



PRODUCT DATA SHEET

INDUSTRIAL FACE SHIELD



CE DIN EN 166 : 2002
Certified Lens Only

PRODUCT DESCRIPTION

- Flip up brow guard with adjustable fastening side knobs.
- Headgear with automatic locking ratchet adjustment system.
- Tricot cushion sweatband.
- 3 Stage adjustment on brow guard resting position.
- 5 Point adjustment on crown strap.
- 3 point lense attachment.
- Fits 1mm standard polycarbonate 305mm x 205mm or deep 305mm x 240mm lenses.

TECHNICAL SPECIFICATIONS

- One size fits all: 50cm - 64cm.
- 148g assembled weight (Brow guard & headgear).
- 80g 305mm x 205mm x 1mm polycarbonate lens.
- 94g 305mm x 240mm x 1mm deep polycarbonate lens.
- Automatic locking ratchet adjustment system.
- Flip up brow guard with 3 point adjustment on resting position.
- Materials: Polypropylene brow guard, side adjustments, gear housing and gears. HDPE headband. Acetyl side screws.
- Colours: Royal blue & natural.

COMPLIANCE

- 1mm Polycarbonate Makrolon GP Clear 099
- DIN EN 166 : 2001
Annex II of the PPE-Directive 89/686/EEC
Optical class: 1
Protection against high speed particles, medium energy impact(B)

INSTRUCTIONS FOR USE

Place headgear on head with the ratchet facing the back. Push ratchet in and turn clockwise to tighten. Push ratchet in and turn anti-clockwise to loosen. To adjust the brow guard resting angle, push the tabs located in the inside left and right of the brow guard inwards till locating pin is free. Then release the tabs into the desired positioning hole. To adjust brow guard swivel action tighten or loosen side knobs on either side. To replace the lens, turn each retaining clip to a horizontal position. Turn each retaining clip to a vertical position once a new lens is fitted.

WARNING

Read all instructions and warnings before use. Failure to follow could result in serious personal injury or death. This impact resistant lens complies to the requirements of EN Standards 166, Clause 7.2.2 for Medium Impact Resistance to high speed projectiles.

This face shield lens only provides limited protection to the user and does not replace machine-guards/screens or covers and can be worn in conjunction with safety spectacles or goggles. Use only approved lenses suited to the application. A risk assessment must be carried out by a competent person to determine hazardous conditions and determine if the protective equipment is suited to the application. Do not use this lense for protection against chemicals or hazardous substances. Do not use for brazing, welding or high intensity light protection. Do not use in high temperatures areas such as furnaces. Do not use this lense for protection against laser or gamma light sources or where optical hazards exist.

Examine the complete lense and mounting. Replace when cracked, scratched, marked, pitted, damaged or when clear vision is compromised. Clean surfaces using mild soapy water, rinse off well, air dry or pat with a soft cloth. Do not dry clean the lens, this will cause fine scratches. Do not use thinners or any other solvent based cleaning agents. This lens should not be used for sporting/recreational/paint-ball/war-games or any other such activity. If in doubt on any of the above, consult with safety officer/supervisor/supplier/manufacturer before use.

Important Notice:

This document is intended to be an introductory summary. The information provided in this document is believed to be reliable, however due to the wide range of intervening factors, We do not warrant that these results will be obtained. **It is essential that the customer determines the suitability of this product for their specific application.** This document contains information that is proprietary, and may not be released without prior written approval.

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E&OE.

Test Report

No. 0041-ECS-24

Rev. 0

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Test lab accredited by DAkkS D-PL-19590-02

Notified by the Central Authority of the Federal States for Safety Technologies (ZLS) ZLS-NB-0434

Customer

Exolon Group NV
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Manufacturer

Test report contains

Main part and 1 measurement report

Number of pages in this test report

9

Product

Clear plate

Arrival of the samples

February 14, 2024

Period of testing

February 21 to March 11, 2024

Test specifications (Standards)

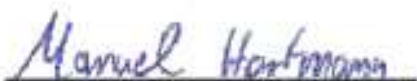
EN 166 : 2001
ISO 16321-1 : 2022

Remarks

From November 11, 2024, EN 166 will no longer be harmonised and will be replaced by EN ISO 16321-1.

The results described in this test report refer to the mentioned test samples, exclusively. A copy of the test report, complete or in extracts, is not allowed without any written permission of the ECS GmbH Aalen.

