



# TEST REPORT

Applicant: Guilin Refine Medical Instrument Co., LTD  
 Address: NO.8-3, Information Industrial Park, High-Tech Zone, Qixing District, Guilin, Guangxi, 541004, P.R.China

Report No: C80282070  
 Date: April 26, 2020

Attn: Chen Ju Dong  
 Sample Description : Face Shield  
 Submitted sample(s) said to be : 20 pieces  
 Item No. : B  
 Device Type: : Face Shield  
 Material : Polymer material  
 Frame Color : Transparent  
 Lens Color : Transparent  
 Lenses Type : Uniform  
 P.O. No. : Not Provided  
 Age Grade : Not Provided  
 Supplier : Guilin Refine Medical Instrument Co., LTD  
 Buyer : Not Provided  
 Goods exported to : Not Provided  
 Country of origin : Not Provided  
 Date(s) of samples received : April 13, 2020  
 Date of Test Period : April 13, 2020 – April 26, 2020

## REMARK

The Personal eye - protection test was performed at an UL approved subcontract lab.  
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Subcontract Report No.: PL 2004384

Notes: The results relate only to the items tested.

For and on behalf of :

UL VS Shanghai Limited Shenzhen Branch

*Hedy Li*



Hedy Li  
 Consumer Engineering Manager  
 Eyewear Testing Department

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SZ-FAF-001 (2017-10-12)



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**Applicant:** Guilin Refine Medical Instrument Co., LTD  
**Address of Applicant:** NO.8-3, Information Industrial Park, High-Tech Zone, Qixing District, Guilin, Guangxi, 541004, P.R. China  
**Date of Receiving Samples:** Apr 14, 2020  
**Testing Period:** Apr 14, 2020 to Apr 18, 2020

**Description of Samples**

The submitted sample and sample information was/were submitted and identified by/on behalf of client;

**Sample Name:** Face Shield  
**Model No.:** B  
**Quantity:** 12 Pairs  
**Material:** Plastic  
**Scale No.:** Not provided  
**Frame Color:** Transparent  
**Lenses Color:** Transparent  
**P.O. No.:** Not provided  
**Supplier / Brand:** Not provided  
**Buyer:** Not provided  
**Goods exported to:** Not provided  
**Country of Origin:** China

**Requested Standard:** EN 166: 2001 Personal eye - protection – Specifications  
 EN 167: 2001 Personal eye - protection – Optical test methods  
 EN 168: 2001 Personal eye - protection - Non-optical test methods

**Results/Remarks:** Please refer to the following page(s).

Issued by stamp

Date of Issued: Apr 25, 2020

For and on behalf of:

Shenzhen Precision Eyewear  
Testing & Inspection Services Co., Ltd.

Manager: WenHua Li





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### Tests Conducted

**Note:** The applicant's attention was drawn that the manufacturer should not use the frame materials which are known to cause irritation, allergic or toxic reaction during wear in a normal state of health against significant proportion of users.

Requirement		Testing				Results <sup>1</sup>
		According to Clause		According to		
		EN	Clause	EN	Clause	
General construction		166	6.1	--	--	P
Materials (Nickel release)		166	6.2	--	--	NA
Headbands		166	6.3	--	--	P
Field of vision		166	7.1.1	168	18	P
Refractive powers (Unmounted oculars covering one eye)	Spherical refractive powers	166	7.1.2.1.1	167	3.1	NA
	Astigmatic refractive powers					
	Prismatic refractive powers					
Refractive powers (Mounted oculars and covering both eyes)	Spherical refractive powers	166	7.1.2.1.2	167	3.2	Optical Class 1
	Astigmatic refractive powers					
	Prismatic refractive powers					
Transmittance	Oculars without filtering action	166	7.1.2.2.1	167	6	P
	Oculars with filtering action	166	7.1.2.2.2	167	6	NA
	Ultraviolet Filter	170	4	167	6	NA
	Sunglare Filter for Industrial Use	172	4.1	167	6	NA
Variations in transmittance (Exempt oculars without filtering action)	Oculars without corrective effect	166	7.1.2.2.3.1	167	7	NA
	Oculars with corrective effect	166	7.1.2.2.3.2	167	7	NA



