

Test Report

Report No.: PL 2412222

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Date of Receiving Samples: Nov 26, 2024

Testing Period: Nov 26, 2024 to Jan 03, 2025

Description of Samples

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

Sample Name: Safety Spectacle
Model No.: HF085-C, HF085-IO, HF085-Y, HF085-G
Device Type: ☒ Spectacles ☐ Goggles ☐ Face Shields
Quantity: 65 Pairs
Material: Plastic
Frame Color: See "Sample Photo"
Lenses Color: See "Sample Photo"
Cat. No.: Not Provided
Order No.: Not Provided
Manufacturer/Supplier: Not Provided
Brand: Not provided
Buyer: Not provided
Country of Destination: Not provided
Country of Origin: Not provided

Tests Conducted: As requested by the applicant, refer to attached page(s) for details.

Issued by stamp

Date of Issued: Jan 03, 2025

For and on behalf of:

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



Manager: WenHua Li

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To be continued

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Sample photo(s):

							
ID No.	01	Frame Color	Black/White	ID No.	02	Frame Color	Black/White
Model No.	HF085-C	Lenses Color	Clear	Model No.	HF085-IO	Lenses Color	Mirror Silver
							
ID No.	03	Frame Color	Black/White	ID No.	04	Frame Color	Black/White
Model No.	HF085-Y	Lenses Color	Yellow	Model No.	HF085-G	Lenses Color	Grey

Conclusion:

ID No.	Model No.	Standard	Result(s)
01	HF085-C	ANSI / ISEA Z87.1 - 2020 Occupation and Educational Personal Eye and Face Protection Devices, only test the related parameters, please refer to "Tests Conducted Summary" for details.	Pass
02	HF085-IO		Pass
03	HF085-G		Pass
04	HF085-Y		Pass

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Tests Conducted Summary

CLAUSES	REQUIREMENTS		RESULTS			
			ID 01	ID 02	ID 03	ID 04
5. Fundamental Design Requirements for All Protectors						
5.1 Optical Requirements						
5.1.1	Optical Quality		P	P	P	P
5.1.2	Luminous Transmission (Applicable for clear lenses)		P	NA	P	NA
5.1.3	Haze (Applicable for clear plano lenses)		P	NA	P	NA
5.1.4	Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors (Exempt from the requirement for the filter lenses of shade 9 or higher.)		P	P	P	P
5.2	Physical Requirements		P	P	P	P
5.2.1	Drop Ball Impact Resistance (Protector first tested to and meeting the requirements of Section 7.1.4 are exempt from drop ball impact testing.)		NA			
5.2.2	Ignition (exclusive of textiles or elastic bands)		P	P	P	P
5.2.3	Corrosion Resistance of Metal Components		NA (No Metal Part)			
5.2.4	Minimum Coverage Area		P			
5.3	Markings		NR			
5.4 Other Requirements						
5.4.1	Vented Goggles	Direct Ventilation	NA			
		Indirect Ventilation	NA			
5.4.4	Frames for Removable Lenses: All frames which can house removable lenses shall be supplied with detailed specifications on the required lens bevel design or mounting technique and nominal lens sizing.		NA			
5.5 Replaceable Lenses						
5.5.1	Goggles	Round lenses measuring 50 mm shall have a dimensional tolerance of ± 0.2 mm;	NA			
		Rectangular lenses measuring 51 x 108 mm shall have a dimensional tolerance of ± 0.8 mm.	NA			

