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Mitteoptilised katsemeetodid**

**Personal eye-protection –  
Non-optical test methods**

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English version

## Personal eye-protection — Non-optical test methods

Protection individuelle de l'œil — Méthodes  
d'essais autres qu'optiques

Persönlicher Augenschutz — Nichtoptische  
Prüfverfahren

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Europäisches Komitee für Normung

**Central Secretariat: rue de Stassart 36, B-1050 Brussels**

## Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 85, Eye-protection equipment, of which the secretariat is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 1995, and conflicting national standards shall be withdrawn at the latest by November 1995.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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## 1 Scope

This standard specifies non-optical test methods for eye-protectors, the requirements for which are contained in other European Standards. Alternative test methods may be used if shown to be equivalent. The optical test methods are given in EN 167. A definition of terms is given in EN 165.

## 2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies. EN 165, *Personal eye-protection — Vocabulary*.

EN 166:1995, *Personal eye-protection — Specifications*.

EN 167:1995, *Personal eye-protection — Optical test methods*.

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*.

## 3 Test for increased robustness

New specimens shall be used for this test.

### 3.1 Unmounted oculars

#### 3.1.1 Apparatus

The support for the ocular (see Figure 1) shall be a steel or rigid plastic cylinder with an internal diameter of  $(35,0 \pm 0,1)$  mm and an outside diameter of  $(41,0 \pm 0,1)$  mm. The cylinder shall be inserted into, or be an integral part of a steel base. The ocular shall be cushioned by a silicone seating ring firmly attached to the top of the tube.

This seating ring shall have a nominal thickness of 3 mm and the same inside and outside diameters as the tube. The silicone seating material shall have a hardness of  $(40 \pm 5)$  I.R.H.D. The combined mass of the support shall be at least 12 kg.

A load ring of mass  $(250 \pm 5)$  g is placed on the ocular. The ring has an inside diameter the same as that of the support tube, and any convenient outside diameter. A silicone seating ring having the same dimensions and hardness as the support tube seating ring is placed between the load ring and the ocular. A piece of carbon paper on a piece of white paper is placed at the base of the 1,5 mm deep cavity in the ocular support (see Figure 1).

For curved oculars with a cylindrical component, the test support tube and load ring shall be curved to conform to the convex and concave surfaces of the ocular respectively.

If the ocular is of insufficient dimensions to enable its entire periphery to be adequately supported, suitable adaptor sleeves shall be used.

#### 3.1.2 Procedure

Centre the intended points of impact of the ocular on the support tube. Adjust the apparatus so that a 22 mm nominal diameter steel ball of 43 g

minimum mass falling from  $\left(1,3 \begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix}\right)$  m strikes

the ocular within  $\pm 5$  mm radius from the centre of the support tube. This height will provide an impact speed of approximately 5,1 m/s.

The points of impact are at the geometric centre of oculars for covering one eye and at the two points of vision for oculars covering both eyes. The points of vision are on the approximate line of sight and nominally 64 mm apart (corresponding to the centres of the eye).

The test shall be carried out at  $(23 \pm 5)$  °C.

### 3.2 Complete eye-protectors

#### 3.2.1 Apparatus

3.2.1.1 *Head-form*, as defined in clause 17.

3.2.1.2 Either a device enabling a 22 mm nominal diameter steel ball of 43 g minimum mass to be projected at a specified point on the eye-protector at a speed of approximately 5,1 m/s or a device enabling a 6 mm nominal diameter steel ball of 0,86 g minimum mass to be projected at the specified point at  $\left(12,0 \begin{smallmatrix} +0,6 \\ 0 \end{smallmatrix}\right)$  m/s.

#### 3.2.2 Procedure

The eye-protector to be tested shall be placed on the head-form in the position corresponding to normal use.

A sheet of carbon paper on top of a sheet of white paper is inserted between the eye-protector and the head-form. The head-form and eye-protector assembly is positioned in the test apparatus.

The ball is projected at the points of impact defined in 3.2.3.