# Test Report



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|---|---|
| **Applicant:** | **Topdio Technical Co.,Ltd** |
| **Address of Applicant:** | **8/F,Block A,Huafeng Industrial Area,Nanchang Road,Hangcheng Street,Bao'an District, Shenzhen ,China** |
| **Date of Receiving Samples:** | **Apr 15, 2020** |
| **Testing Period:** | **Apr 15, 2020 to Apr 21, 2020** |

**Description of Samples**

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

| | |
|---|---|
| **Sample Name:** | **Safety goggles** |
| **Model No.:** | **JN-01 VS2020-1** |
| **Quantity:** | **12 Pairs** |
| **Material:** | **Plastic** |
| **Scale No.:** | **Not provided** |
| **Frame Color:** | **Blue/White** |
| **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).**

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TESTING SERVICE

**Issued by stamp**
**Date of Issued: Apr 21, 2020**
**For and on behalf of:**
**Shenzhen Precision Eyewear**
**Testing & Inspection Services Co., Ltd.**

**Manager: WenHua Li**

## 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[1] |
|---|---|---|---|---|---|---|
| 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 |

## 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 | NA |
| Lateral protection | | 166 | 7.2.8 | 168 | 19 | P |
| Resistance to fogging of oculars | | 166 | 7.3.2 | 168 | 16 | NA |
| Information supplied by the manufacturer | | 166 | 10 | -- | -- | NR |

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.

## 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 | | |
| 2004410-(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 | | |
| 2004410-(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 | | |
| 2004410-01 | +0.02 | 0.00 | 0.00 | 0.00 | -- | 0.01 | 0.00 | Optical class 1 |
| 2004410-02 | +0.02 | +0.01 | 0.00 | 0.00 | -- | 0.01 | 0.00 | |
| 2004410-03 | +0.02 | +0.01 | 0.00 | 0.00 | -- | 0.01 | 0.01 | |
| 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):

## Test Result

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

| Sample No. | Requirements | Luminous Transmittance, $\tau_v$ (%) | | Result(s) |
|---|---|---|---|---|
| | | Left | Right | |
| 2004410-01 | $\tau_v > 74.4\%$ | 92.5 | 93.1 | P |
| 2004410-02 | | 91.4 | 91.9 | P |
| 2004410-03 | | 91.9 | 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/m²) / lx | | Result(s) |
|---|---|---|---|---|
| | | Left | Right | |
| 2004410-01 | Ⅲ | 0.07 | 0.04 | P |
| 2004410-02 | | 0.07 | 0.03 | P |
| 2004410-03 | | 0.08 | 0.02 | P |

Requirements:
The maximum value of the reduced luminance factor shall be :
Ⅰ 1.00(cd/m²) / lx for welding filter;
Ⅱ 0.75(cd/m²) / lx for oculars used in eye-protectors against high speed particles;
Ⅲ 0.50 (cd/m²) / lx for all other oculars;

Measurement Uncertainty (if necessary):

## Test Result

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

| Sample No. | Defects | | Comment | Result(s) |
|---|---|---|---|---|
| | Observed | Absent | | |
| 2004410-(01~03) | | X | -- | P |
| Requirements:<br>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 (℃) | Test position | Defects | | Comment | Result(s) |
|---|---|---|---|---|---|---|
| | | | Observed | Absent | | |
| 2004410-(04~05) | 55 | Left Frontal | | X | -- | P |
| 2004410-06 | | Left Lateral | | X | -- | P |
| 2004410-(07~09) | -5 | Left Frontal | | X | -- | P |
| 2004410-09 | | Left Lateral | | X | -- | P |
| 2004410-(04~05) | 55 | Right Frontal | | X | -- | P |
| 2004410-06 | | Right Lateral | | X | -- | P |
| 2004410-(07~09) | -5 | Right Frontal | | X | -- | P |
| 2004410-09 | | Right Lateral | | X | -- | P |
| Requirements:<br>The following defects shall not occur:<br>1. ocular fracture:<br>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 | | |
| 2004410-(04~06) | | X | -- | P |
| Requirements:<br>Assembled eye-protectors shall show no apparent deformation; | | | | |

## Test Results

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

| Samples type | | Sample No. | | | | | |
|---|---|---|---|---|---|---|---|
| other oculars | | 2004410-01 | | 2004410-02 | | 2004410-03 | |
| **Test Items** | | **Left** | **Right** | **Left** | **Right** | **Left** | **Right** |
| The relative change of luminous transmittance (%) | Before Expose | 92.5 | 93.1 | 91.4 | 91.9 | 91.9 | 91.7 |
| | After Expose | 91.8 | 92.6 | 91.1 | 92.0 | 91.6 | 92.3 |
| | Difference | -0.8 | -0.5 | -0.3 | +0.1 | -0.3 | -0.7 |
| Reduced scattered light coefficient (cd/m²) / lx | Before Expose | 0.07 | 0.04 | 0.07 | 0.03 | 0.08 | 0.02 |
| | After Expose | 0.05 | 0.04 | 0.06 | 0.03 | 0.09 | 0.04 |
| **Result(s)** | | P | | P | | P | |