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CLAUSES	REQUIREMENTS			RESULTS			
				ID 01	ID 02	ID 03	ID 04
5.6	Aftermarket Components and Accessories: All original equipment manufacturers (OEM) and non-OEM aftermarket components or accessories not sold with the original device shall be tested assembled with the original complete device in the as-worn condition to show compliance with all applicable requirements in Sections 5, 6, 7 and 8 as claimed for the original device.			NA			
6. Optional Design Characteristics (Apply for Relaxed Optical Level “O2”)							
6.1.1	Relaxed Optics Level	Prism and prism imbalance		NA			
		Refractive power		NA			
		Astigmatism		NA			
		Resolving power.		NA			
6.1.2	Luminous transmittance			NA			
6.2	Anti-Fog Properties			NA (No Claim)			
7. Optional Hazard-Specific Protector Requirements (Apply for Impact Mark “+” or “Z87+”)							
7.1.1	Protectors and replaceable components marked for impact protection shall meet applicable requirements of Section 7.1.						
7.1.2	Frames and Shells	High mass impact		NA			
		High Velocity Impact		NA			
7.1.3	Lateral (Side) Coverage			P	P	P	P
7.1.4	Impact Requirements	High Mass Impact		P	P	P	P
		High Velocity Impact		P	P	P	P
		Penetration Test (lenses only)		P	P	P	P
7.1.4.7	Devices with Lift Fronts			NA			
7.2 Optical Radiation Protector Requirements							
7.2.1	Protectors with Clear lenses			NA			
7.2.2.1.1	Transmission Requirement of Ultraviolet Filter Lenses			P (Claim U6)			
7.2.2	Protectors Providing Filtration of Optical Radiation	Visible Light Filters	Transmittance requirements (Refer to ANSI Z80.3:2018)	NA	P	NA	P
			Variations in Luminous Transmittance	NA	P	NA	P
		Transmittance of Non-Lens Components	Spectacles (only apply for Side shields)	P	P	P	P
			Goggles (exempt Frames/housings of face shields are exempt from frame transmittance requirements.	NA			
7.2.2.1.3	Variations in Luminous Transmittance			NA	P	P	P

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CLAUSES	REQUIREMENTS	RESULTS			
		ID 01	ID 02	ID 03	ID 04
7.3. Droplet and Splash, Dust, and Fine Dust Protection Requirements					
7.3.1	Goggles	NA			
7.3.2	Face shields	NA			
7.4	Dust Hazard	NA			
7.5	Fine Dust Hazard	NA			

Remark: #1: P = Pass; F = Fail; NA = Not Applicable, NR=Not Required; X=Checked;

Test Results

Optical Quality — Clause 5.1.1 & 9.1/Physical Requirements — Clause 5.2

Sample No.	ID No.	Defects		Comment	Results
		Observed	Absent		
2412222-01	01		X	--	P
2412222-18	02		X	--	P
2412222-34	03		X	--	P
2412222-50	04		X	--	P

Requirements:

- Optical Quality: Protector lenses shall be free of striae, bubbles, waves and other visible defects which would impair the wearer's vision.
- Physical Requirements: Protectors shall be free from projections, sharp edges or other defects which are likely to cause discomfort or injury during use.

☒ Luminous Transmission (Apply for Clear Plano Lenses only) — Clause 5.1.2 & 9.2

☐ Luminous Transmittance (Apply for Relaxed Optical Level "O2") — Clause 6.1.2 & 9.2

☒ Optical Radiation Protector Requirements - Protectors with Clear Lenses — Clause 7.2.1&9.2

Sample No.	ID No.	Mark or Claim "O2"		Luminous Transmittance (%)		Results
		Yes	No	Left	Right	
2412222-01	01		X	85.7	88.8	P
2412222-34	03		X	86.8	88.6	P

Requirements:

- Clear plano, reader, magnifier and prescription lenses shall have a luminous transmission not less than 85%.
- When mark or claim "O2", protectors with relaxed optics shall have a luminous transmittance of not less than 78%.

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Test Results

Haze (Apply for Clear Plano Lenses only) — Clause 5.1.3&9.3

Sample No.	ID No.	Haze (%)		Results
		Left	Right	
2412222-01	01	0.5	0.6	P
2412222-34	03	0.4	0.4	P
Requirements: Clear plano lens shall exhibit not more than 3% haze.				

Measurement Uncertainty (if necessary):

☒ Refractive Power, Astigmatism, Resolving Power — Clause 5.1.4& 9.4

☐ Relaxed Optics Level — Clause 6.1.1& 9.4

Sample No.	ID No.	Device Type	Spherical Power (D)		Astigmatic Power (D)		Resolving Power(Pattern)		Results
			Left	Right	Left	Right	Left	Right	
2412222-02	01	Spectacle	0.00	0.00	0.01	0.03	> 20	> 20	P
2412222-18	02	Spectacle	0.00	-0.01	0.02	0.02	> 20	> 20	P
2412222-34	03	Spectacle	-0.01	-0.01	0.02	0.04	> 20	> 20	P
2412222-50	04	Spectacle	0.00	-0.01	0.04	0.02	> 20	> 20	P
Specification	Protector		General	Level "O2"	General	Level "O2"	General	Level "O2"	
	Spectacle / Reader		+/- 0.06	+/- 0.13	≤ 0.06	≤ 0.13	Pattern 20	Pattern 17	
	Goggle/Full-facepiece respirator		+/- 0.06	+/- 0.13	≤ 0.06	≤ 0.13	Pattern 20	Pattern 17	
	Faceshield windows/ Loose- fitting respirator		No requirement				Pattern 20	Pattern 17	
	Welding helmet lenses		+/- 0.06	+/- 0.13	≤ 0.06	≤ 0.13	Pattern 20	Pattern 17	

Measurement Uncertainty (if necessary):

☒ Prismatic Power and Prism Imbalance for Plano Protectors — Clause 5.1.4 & 9.4

☐ Relaxed Optics Level — Clause 6.1.1& 9.4

Sample No.	ID No.	Device Type	Prism Imbalance Imbalance(Δ)			Prismatic (Δ)		Results
			Vertical	Horizontal		Left	Right	
				Base Out	Base In			
2412222-02	01	Spectacle	0.02	0.09	--	0.05	0.05	P
2412222-18	02	Spectacle	0.02	--	0.14	0.16	0.03	P
2412222-34	03	Spectacle	0.07	0.21	--	0.19	0.09	P
2412222-50	04	Spectacle	0.03	0.09	--	0.10	0.07	
Specification	Spectacle/ Reader		≤0.25	≤0.50	≤0.25	≤0.50		
	Goggle/Full-facepiece respirator		≍ 0.125	≍ 0.50	≍ 0.125	≍ 0.25		
	Faceshield windows /Loose-fitting respirator		≍ 0.37	≍ 0.75	≍ 0.125	≍ 0.37		
	Welding helmet lenses		≍ 0.25	≍ 0.75	≍ 0.25	≍ 0.50		

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Test Results

Ignition — Clause 5.2.2 & 9.7

Sample No.	ID No.	Continued combustion		Comment	Results
		Observed	Absent		
2412222-03	01		X	--	P
2412222-19	02		X	--	P
2412222-35	03		X	--	P
2412222-51	04		X	--	P
Requirements: Protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.					

Minimum Coverage Area — Clause 5.2.4

Sample No.	ID No.	Type	Test Position	Minimum Coverage area		Comment	Results
				Pass	Fail		
2412222-02	01	Adults	Left	X		---	P
			Right	X		---	P
Requirements:							
1. For adult: the frame, lens housing or carrier and lens(es) shall cover in plane view an area of not less than 40 mm in width and 33 mm in height (elliptical) in front of each eye, centered on the geometrical center of the lens.							
2. For children: the frame, lens housing or carrier and lens(es) shall cover in plane view an area of not less than 34mm in width and 28 mm in height (elliptical), centered on the geometrical center of the lens.							

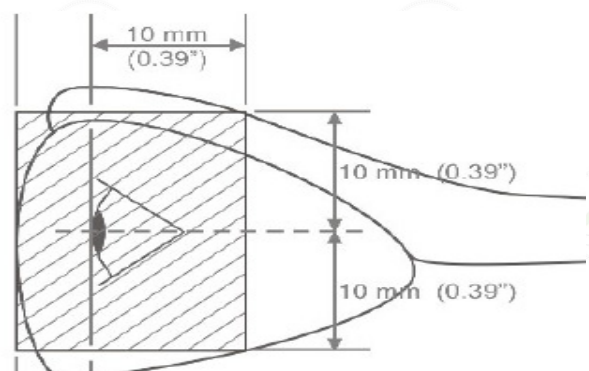
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Test Results

Lateral (Side) Coverage — Clause 7.1.3&9.10

Sample No.	ID No.	Minimum side shield protection		Comment	Results
		Pass	Fail		
2412222-01	01	X		--	P
2412222-18	02	X		--	P
2412222-34	03	X		--	P
2412222-50	04	X		--	P
Requirements: The impact rated protectors shall provide continuous lateral coverage (i.e. no openings greater than 1.5mm in diameter) from the vertical plane of the lenses tangential to a point not less than 10 mm posterior to the corneal plane and not less than 10 mm (0.394 in.) in height (or 8 mm for the smaller headform) above and not less than 10 mm (0.394 in.) in height (or 8 mm for the smaller headform) below the horizontal plane centered on the eyes of the headform. The probe shall not contact the headform within the defined coverage area. (See Figure).				Figure (Medium Headform) 	

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High Mass Impact Test — Clause 7.1.4.2&9.11

Sample No.	ID No.	Impact Position	Defects		Comment	Results
			Observed	Absent		
2412222-(10, 12)	01	Left Center		X	--	P
2412222-(11, 13)		Right Center		X	--	P
2412222-(26, 28)	02	Left Center		X	--	P
2412222-(27, 29)		Right Center		X	--	P
2412222-(42, 44)	03	Left Center		X	--	P
2412222-(43, 45)		Right Center		X	--	P
2412222-(58, 60)	04	Left Center		X	--	P
2412222-(59, 61)		Right Center		X	--	P

Requirements:

A complete device shall fail if any of the following occurs:

- any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste;
- fracture;
- penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface;
- lens not retained;
- for the high-velocity test, the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.