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**Tests Conducted**

Requirement  Test Items		According to Clause		Testing		Results
		EN	Clause	According to		
				EN	Clause	
Diffusion of light		166	7.1.2.3	167	4	P
Quality of material and surface		166	7.1.3	167	5	P
Minimum robustness <sup>2</sup>		166	7.1.4.1	168	4	NA
Increased robustness	Unmounted oculars	166	7.1.4.2.1	168	3.1	NA
	Complete eye-protectors and frame	166	7.1.4.2.2	168	3.2	P
Stability at an elevated temperature		166	7.1.5.1	168	5	P
Resistance to ultraviolet radiation (oculars only)		166	7.1.5.2	168	6	P
Resistance to corrosion (All metal parts only)		166	7.1.6	168	8	NA
Resistance to ignition		166	7.1.7	168	7	P
Protection against high-speed particles		166	7.2.2	168	9	NA
Protection against droplets and splashes		166	7.2.4	168	12	P
Lateral protection		166	7.2.8	168	19	P
Resistance to fogging of oculars		166	7.3.2	168	16	P
Information supplied by the manufacturer		166	10	--	--	P

Remarks: 1. P = Pass; F = Fail; NA = Not Applicable; NR= Not require; X=Checked.

2. This requirement relates only to cover plates and oculars with filtering effect and not be assessed if these items are intended to meet the requirements for increased robustness or resistance to high speed particles, in which case the requirements of 7.1.4.2 or 7.2.2 shall be met.

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### Test Result

#### General construction — Clause 6.1/ Headbands – Clause 6.3

Sample No.	General construction		Headbands				Comment	Result(s)
	Defects		Width		Adjustable			
	Observed	Absent	Pass	Fail	Yes	No		
2004384-(01~03)		X	X		X		--	P
Requirements:								
1. General construction: Eye-Protectors shall be free of projections, sharp edges or other defects which are likely to cause discomfort or injury during use.								
2. Headbands: shall be at least 10mm wide over any portion which may come into contact with the wearer's head, and shall be adjustable or self-adjusting;								

#### Field of vision — Clause 7.1.1 / EN 168:2001 Clause 18

Sample No.	Head-form		Exhibit minimum field of vision defined in the standard		Comment	Result(s)
	Medium	Small	Yes	No		
2004384-(01~03)	X		X		--	P
Requirements:						
Eye-Protectors shall be exhibit field of vision an area of not less than 22 mm in the horizontal length and 20mm in the vertical width in front of each eye.						

#### Refractive powers— Clause 7.1.2.1 .2 / EN 167:2001 Clause 3.2

Sample No.	Refractive powers				Difference in prismatic refractive powers (cm/m)			Result(s)
	Spherical (m <sup>-1</sup> )		Astigmatic (m <sup>-1</sup> )		Horizontal		Vertical	
	Left	Right	Left	Right	Base Out	Base In		
2004384-01	0.00	0.00	0.00	0.04	0.08	--	0.00	Optical class 1
2004384-02	0.00	0.00	0.00	0.04	0.10	--	0.00	
2004384-03	0.00	0.00	0.00	0.00	0.10	--	0.02	

Requirement: Permissible tolerances for refractive powers :

Optical class 1	±0.06	0.06	0.75	0.25	0.25
Optical class 2	±0.12	0.12	1.00	0.25	0.25
Optical class 3	+0.12~-0.25	0.25	1.00	0.25	0.25

Measurement Uncertainty (if necessary):



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**Test Result**

**Transmittance (without filtering action) — Clause 7.1.2.2/ EN 167:2001 Clause 6**

Sample No.	Requirements	Luminous Transmittance, $T_v$ (%)		Result(s)
		Left	Right	
2004384-01	$T_v > 74.4\%$	89.6	89.9	P
2004384-02		90.6	90.3	P
2004384-03		89.9	90.0	P

Measurement Uncertainty (if necessary):

**Diffusion of light — Clause 7.1.2.3 / EN 167:2001 Clause 4**

Sample No.	Samples type	Diffusion of light ( $cd/m^2$ ) / lx		Result(s)
		Left	Right	
2004384-01	III	0.11	0.08	P
2004384-02		0.26	0.17	P
2004384-03		0.14	0.11	P

