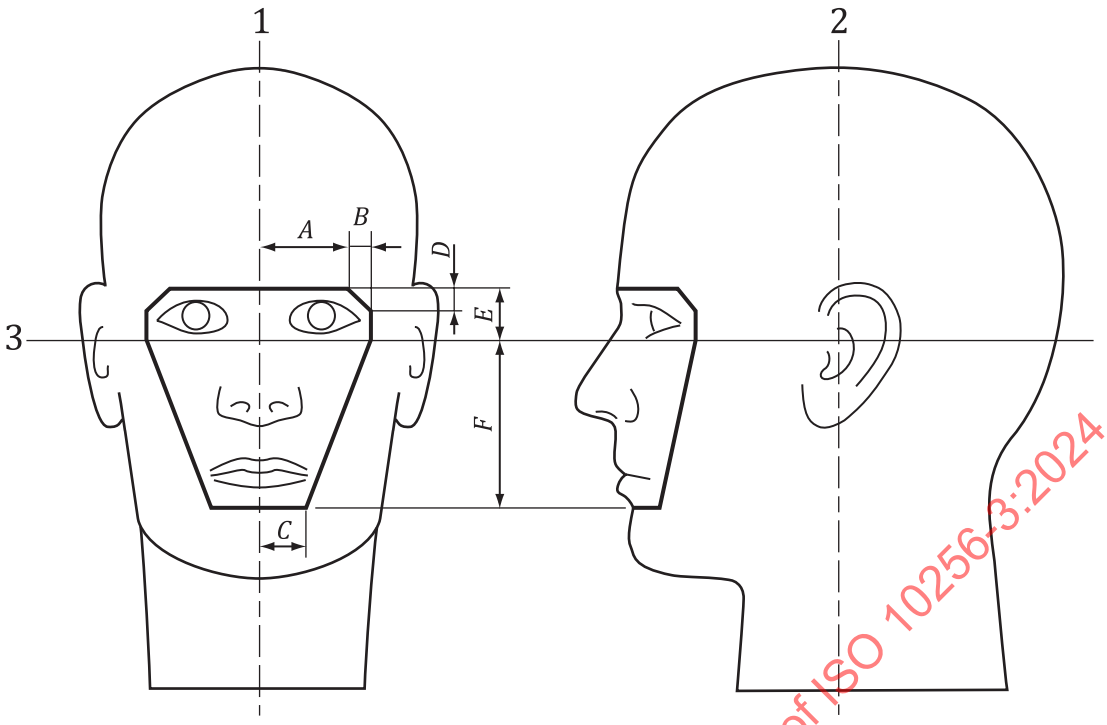


a) Front **b) Side**

Key

1 eye protector
2 centre right pupil
3 centre left pupil
4 field of vision
5 optical quality test area (30° from the centre of the pupil)
6 10 mm excluded area as per optical test area definition

Figure 3 — Optical quality test area



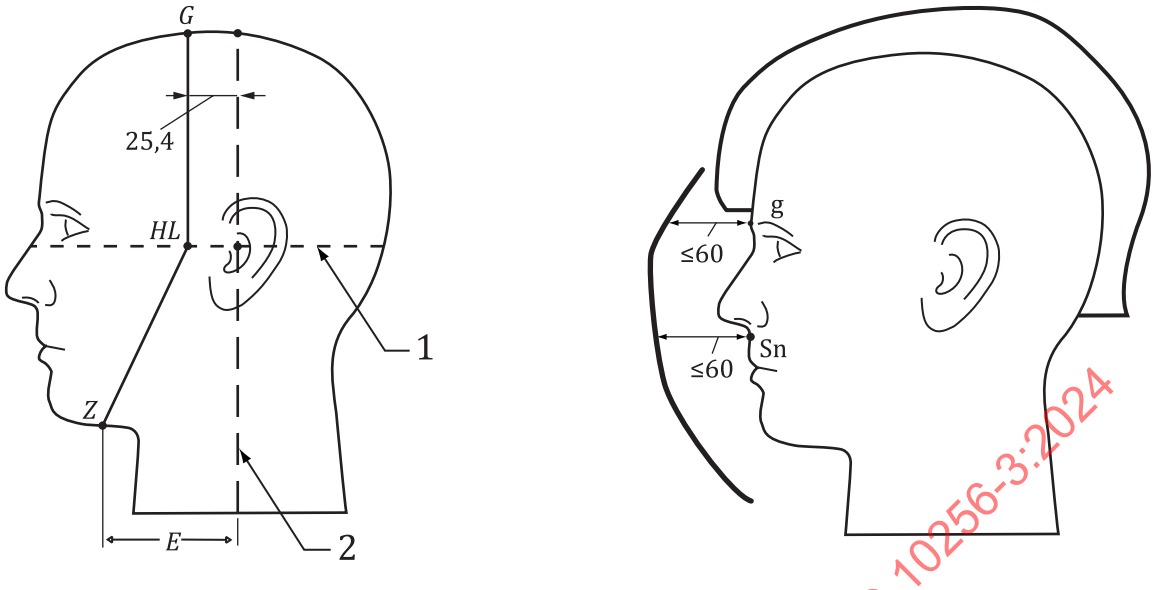
Key

1 median plane
2 mid-frontal plane
3 basic plane

Facially featured headform in accordance with CSA Z262.6-14	Dimensions (in accordance with CSA Z262.2) mm					
	A	***B***	***C***	***D***	***E***	***F***
515	55	0	23	0	35	55
535	57	0	25	0	36	60
575	48	16	25	17	36	68
605	51	17	28	18	37	74

Figure 4 — No-contact zone (projected dimensions)

Dimensions in millimetres



a) Side view

b) Maximum distance from headform to protector

Key

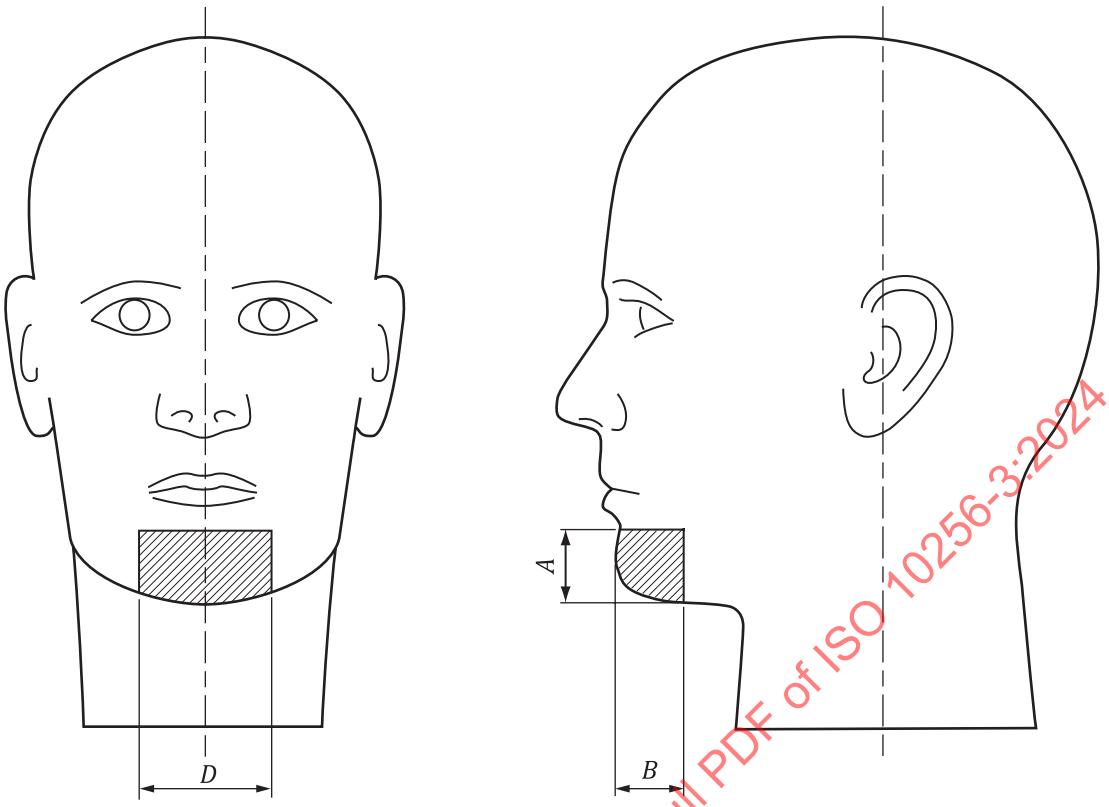
1 basic plane
2 mid-frontal plane
g glabella
Sn subnasale

Facially featured headform in accordance with CSA Z262.6-14	Dimensions mm
	E
515	75,9
535	76,9
575	78,3
605	81,6

NOTE G-HL-Z denote points on the headform as defined in 4.5.1.

Figure 5 — Protected area for full-face protector and maximum distance from headform to protector

Dimensions in millimetres



Facially featured headform in accordance with CSA Z262.6-14	Dimensions for load-bearing area mm		
	D **(min.)**	***A*** **(min. – max.)**	***B*** **(min.)**
515	42	15 – 24	15
535	48	15 – 24	15
575	53	18 – 27	18
605	53	18 – 27	18

Figure 6 — Minimum load-bearing area