Aalen, March 12, 2024



Manuel Hartmann, B.Eng.
ECS test engineer

Test objects, tests and results

Based on the tables as written in the standards EN 166 and EN ISO 16321-1, the main part assigns the test samples to the named tests. The test results are documented according to the named standards.

Signs and symbols

The requirements are described in EN 166 and EN ISO 16321-1.

+	meet the requirements
.	<i>do not meet the requirements</i>
/	not tested
n.a.	not applicable
n.v.	not available
G	borderline case
<i>Ab</i>	<i>interruption of the testing sequence</i>
BO	Base out
BI	Base in
RT	Room temperature
R	Remark

Whenever the dioptric power of the surface is stated, this value was calculated using the formula $F=0.523/r$, where "r" is the radius of the curved surface.

The relative measurement uncertainties of the applied optical metrological instruments correspond to the required one in EN 167.

Unless stated otherwise, the measurements were carried out in the main viewing point of the specimens and, in the case of lenses with corrective power, at the applicable reference point.

Test results

The annexes document the test results of each individual measurement. All results printed in bold and italic type document that the test sample did actually not meet the requirements which are demanded in the specified standards.

Samples and summary of the test results

Type: Clear plate, Exolon GP clear 099						
Test report: 00411-ECS-24						
Number of delivered samples: 30				ISO-assessment		
Number of test samples: 30						
Test sequence	Requirement	Tests				Samples 24041-1 to -30
		according to		ISO	Clause	
		ISO	Clause	ISO	Clause	
1	Marking	16321-1	8	18526-3	8	n.a.
2	Information delivered by the manufacturer / applicant	16321-1	9	18526-3	9	n.a.
3	Physiological compatibility	16321-1	4.2			+
4	Construction and adjustment	16321-1	4.3	18526-3	6.1	+
5	Field of view	16321-1	5.1	18526-3	6.2	n.a.
6	Refractive power and prismatic power for plano lenses	16321-1	5.2	18526-1	6.1 6.2	+
7	Luminous transmittance rel. NA / D65	16321-1	6	18526-2	7.1 7.3	+
8	Wide angle scattered light	16321-1	6.5	18526-2	14.1	+
9	Quality of material and surface	16321-1	7.3	18526-2	6.6	+
10	Basic impact level of complete protectors	16321-1	7.4	18526-3	7.3	+
11	Resistance to thermal exposure	16321-1	7.5	18526-3	6.7	+
12	Resistance to UV radiation	16321-1	7.6	18526-3	6.8.3	+
13	Resistance to corrosion	16321-1	7.7	18526-3	6.9	n.a.
14	Resistance to ignition	16321-1	7.8	18526-3	6.10	+
15	High-speed impact resistance impact level E	16321-1	7.10	18526-3	7.3.2	+
See the measurement report 1 for the individual results of each test sample.						

Samples and summary of the test results

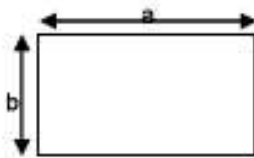
Type: Clear plate, Exolon GP clear 099						
Test report: 00411-ECS-24						
Number of delivered samples: 30				EN-assessment		
Number of test samples: 30						
Test sequence	Requirement	Tests				Samples 24041-1 to -30
		according to				
		EN	Clause	EN	Clause	
1	Marking	166	9.2			n.a.
2	Information delivered by the manufacturer / applicant	166	10			n.a.
3	General construction and material requirements	166	6.1 6.2			+
4	Headband	166	6.3			n.a.
5	Quality of material and surface	166	7.1.3	167	5	+
6	Field of vision	166	7.1.1	168	18	n.a.
7	Spherical + astigmatic refractive powers	166	7.1.2	167	3.2	+
8	Prism imbalance	166	7.1.2	167	3.2	+
9	Luminous transmittance rel. NA / D65	166	7.1.2	167	6	+
10	Diffusion of light	166	7.1.2	167	4	+
11	Resistance to ageing - temperature	166	7.1.5	168	5	+
12	Resistance to ageing - UV radiation	166	7.1.5	168	6	+
13	Increased robustness (S)	166	7.1.4	168	3.1	+
14	Protection against high-speed particles, medium energy impact (B)	166	7.2.2	168	9	+
15	Resistance to ignition	166	7.1.7	168	7	+
16	Resistance to corrosion	166	7.1.6	168	8	n.a.
See the measurement report 1 for the individual results of each test sample.						

