

*Indian Standard*  
SPECIFICATION FOR  
VISOR FOR SCOOTER HELMETS

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR VISOR FOR SCOOTER HELMETS

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( Continued on page 2 )

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( Continued from page 1 )

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( Continued on page 10 )

# *Indian Standard*

## SPECIFICATION FOR VISOR FOR SCOOTER HELMETS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 16 October 1981, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** Specifications for the scooter helmets are covered in IS : 4151-1982\*. In order to protect the face from cold breeze and also from obstacles like insects etc, many people prefer to use visor along with the helmet. This standard has therefore been formulated to cover the requirements of such visors.

**0.3** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard covers the requirements in regard to the material, construction, workmanship and the performance test for the visor used in motor cycle and scooter helmets. This standard is an adjunct to IS : 4151-1982\*.

NOTE — If the visors are manufactured separately, these should match to the shape as specified.

### 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following definitions shall apply.

**2.1 Visor** — The complete assembly of visor screen fitted with suitable provision for attachment with the helmet.

**2.2 Visor Screen** — The curved transparent plastic material intended for providing protection to the eyes and face.

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\*Specification for protective helmets for scooter and motor cycle riders (*second revision*).

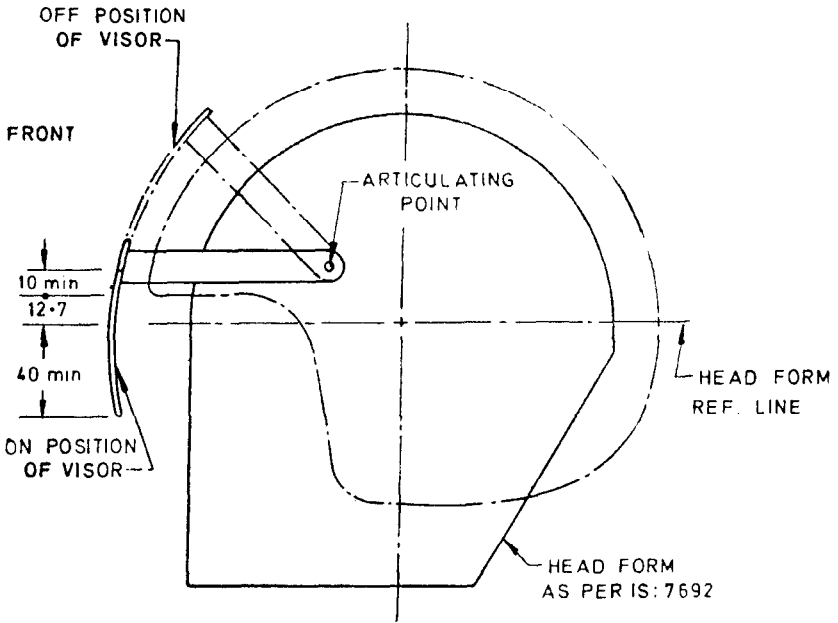
†Rules for rounding off numerical values (*revised*).

3. MATERIALS

3.1 The plastic material for the visor screen shall be so chosen that it satisfies the requirements given in 5. The bolt used for fixing of visor screen with the shell shall be corrosion resistant ( see IS : 4151-1982\* ).

4. DESIGN

4.1 The visor shall be of adjustable/detachable type design for quick and easy attachment to and removable from safety helmets. The details of the shape and the fixing arrangements are shown in Fig. 1.



NOTE — The width of visor along the curvature shall not be less than 30 cm.

