



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



中国认可
国际互认
检测
TESTING
CNAS L2210

Test Report

Report No.: PL2003329

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Applicant: UL VS Shanghai Limited Shenzhen Branch

Address of Applicant: 3- 4F Qingyi Supermask Photoelectricity Building, No.8 Langshan 2nd Road, North High-Tech Industrial Park, Nanshan District, Shenzhen, China

Date of Receiving Samples: Mar 18, 2020

Testing Period: Mar 18, 2020 to Mar 23, 2020

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

Sample Name: Safety Goggle

Model No.: EP01

Quantity: 10 Pairs

Material: Plastic

Scale No.: Not provided

Frame Color: Transparent Blue/ Black

Lenses Color: Clear

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: Mar 23, 2020

For and on behalf of:

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

李红
Manager: WenHua Li

EN166 Testing Report



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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 | | Results¹ | |
|---|---------------------------------------|--------|--------------|--------|----------|--------------------|
| Test Items | 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 |

桂林市锐锋医疗器械有限公司
Guilin Refine Medical Instrument Co., Ltd



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Tests Conducted

| Requirement | | | Testing | | Results | | |
|--|-----------------------------------|---------------------|---------|--------------|---------|--------|----|
| Test Items | | According to Clause | | According to | | | |
| | | EN | Clause | 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 ² | | | 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

| Sample No. | Defects | | Comment | Result(s) |
|---|----------|--------|---------|-----------|
| | Observed | Absent | | |
| 2003329-(01~03) | | X | -- | P |
| Requirements: Eye-Protectors shall be free of projections, sharp edges or other defects which are likely to cause discomfort or injury during use. | | | | |

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 | | |
| 2003329-(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 ⁻¹) | | Astigmatic (m ⁻¹) | | Horizontal | | Vertical | |
| | Left | Right | Left | Right | Base Out | Base In | | |
| 2003329-01 | +0.02 | 0.00 | 0.00 | 0.00 | -- | 0.02 | 0.00 | Optical class 1 |
| 2003329-02 | +0.02 | 0.01 | 0.00 | 0.00 | 0.02 | -- | 0.00 | |
| 2003329-03 | +0.02 | +0.01 | 0.00 | 0.00 | 0.01 | -- | 0.00 | |
| 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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Transmittance (without filtering action) — Clause 7.1.2.2/ EN 167:2001 Clause 6

| Sample No. | Requirements | Luminous Transmittance, τ_v (%) | | Result(s) |
|------------|-------------------|--------------------------------------|-------|-----------|
| | | Left | Right | |
| 2003329-01 | $\tau_v > 74.4\%$ | 91.1 | 91.4 | P |
| 2003329-02 | | 90.7 | 91.1 | P |
| 2003329-03 | | 90.7 | 91.7 | 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 | |
| 2003329-01 | III | 0.04 | 0.07 | P |
| 2003329-02 | | 0.18 | 0.02 | P |
| 2003329-03 | | 0.06 | 0.06 | 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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Quality of material and surface — Clause 7.1.3 / EN 167:2001 Clause 5

| Sample No. | Defects | | Comment | Result(s) |
|---|----------|--------|---------|-----------|
| | Observed | Absent | | |
| 2003329-(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 3.1

| Sample No. | Test temperature (°C) | Test position | Defects | | Comment | Result(s) |
|--|-----------------------|---------------|----------|--------|---------|-----------|
| | | | Observed | Absent | | |
| 2003329-(04~05) | 55 | Left Frontal | | X | -- | P |
| 2003329-06 | | Left Lateral | | X | -- | P |
| 2003329-(07~08) | -5 | Left Frontal | | X | -- | P |
| 2003329-09 | | Left Lateral | | X | -- | P |
| 2003329-(04~05) | 55 | Right Frontal | | X | -- | P |
| 2003329-06 | | Right Lateral | | X | -- | P |
| 2003329-(07~08) | -5 | Right Frontal | | X | -- | P |
| 2003329-09 | | Right Lateral | | X | -- | P |
| Requirements: | | | | | | |
| The following defects shall not occur: | | | | | | |
| 1. ocular fracture: | | | | | | |
| 2. 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 | | |
| 2003329-(04~06) | | X | -- | P |
| Requirements: Assembled eye-protectors shall show no apparent deformation; | | | | |



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

| Samples type | | Sample No. | | | | | |
|---|---------------|----------------------|-------|--|-------|------------|-------|
| Oculars used in eye-protectors against high speed particles | | 2003329-01 | | 2003329-02 | | 2003329-03 | |
| Test Items | | Left | Right | Left | Right | Left | Right |
| The relative change of luminous transmittance (%) | Before Expose | 91.1 | 91.4 | 90.7 | 91.1 | 90.7 | 91.7 |
| | After Expose | 90.9 | 91.6 | 91.1 | 90.5 | 91.3 | 91.9 |
| | Difference | -0.2 | 0.2 | 0.4 | -0.7 | 0.7 | 0.2 |
| Reduced scattered light coefficient (cd/m ²) / lx | Before Expose | 0.04 | 0.07 | 0.18 | 0.02 | 0.06 | 0.06 |
| | After Expose | 0.09 | 0.14 | 0.10 | 0.09 | 0.10 | 0.07 |
| Result(s) | | P | | P | | P | |
| Requirements: | | | | | | | |
| 1. The relative change of luminous transmittance | | | | 2. Reduced scattered light coefficient | | | |
| Luminous transmittance | | Permissible relative | | The maximum value of the reduced luminance factor shall be: | | | |
| Less than (%) | Up to (%) | Change (%) | | | | | |
| 100 | 17.8 | ±5 | | - 1.00(cd/m ²) / lx for welding filter; | | | |
| 17.8 | 0.44 | ±10 | | - 0.75(cd/m ²) / lx for oculars used in eye-protectors against high speed particles; | | | |
| | | | | - 0.50 (cd/m ²) / lx for all other oculars; | | | |

Measurement Uncertainty (if necessary):

Resistance to ignition — Clause 7.1.7 / EN 168:2001 Clause 8

| Sample No. | Continued combustion | | Comment | Result(s) |
|---|----------------------|----|---------|-----------|
| | Yes | No | | |
| 2003329-(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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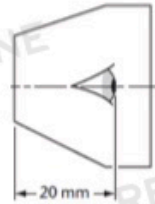
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Lateral Protection — Clause 7.2.8 / EN 168:2001 Clause 19

| Sample No. | Lateral region coverage | | Comment | Result(s) |
|---|-------------------------|------|--|-----------|
| | Pass | Fail | | |
| 2003329-(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 | | |
| 2003329-10 | 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. | | | | | |

Protection against chemical droplets — Clause 7.2.4 / EN 168:2001 Clause 12

| Sample No. | Shows a Crimson | | Comment | Result(s) |
|---|-----------------|--------|---------|-----------|
| | Observed | Absent | | |
| 2003329-(11~13) | | X | -- | P |
| Requirements: Shall be considered to be satisfactory if no spray solution penetrate goggles. | | | | |



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Information supplied by the manufacturer — Clause 10

| Sample No. | Observed Result | | Comment | Result |
|------------|-----------------|---------|---------|--------|
| | Meet | No Meet | | |
| 2003329-01 | X | | — | P |

Requirements:

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

- Name and address of the manufacturer
- The number of this standards
- The eye-protector model identification
- Instructions for storage, use and maintenance
- Specific instructions for cleaning and disinfection
- Details of the final of use, protection capabilities and performance characteristics
- The significance of making on the frame and the ocular
- A warning concerning the compatibility of marking

Sample Photo:



-----Report End-----

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