Requirements:

1. The relative change of luminous transmittance

| Luminous transmittance | | Permissible relative Change (%) |
|---|---|---|
| **Less than (%)** | **Up to (%)** | |
| 100 | 17.8 | ±5 |
| 17.8 | 0.44 | ±10 |

2. Reduced scattered light coefficient
The maximum value of the reduced luminance factor shall be:
- 1.00(cd/m²) / lx for welding filter;
- 0.75(cd/m²) / lx for oculars used in eye-protectors against high speed particles;
- 0.50 (cd/m²) / lx for all other oculars;

Measurement Uncertainty (if necessary):

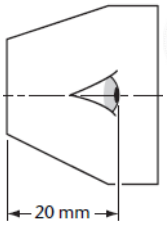
**Resistance to ignition — Clause 7.1.7 / EN 168:2001 Clause 7**

| Sample No. | Continued combustion | | Comment | Result(s) |
|---|---|---|---|---|
| | **Yes** | **No** | | |
| 2004410-(04~06) | | X | -- | P |

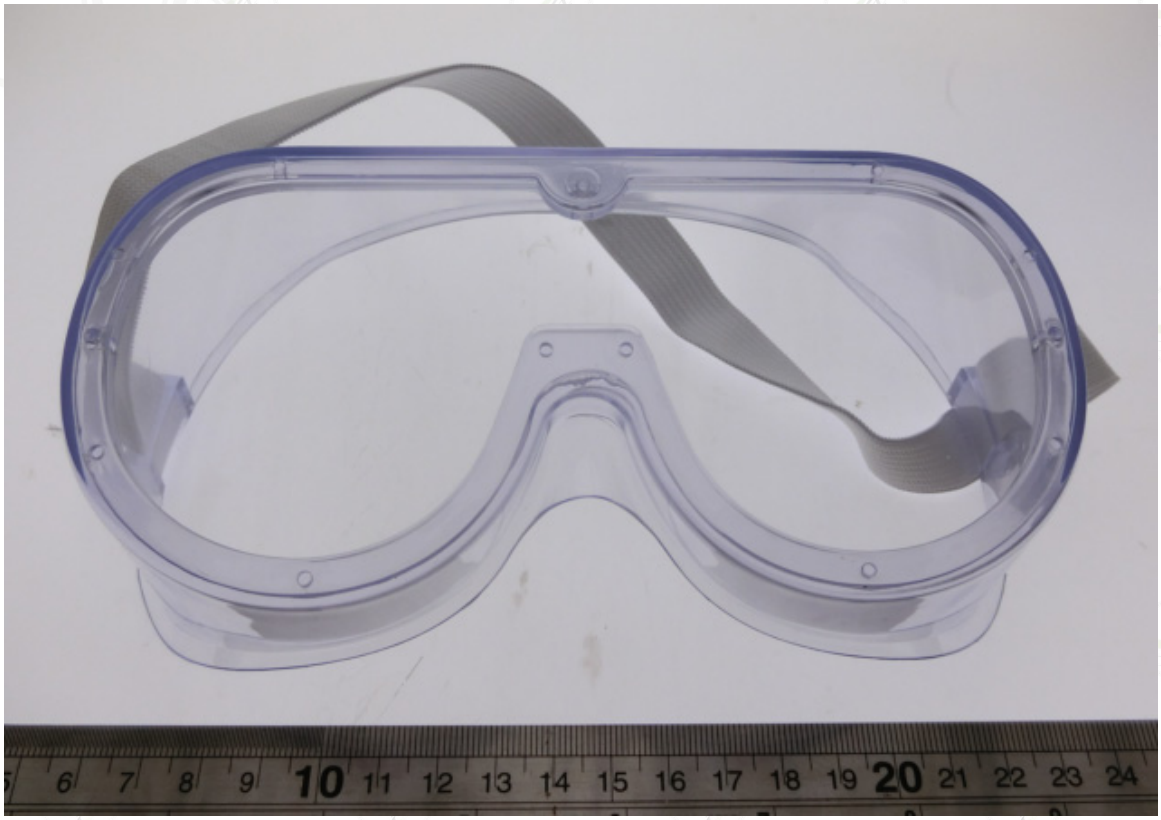
Requirements:
Eye-protectors shall be considered to be satisfactory if no parts ignites or continues to glow after removal of the steel rod.

## Test Results

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

| Sample No. | Lateral region coverage | | Comment | Result(s) |
|---|---|---|---|---|
| | Pass | Fail | | |
| 2004410-(01~03) | X | | --- | P |
| Requirements:<br>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:**   | |

**Sample Photo:**



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