

TEST REPORT

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;

Report Reference No. : TZRPS20200410037

Tested by
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Checked by
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David Choi

Approved by
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Kevin Zhang

Date of issue : Apr 10, 2020

Testing laboratory : AMTRE VERITAS STANDARD TECHNICAL TESTING LTD
Address : No. 96 Holcroft House Ingrave Street London, United Kingdom

Applicant's name :
Address :

Manufacturer's name .

Address .

Factory's name :
Address :

Test specification:

Standard : EN 166: 2001
 EN 167: 2001
 EN 168: 2001

Test procedure : CE

Non-standard test method..... : N/A

Test item description :

Trade Mark..... :

Product Name:..... : Safety Gog-

gles

Test case verdicts:

Test case does not apply to the test object: N/A

Test object does meet the requirement: Pass (P)

Test object does not meet the requirement ...: Fail (F)

Testing:

Date of receipt of test item: Apr 03, 2020

Date(s) of performance of test: Apr 03, 2020 to Apr 10, 2020

General remarks:

The test results presented in this report relate only to the item(s) tested.

This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

"(see remark #)" refers to a remark appended to the report.

"(see Annex #)" refers to an annex appended to the report. "(see

appended table)" refers to a table in the Test Report.

Throughout this report a comma (point) is used as the decimal separator.

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		
		According to Clause			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	
Lateral protection	166	7.2.8	168	19	P	
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.

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Test Result

General construction — Clause 6.1

Sample No.	Defects		Comment	Result(s)
	Observed	Absent		
2003412-(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		
2003412-(01~03)	X		X		--	P

Requirements:

Eye-Protectors shall 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		
2003412-01	+0.01	0.00	0.00	0.00	--	0.01	0.00	Optical class 1
2003412-02	+0.02	+0.01	0.00	0.00	--	0.01	0.01	
2003412-03	+0.02	0.00	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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Test Result

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	
2003412-01	$\tau_v > 74.4\%$	91.7	91.6	P
2003412-02		92.1	92.4	P
2003412-03		91.9	91.9	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	
2003412-01	III	0.22	0.03	P
2003412-02		0.18	0.21	P
2003412-03		0.03	0.03	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):

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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		
2003412-(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		
2003412-(04~05)	55	Left Frontal		X	--	P
2003412-06		Left Lateral		X	--	P
2003412-(07~08)	-5	Left Frontal		X	--	P
2003412-09		Left Lateral		X	--	P
2003412-(04~05)	55	Right Frontal		X	--	P
2003412-06		Right Lateral		X	--	P
2003412-(07~08)	-5	Right Frontal		X	--	P
2003412-09		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		
2003412-(04~06)		X	--	P
Requirements: 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.					
Oculars used in eye-protectors against high speed particles		2003412-01		2003412-02		2003412-03	
Test Items		Left	Right	Left	Right	Left	Right
The relative change of luminous transmittance (%)	Before Expose	91.7	91.6	92.1	92.4	91.9	91.9
	After Expose	92.2	92.1	91.6	91.5	91.3	91.5
	Difference	0.5	0.5	-0.5	-1.0	-0.7	-0.4
Reduced scattered light coefficient (cd/m ²) / lx	Before Expose	0.22	0.03	0.18	0.21	0.03	0.03
	After Expose	0.06	0.19	0.23	0.20	0.04	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

a) 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 8

Sample No.	Continued combustion		Comment	Result(s)
	Yes	No		
2003412-(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 Number	Lateral region coverage		Comment	Result(s)
	Pass	Fail		
2003412-01	X		---	P
2003412-02	X		---	P
2003412-03	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: 	

PHOTO APPENDIX



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ARTWORK OF MARKING LABEL

Safety Goggles

MODEL NO: /

STANDARD:

EN166: 2001

EN167: 2001

EN168: 2001

Taizhou Rapusel Glasses Co.,Ltd.

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MADE IN CHINA

MANUFACTURE DATE: