REPORT

issued by an Accredited Testing Laboratory

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Reference: 105105-2P03824-01

SP Testing

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Testing of clear face shields according to method MET5659

(1 appendix)

Test object

Disposable clear face shield MP001 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 5 – Increased robusness. MET5659 is based on selected requirements in EN 166:2001 Personal Eye-protection – Specifications including cleanability when applicable.

Identification

Date of arrival: April, 2020
Your reference: Michael Backhuvud
Identification: Six pieces of disposable clear face shields with large coverage area. The specimens were supplied by the customer, nominal plastic thickness 0,175 mm, foam size 30×30×300 mm. Upon arrival at RISE the specimens were numbered #1 – #6.
See pictures of the face shield in the appendix.

Date of test

April 24-27, 2020.

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	Pass
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	n/a
8	§7.3.2 Resistance to fogging of oculars (optional)	n/a

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Testing
ISO/IEC 17025

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 plastic headband is adjustable by means of a 23 mm elastic band. **Pass**

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

All specimens 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})		Astigmatic refractive power (m^{-1})	
	Left	Right	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
#1	0,0	0,0	Out
#2	0,0	0,1	Out
#3	0,0	0,0	Out
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	0,12	0,15
#2	0,34	0,27
#3	0,19	0,21
Limit	≤0,5	≤0,5

Pass

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

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

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 fulfil 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

The tested face shields do not claim to be reusable after cleaning. **n/a**

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: ± 0,03 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.

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Measurement Science and Technology - Time and Optics

Performed by

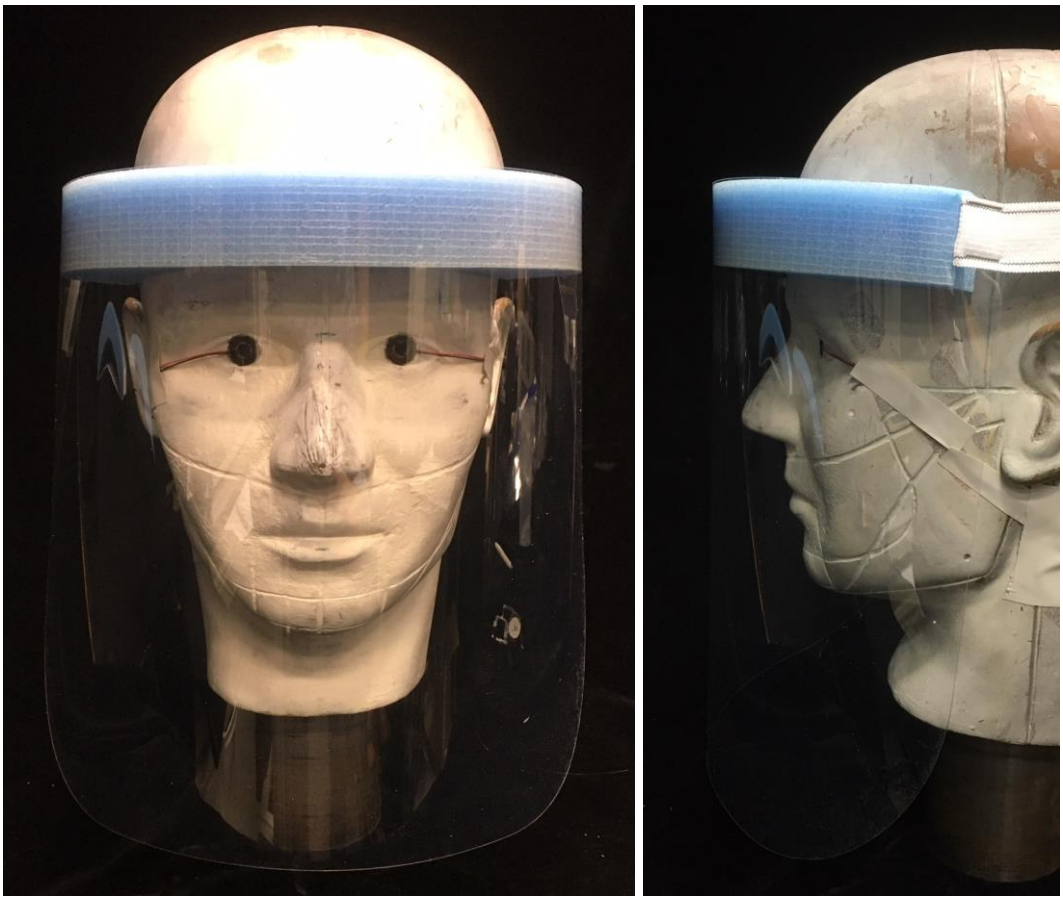
Stefan Källberg

Appendix

Pictures of the tested face shield

Appendix 1

Pictures of the tested face shield



RAPPORT

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Datum
2020-04-28

Beteckning
105105-2P03824-02

Sida
1 (1)

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Beskrivning av avvikelse mot MET5659 för visir

Detta dokument gäller klart visir MP001 provat enligt MET5659 (provningsrapport 105105-2P03824-01) med avvikelse mot punkt 5 Mekanisk tålighet (EN166 §7.1.4.2 Increased robustness).

Punkt 5 – Mekanisk tålighet

Testet utförs med visiret monterat på ett provhuvud och genom att låta en stålkula falla mot visiret i vissa punkter. Kravet är att inget genomslag av kulan kan noteras. För aktuellt visir noterades genomslag i ögonpositioner och från sidan. Anledningen bedöms vara en kombination av visirets design (dimensioner och fasthet på skum mot pannan) och plastens styvhet, som till stor del är kopplat till tjockleken på plasten men även kan variera mellan olika plasttyper.

Tidigare erfarenheter visar att visir med plasttjocklek från ca 0,175 mm kan klara testen, vilket kan jämföras med tjockleken på aktuellt visir som är just 0,175 mm. Trots den relativt tunna plasten upplevs visiret inte som instabilt utan behåller formen bra vid t.ex. hastiga huvudrörelser.

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Mätteknik - Tid och optik

Utfört av

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Date	Reference	Page
2020-05-19	105105-2P03824-03	1 (2)

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Testing of clear face shield according to method MET5659 Clause 7 - Cleanability

(1 appendix)

Limited testing of cleanability of clear face shield MP001 in accordance with updated user instructions. Also refer to previously issued full test report 105105-2P03824-01 for the face shield.

Test object

Disposable clear face shield MP001 with full face coverage for protection against droplets and splashes of liquids.

Summary of results

The tested face shields fulfils the requirement in RISE method MET5659 Clause 7 regarding cleanability according to the manufacturer's user instructions.

Identification

Date of arrival: April, 2020
Your reference: Michael Backhuvud
Identification: Six pieces of clear face shields with large coverage area. The specimens were supplied by the customer, nominal plastic thickness 0,175 mm, foam size 30×30×300 mm. Upon arrival at RISE the specimens were numbered #1 – #6.
See pictures of the face shield in the appendix.

Date of test

May 19, 2020.

Summary of assessments

Clause MET5659	Requirement with reference to EN 166 if applicable	Assessment
7	Cleanability (PPE-regulation 2016/425 appendix 2 §1.4	Pass

Measurement method

Limited testing according to MET5659 Clause 7- Cleanability.

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.

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Result details

MET5659 Clause 7 - Cleanability

Testing conducted on three specimens marked #1-3

When cleaned five times according to the manufacturer's instructions ("BruksanvisningMP001_1" created 2020-05-14, isopropyl alcohol and soft cloth) no visual defects such as miscolouring, diffusion or cracks where noted **Pass**

Measurement uncertainty

Not applicable for the performed test.

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