REPORT

issued by an Accredited Testing Laboratory

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Date	Reference	Page
2020-05-27	105105-2P04582-01	1 (4)

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Testing of clear face shields according to method MET5659

(1 appendix)

Test object

Clear face shield Profront (model 200404) with full face coverage for protection against droplets and splashes of liquids.

Summary of results

The tested face shield fulfils all requirements in RISE method MET5659 except Clause 4 – Diffusion of light and Clause 5 – Increased robustness. MET5659 is based on selected requirements in EN 166:2001 Personal Eye-protection – Specifications including cleanability when applicable.

Identification

Date of arrival: May, 2020
Your reference: Andreas Wilhelmsson
Identification: Six pieces of clear face shields with large coverage area. The specimens, which were supplied unmarked by the manufacturer, are assembled from a separate plastic sheet, and a plastic frame. Nominal plastic thickness 0,25 mm. Upon arrival at RISE the specimens were numbered #1 – #6. See pictures in the appendix.

Comment: The plastic frame is also available in a less stiff version which was supplied together with the standard frames used for testing. However, the change in frame stiffness will not have an impact on any of the test results.

Date of test

May 20-25, 2020.

Accred. No. 1002
Testing
ISO/IEC 17025

Summary of assessments

Clause MET5659	Requirement with reference to EN 166 if applicable	Assessment
1	§6.1 General construction	Pass
	§6.2 Materials	n/a
	§6.3 Headbands (without the requirement of 10 mm width)	Pass
2	§7.1.3 Quality of material and surface	Pass
3	§7.1.2.1 Spherical, astigmatic and prismatic refractive powers	Pass
4	§7.1.2.3 Diffusion of light	Fail
5	§7.1.4.2 Increased robustness (at room temperature)	Fail
6	§7.2.4 Protection against droplets and splashes of liquids	Pass
7	Cleanability (PPE-regulation 2016/425 appendix 2 §1.4	Pass
8	§7.3.2 Resistance to fogging of oculars (optional)	n/a

Measurement method

The measurements and evaluations follows, in applicable parts, RISE methods MET1818, MET5659 and the procedures described in EN 166:2001.

Measurement conditions

The measurements are performed in a temperature stabilized laboratory with temperature 23 °C ±2 °C. The samples are kept in the laboratory 1 h before the testing is performed.

Result details

Any paragraph referenced below are from EN 166 unless stated otherwise. Assessments against limits or tolerances are made without considering the measurement uncertainties.

MET5659 Clause 1 - General construction and design

All specimens were assessed.

§6.1 General construction

The specimens were free from projections, sharp edges and other defects which are likely to cause discomfort or injury during use. **Pass**

§6.2 Materials

Manufacturer to certify that the parts of the face shield which are in contact with the wearer are not made of materials which are known to cause skin irritation. **n/a**

§6.3 Headbands

The headband is made up of the 9 mm wide plastic frame which fits securely on a normal sized head. If required, an elastic band (not included) can be attached to the frame ends for increased fitting security. **Pass**

MET5659 Clause 2 - Quality of material and surface (§7.1.3)

Specimen #1 to #3 were assessed.

The specimens were free from any defects as specified in EN 166 §7.1.3. **Pass**

MET5659 Clause 3 - Spherical, astigmatic and prismatic refractive powers (§7.1.2.1)

No optical class was claimed. The specimens satisfied the requirements for optical class 1.

Specimen	Spherical refractive power (m^{-1}) Left	Right	Astigmatic refractive power (m^{-1}) Left	Right
#1	0,00	0,00	0,00	0,00
#2	0,00	0,00	0,00	0,00
#3	0,00	0,00	0,00	0,00
Limit	±0,06		≤0,06	

Pass

Specimen	Difference in prismatic power (cm/m) Vertical prism	Horisontal prism	Base
#4	0,0	0,0	-
#5	0,0	0,0	-
#6	0,0	0,0	-
Limit	≤0,25	≤0,75	-

Pass

MET5659 Clause 4 - Diffusion of light (§7.1.2.3)

Specimen	Reduced luminance factor ($cd \cdot m^{-2} \cdot lx^{-1}$) Left	Right
#1	1,63	1,83
#2	1,60	1,57
#3	1,77	1,93
Limit	≤0,5	≤0,5

Fail

MET5659 Clause 5 - Increased robustness (§7.1.4.2 at room temperature)

Specimen	Impact position	
#4	1 (left eye frontal	**Fail**
	2 (left eye frontal	**Fail**
	3 (left eye side)	**Pass**
#5	1 (left eye frontal	**Fail**
	2 (left eye frontal	**Fail**
	3 (left eye side)	**Pass**
#6	1 (left eye frontal	**Fail**
	2 (left eye frontal	**Fail**
	3 (left eye side)	**Pass**

MET5659 Clause 6 - Protection against droplets and splashes of liquids (§7.2.4)

Specimen #1 to #3 were assessed. Note that for face shields this assessment is based on the area of coverage as specified in EN 168:2001 §10.2.

The specimens fulfils the requirements when evaluated against the coverage area ABGH as defined in Figure 11 in EN 168 (full face coverage). **Pass**

MET5659 Clause 7 - Cleanability

Specimen #1 to #3 were assessed.

When cleaned five times according to the manufacturer's instructions (disinfection agent with tenside) no visual defects such as miscolouring, diffusion or cracks where noted **Pass**

MET5659 Clause 8 - Resistance to fogging of oculars (§7.3.2, optional)

The tested face shields do not claim to have this optional property. **n/a**

Measurement uncertainty

Spherical and astigmatic powers: ± 0,02 m^{-1}

Prismatic power: ±0,1 cm/m

Reduced luminance factor: ±0,10 $cd \cdot m^{-2} \cdot lx^{-1}$

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EAL Publication EA-4/02.

RISE Research Institutes of Sweden AB
Measurement Science and Technology - Time and Optics

Performed by

Signed by: Stefan Källberg
Reason: I am the author of this document
Date & Time: 2020-05-27 17:11:38 +02:00

Stefan Källberg

Appendix

Pictures of the tested face shield

Appendix 1

Pictures of the tested face shield