**Requirements:**

The maximum value of the reduced luminance factor shall be :

- I 1.00( $cd/m^2$ ) / lx for welding filter;
- II 0.75( $cd/m^2$ ) / lx for oculars used in eye-protectors against high speed particles;
- III 0.50 ( $cd/m^2$ ) / lx for all other oculars;

Measurement Uncertainty (if necessary):



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### Test Result

#### Quality of material and surface — Clause 7.1.3 / EN 167:2001 Clause 5

Sample No.	Defects		Comment	Result(s)
	Observed	Absent		
2004384-(01~03)		X	--	P

**Requirements:**

Except in a marginal area 5 mm wide, oculars shall be free from any significant defects likely to impair vision in use, such as bubbles, scratches, inclusions, dull spots, pitting, mould marks, scouring, grains, pocking, scaling and undulation.

#### Increased robustness — Clause 7.1.4.2 / EN 168:2001 Clause 3.2

Sample No.	Test temperature (°C)	Test position	Defects		Comment	Result(s)
			Observed	Absent		
2004384-(04~05)	55	Left Frontal		X	--	P
2004384-06		Left Lateral		X	--	P
2004384-(07~08)	-5	Left Frontal		X	--	P
2004384-09		Left Lateral		X	--	P
2004384-(04~05)	55	Right Frontal		X	--	P
2004384-06		Right Lateral		X	--	P
2004384-(07~08)	-5	Right Frontal		X	--	P
2004384-09		Right Lateral		X	--	P

**Requirements:**

The following defects shall not occur:

- Ocular fracture;
- Ocular deformation;

#### Stability at an elevated temperature — Clause 7.1.5.1 / EN 168:2001 Clause 5

Sample No.	Apparent deformation		Comment	Result(s)
	Observed	Absent		
2004384-(04~06)		X	--	P

**Requirements:**

Assembled eye-protectors shall show no apparent deformation;



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### Test Results

#### Resistance to ultraviolet radiation (oculars only) — Clause 7.1.5.2 / EN 168:2001 Clause 6

Samples type		Sample No.					
Other oculars		2004384-01		2004384-02		2004384-03	
Test Items		Left	Right	Left	Right	Left	Right
The relative change of luminous transmittance (%)	Before Expose	89.6	89.9	90.6	90.3	89.9	90.1
	After Expose	89.6	89.1	90.2	90.0	89.9	89.7
	Difference	0.0	-0.2	-0.4	-0.3	-0.2	-0.4
Reduced scattered light coefficient (cd/m <sup>2</sup> ) / lx	Before Expose	0.11	0.08	0.26	0.17	0.14	0.11
	After Expose	0.13	0.12	0.13	0.17	0.13	0.14
Result(s)		P		P		P	
Requirements:							
1. The relative change of luminous transmittance			2. Reduced scattered light coefficient				
Luminous transmittance		Permissible relative change (%)			The maximum value of the reduced luminance factor shall be:		
Less than (%)	Up to (%)	Change (%)			- 1.00(cd/m <sup>2</sup> ) / lx for welding filter;		
100	17.8	±5			- 0.75(cd/m <sup>2</sup> ) / lx for oculars used in eye-protectors against high speed particles;		
17.8	0.44	±10			- 0.50 (cd/m <sup>2</sup> ) / lx for all other oculars;		

Measurement Uncertainty (if necessary):

#### Resistance to ignition — Clause 7.1.7 / EN 168:2001 Clause 7

Sample No.	Continued combustion		Comment	Result(s)
	Yes	No		
2004384-(04~06)		X	--	P
Requirements:				
Eye-protectors shall be considered to be satisfactory if no parts ignites or continues to glow after removal of the steel rod.				