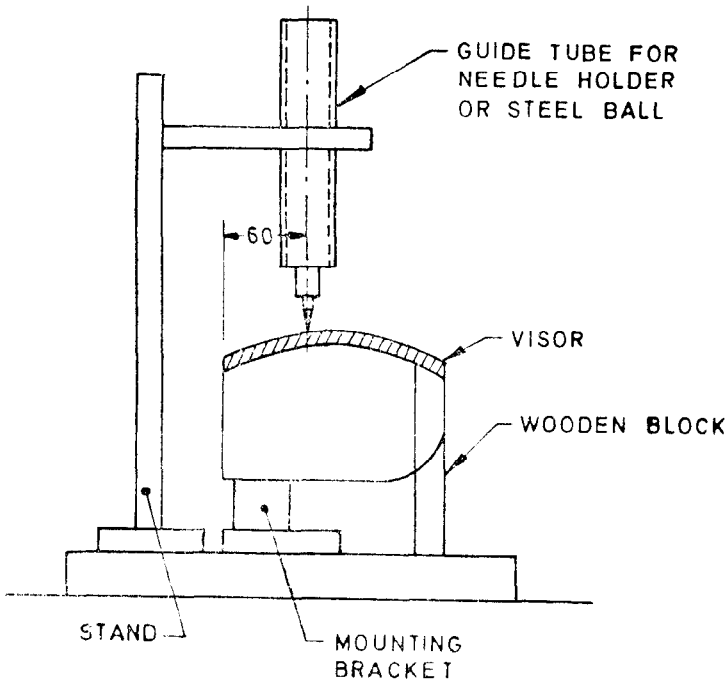
All dimensions in millimetres.

FIG. 1 TYPICAL SHAPE OF THE VISOR FOR MOTOR CYCLE AND SCOOTER HELMET

\*Specification for protective helmets for scooter and motor cycle riders ( second revision ).

## 5. REQUIREMENTS

**5.1 Impact Resistance** — Mount the visor protective on a suitable vertically mounting bracket on a wooden support fastened securely to a base (see Fig. 2). Provide an additional supporting wooden block 25 mm wide conforming to the shape of plastic visor, as a support for the visor at the lower end. The visor protective will then rest in a position such that the axis of the cylindrical/spherical surface of visor is upper most. Make the impact test at room temperature (20° - 30°C) under normal humidity condition. Drop freely from a height of one metre on the apex of the visor at a point approximately 60 mm below the top edge of the visor, steel spherical ball, weighing 50 g, the visor shall not be fractured nor be separated from the mounting.



All dimensions in millimetres.

FIG. 2 TYPICAL DETAIL OF APPARATUS FOR TESTING OF VISOR FOR SCOOTER HELMET

**5.2 Penetration Resistance** — Mount the visor protective in the manner described in 5.1 and tested under similar conditions. Drop freely a pointed project of suitable size, consisting of a new sewing machine needle number 135 × 17 size 25 mm fastened into a holder weighing 50 g, needle point downward, from the height of the one metre on the apex of the visor at a point approximately 60 mm below the top edge of the visor. The projectile may be guided but not restricted in its fall by dropping through the tube extended to within approximately 10 cm of the protective visor. The visor shall not be fractured nor pierced through by the impact of projectile.

**5.3 Flammability** — When tested as per method given in Appendix F of IS : 2925-1975\*, the rate of burning shall not be greater than 3 cm/minute.

### 5.4 Optical Requirements

**5.4.1 Distortion** — There shall not be any visual detectable distortion of objects seen through the visor by unaided eye.

**5.4.2 Spherical and Cylindrical Error** — The spherical and cylindrical error when tested as per method given in Appendix A shall not be more than 0.25 dioptre.

**5.4.3 Prismatic Error** — The maximum prismatic error when tested as per method given in Appendix A shall be 0.5 dioptre and the maximum difference between prismatic power of the left and right side vision areas of the helmet shall be 0.5 dioptre.

**5.4.4 Diffuse Transmittance** — When tested as per method given in Appendix G of IS : 7569-1975†, the diffuse transmittance shall not be more than 5 percent.

**5.4.5 Light Transmission** — When tested as per method given in Appendix G of IS : 7569-1975†, the minimum light transmission shall be 80 percent.

### 5.5 Field of Vision

**5.5.1** The visor shall provide the field of vision as given in IS : 4151-1982‡.

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\*Specification for industrial safety helmets (*first revision*).

†Specification for cast acrylic sheets for use in luminaires.

‡Specification for protective helmets for scooter and motor cycle riders (*second revision*).

## 6. WORKMANSHIP AND FINISH

6.1 The visor screen shall be optically clear, free from surface imperfections, scratches, bubbles and irregularities causing visual irregularities. All edges shall be finished smooth and shall be free from burrs, protrusions and irregularities.

## 7. MASS

7.1 The mass of the complete visor shall not exceed 350 g. If the mass exceeds 350 g, this mass determined to the nearest 10 g shall be shown on the label attached to the visor.

## 8. INSTRUCTIONS

8.1 Each visor shall be supplied with a printed card fixed with a tag having the following information:

- a) To maintain a good field of vision, formation of scratches and accumulation of dirt on the visor screen shall be avoided.
- b) No organic solvents or materials containing organic solvents such as metal polish, waxes and polishes shall be used to clean the visor screen.
- c) A soft cloth shall be used to wipe the visor for removing dust, dirt, etc.

## 9. MARKING

9.1 Each visor shall be marked with the following information:

- a) Manufacturer's name or trade-mark, and
- b) Year of manufacture.

9.1.1 The visor may also be marked with the ISI Certification Mark:

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.



## APPENDIX A

(Clauses 5.4.2 and 5.4.3)

### METHOD OF TEST FOR SPHERICAL AND CYLINDRICAL ERROR

#### A-1. APPARATUS

**A-1.1 Telescope** — Having a magnification between 7.5 and 20 (recommended magnification 15) with an aperture of 15 to 20 mm and an adjustable eye-piece fitted with a graticule, for example, a theodolite which is adjustable both vertically and laterally.

NOTE — In the event when the telescope shows a doubling of the image or other aberrations, the ocular to be tested shall be examined with a 5 mm aperture in instrument to locate and qualify the area or areas of observation in the total area of 20 mm diameter. A focometer may be used for this purpose.

#### A-1.2 Adjustable Light Source with Condenser

**A-1.2.1 Target** — Consisting of a black plate with the cut-out pattern shown in Fig. 1 of IS : 7524 (Part II)-1980\*. The bars are 2.0 mm wide. The bigger annulus depicted inside the bars has a diameter of 46 mm with an annular aperture of 0.6 mm and the smaller annular has a diameter of 23 mm. The diameter of the central aperture is 0.6 mm. This target is mounted on a glass plate.

**A-1.2.2 Standard Lenses** — With refractive powers of  $\pm 0.06 \text{ m}^{-1}$ ,  $\pm 0.12 \text{ m}^{-1}$  and  $\pm 0.25 \text{ m}^{-1}$  (tolerance  $\pm 0.01 \text{ m}^{-1}$ ).

#### A-2. PROCEDURE

**A-2.1 Calibration and Test** — Place the telescope and the optical system of the target so that they are on the same axis. Trans-illuminate the target [ see Fig. 1 of IS : 7524 (Part II)-1980\* ] by means of a parallel beam of a light of adjustable intensity. Adjust the distance between the telescope and the target at  $4.6 \pm 0.1 \text{ m}$ . Focus the reticule and the target aligning the telescope so that a clear image of the pattern is obtained. Regard this setting as the zero point of the dioptré scale of the telescope.

NOTE — The focussing adjustment of the telescope shall be calibrated so that a power of  $0.01 \text{ m}^{-1}$  can be measured.

**A-2.2** Insert the standard lenses, one at a time, in the order of ascending refractive powers, normal to the axis of the telescope, in the path of the rays and adjust the telescope to get a clear image of the target each time. Mark these positions on the dioptré scale of the telescope for the respective refractive powers.

\*Method of test for eye protectors: Part II Special tests.

**A-2.3** Next, insert the visor in place of the standard lenses as in **A-2.2**. Adjust the telescope to get a clear image and note their refractive powers from the dioptric scale of the telescope.

**A-2.4** Record astigmatism of the visor as the maximum difference between the values of refractive powers obtained in resolving the horizontal and vertical bars [ see Fig. 1 of IS : 7524 ( Part II )-1980\* ] of the target during rotation of the test lens around its axis.

**A-2.5** For determining the prismatic power, place the visor normal to the axis of the telescope, in the path of the rays and adjust the telescope to get a clear image. If on doing so, the point of intersection of the lines of the reticule falls outside the image of the bigger annulus the prismatic power of the test lens shall be taken as having exceeded  $0.5 \text{ m}^{-1}$  ( 0.5 dioptic ).

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\*Method of test for eye protectors; Part II Special tests.

**IS : 9973 - 1981**

(Continued from page 2)

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