Test mark: 00411-ECS-24

Type: Clear plate, Exolon GP clear 099

Measurement Report 1

Description of the type - general construction

Design:		Clear plates cut out from a polycarbonate sheet. Middle thickness of the lens / mm: 1.0 ± 0.05 Dimensions: a / mm: 101 b / mm: 101
Clear plate:	Identification mark: none Material: Polycarbonate	
Information brochure / instruction manual	The information brochure and the technical documentation have not been provided.	

Quality of material and surface, field of vision, lateral protection, refractive powers, prism imbalance Wide scattered light (haze), transmission

			24041					
			-1	-2	-3	-4	-5	-6
quality of material and surface			+	+	+	+	+	+
spherical power	R	dpt	0.00	+0.01	+0.01	0.00	0.00	+0.01
	L	dpt	0.00	0.00	+0.01	0.00	+0.01	+0.01
astigmatic power	R	dpt	0.00	0.00	0.00	0.00	0.00	0.00
	L	dpt	0.00	0.00	0.00	0.00	0.00	0.00
prism imbalance (horizontal/vertical)		cm / m	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00
optical class (EN 166 requirement)			1	1	1	1	1	1
enhanced optical performance (optional ISO 16321-1 requirement)			+	+	+	+	+	+
wide scattered light, haze	R	%	0.3	0.2	0.2	0.3	0.2	0.2
	L	%	0.1	0.6	0.2	0.3	0.2	0.2
luminous transmittance rel. NA _v		%	89.0	89.1	89.2	89.2	89.1	89.0
luminous transmittance rel. D65 _v		%	89.0	89.1	89.1	89.1	89.1	89.0

Test mark:	00411-ECS-24
Type:	Clear plate, Exolon GP clear 099

Quality of material and surface, refractive powers, prism imbalance after test to thermal ageing

		24041		
		-1	-2	-3
quality of material and surface		no deformations after thermal ageing		
spherical power	dpt	+0.01 +0.01	+0.01 +0.01	+0.01 +0.01
astigmatic power	dpt	0.00 0.00	0.00 0.00	0.00 0.00
prismatic power / prism imbalance (horizontal/vertical)	cm / m	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00

Quality of material and surface, diffusion of light, transmission after test to UV ageing

		24041			
		-5 R	-5 L	-6 R	-6 L
quality of material and surface		no surface modifications or cracks after UV ageing and after breathing on the surface			
reduced luminance coefficient, diffusion of light	$\frac{\text{cd/m}^2}{\text{lx}}$	0.09	0.08	0.04	0.04
wide scattered light, haze	%	0.3	0.2	0.2	0.3
luminous transmittance rel. NA _v	%	88.6	88.5	88.5	88.6
relative change	%	0.6	0.8	0.5	0.6

Test mark: 00411-ECS-24

Type: Clear plate, Exolon GP clear 099

Basic impact level / increased robustness
EN ISO 16321-1 and EN 166 requirements; combined tests

	test temperature / °C	test point	results
24041-7	-5	frontal	+
24041-8	-5	frontal	+
24041-9	-5	frontal	+
24041-10	-5	frontal	+
24041-11	-5	frontal	+
24041-12	-5	frontal	+
24041-13	+55	frontal	+
24041-14	+55	frontal	+
24041-15	+55	frontal	+
24041-16	+55	frontal	+
24041-17	+55	frontal	+
24041-18	+55	frontal	+

Test mark: 00411-ECS-24

Type: Clear plate, Exolon GP clear 099

**High-speed impact resistance, impact level E /
 protection against high-speed particles / resistance to medium energy impact (B)
 EN ISO 16321-1 and EN 166 requirement**

	test temperature / °C	test point	speed / m/s	results
24041-19	RT	frontal	.	+
24041-20	RT	frontal	.	+
24041-21	RT	frontal	.	+
24041-22	RT	frontal	.	+
24041-23	RT	frontal	.	+
24041-24	RT	frontal	.	+
24041-25	RT	frontal	.	+
24041-26	RT	frontal	.	+
24041-27	RT	frontal	.	+
24041-28	RT	frontal	.	+
24041-29	RT	frontal	.	+
24041-30	RT	frontal	.	+

Test mark:	00411-ECS-24
Type:	Clear plate, Exolon GP clear 099

Resistance to ignition

	24041
	-10 -11 -12
flammability	no ignition, no further glowing

Resistance to corrosion

	24041
	-7 -8 -9
corrosion	no bare metal parts

● **End of Measurement Report 1**