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#### Protection against droplets and splashes— Clause 7.2.4 / EN 168:2001 Clause 12

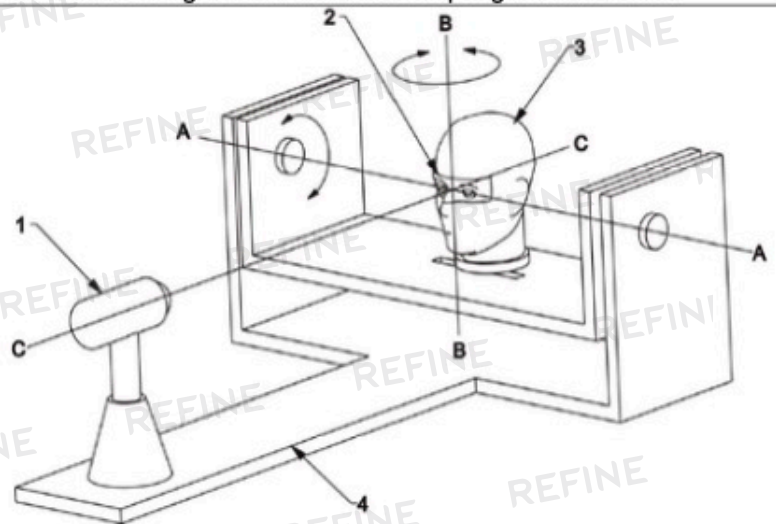
Sample No.	Test Point	Contact		Comment	Results
		Yes	No		
2004384-(10~12)	a		X	--	P
	b		X	--	P
	c		X	--	P
	d		X	--	P
	e		X	--	P
	f		X	--	P

#### Requirements:

As a failure any location where laser beam contacts the rectangle without first intercepting the faceshield.

#### Test Point:

- Facing forwards and rotated  $(45\pm 1)^\circ$  forwards about horizontal axis A
- Facing forwards and rotated  $(45\pm 1)^\circ$  backwards about horizontal axis A
- Rotated  $(90\pm 1)^\circ$  to the left about vertical axis B and rotated  $(45\pm 1)^\circ$  forwards about horizontal axis A
- Rotated  $(90\pm 1)^\circ$  to the left about vertical axis B and rotated  $(45\pm 1)^\circ$  backwards about horizontal axis A
- Rotated  $(90\pm 1)^\circ$  to the right about vertical axis B and rotated  $(45\pm 1)^\circ$  forwards about horizontal axis A
- Rotated  $(90\pm 1)^\circ$  to the right about vertical axis B and rotated  $(45\pm 1)^\circ$  backwards about horizontal axis A



#### Key

- laser beam or cylindrical tube fitted with cross wires
- rectangle enclosing the eye region
- headform
- support frame

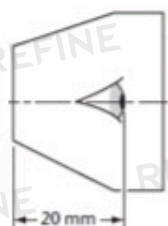
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### Test Results

#### Lateral Protection — Clause 7.2.8 / EN 168:2001 Clause 19

Sample No.	Lateral region coverage		Comment	Result(s)
	Pass	Fail		
2004384-(01~03)	X		---	P
Requirements: Eye-protectors claimed to lateral protection shall pass the lateral region coverage. These region being a 20mm wide with 10 mm radial ends struck from the front and side impact points (See figure 1)			Figure 1: 	

#### Resistant to Fogging of Oculars — Clause 7.3.2/ EN 168:2001 Clause 16

Sample No.	Position	After Fogging Test Evaluation		Comment	Result
		Fogging	Free Fogging		
2004384-10	Left		X	--	P
	Right		X	--	P
Requirements: If oculars are described as resistant to fogging they shall remain free from fogging for a minimum of 8s.					



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**Test Results**

**Information supplied by the manufacturer — Clause 10**

The manufacturer shall be provided with each eye-protector at least the following information:

Information	Results
Name and address of the manufacturer	P
The number of this standards	P
The eye-protector model identification	P
Instructions for storage, use and maintenance	P
Specific instructions for cleaning and disinfection	P
Details of the filed of use, protection capabilities and performance characteristics	P
The significance of making on the fame and the ocular	P
A warning concerning the compatibility of marking	P
A warning that materials which may come into contact with the wearer's skin could cause allergic reactions to susceptible individuals	P
A warning that scratched or damaged oculars should be replaced	P
A warning that eye-protection against high speed worn over standard ophthalmic spectacles may transmit impacts, thus creating a hazard to the wearer.	P

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Sample Photo:



----Report End----

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