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Test Results

High Velocity Impact Test (Impact-rate protector) — Clause 7.1.4.3 & 9.12

Device Type: Spectacles				Steel ball diameter: ☒ Ø 6.35mm ☐ Ø 6.00mm			
Sample No.	ID No.	Impact Position		Defects		Comment	Results
				Observed	Absent		
2412222-04	01	Left	Center		X	--	P
2412222-05			30° Temporal		X	--	P
2412222-06		Right	Center		X	--	P
2412222-07			30° Temporal		X	--	P
2412222-08		90° above 10mm			X	--	P
2412222-09		90° below 10mm			X	--	P
2412222-20	02	Left	Center		X	--	P
2412222-21			30° Temporal		X	--	P
2412222-22		Right	Center		X	--	P
2412222-23			30° Temporal		X	--	P
2412222-24		90° above 10mm			X	--	P
2412222-25		90° below 10mm			X	--	P

Requirements:

A complete device shall fail if any of the following occurs:

- any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste;
- fracture;
- penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface;
- lens not retained;
- the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.

Table: High Velocity Impact Testing

Device Type	Minimum Velocity(m/s)	
	Ø6.35mm steel ball	Ø6.00mm steel ball
Welding helmets	45.7	50.9
Spectacles, Reader, Magnifiers	45.7	50.9
Goggles, Full faceshields respirators	76.2	84.7
Faceshield / Loose-fitting respirator	91.4	101.5

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High Velocity Impact Test (Impact-rate protector) — Clause 7.1.4.3&9.12

Device Type: Spectacles				Steel ball diameter: ☒ Ø 6.35mm ☐ Ø 6.00mm			
Sample No.	ID No.	Impact Position		Defects		Comment	Results
				Observed	Absent		
2412222-36	03	Left	Center		X	--	P
2412222-37			30° Temporal		X	--	P
2412222-38		Right	Center		X	--	P
2412222-39			30° Temporal		X	--	P
2412222-40		90° above 10mm			X	--	P
2412222-41		90° below 10mm			X	--	P
2412222-52	04	Left	Center		X	--	P
2412222-53			30° Temporal		X	--	P
2412222-54		Right	Center		X	--	P
2412222-55			30° Temporal		X	--	P
2412222-56		90° above 10mm			X	--	P
2412222-57		90° below 10mm			X	--	P

Requirements:

A complete device shall fail if any of the following occurs:

- any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste;
- fracture;
- penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface;
- lens not retained;
- the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.

Table: High Velocity Impact Testing

Device Type	Minimum Velocity(m/s)	
	Ø6.35mm steel ball	Ø6.00mm steel ball
Welding helmets	45.7	50.9
Spectacles, Reader, Magnifiers	45.7	50.9
Goggles, Full faceshields respirators	76.2	84.7
Faceshield / Loose-fitting respirator	91.4	101.5

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Plastic Lens Penetration Test (for Plastic lenses only) — Clause 7.1.4.4&9.13

Sample No.	ID No.	Impact Position	Defects		Comment	Results
			Observed	Absent		
2412222-(14, 16)	01	Left Center		X	--	P
2412222-(15, 17)		Right Center		X	--	P
2412222-(30, 32)	02	Left Center		X	--	P
2412222-(31, 33)		Right Center		X	--	P
2412222-(46, 48)	03	Left Center		X	--	P
2412222-(47, 49)		Right Center		X	--	P
2412222-(62, 64)	04	Left Center		X	--	P
2412222-(63, 65)		Right Center		X	--	P

Requirements:

A complete device shall fail if any of the following occurs:

- piece fully detached from the inner surface
- fracture
- penetration of the rear surface
- lens not retained

☒ Transmission Requirement of Ultraviolet Filter Lenses — Clause 7.2.2.1.1& 9.2

☒ Transmittance of Non-Lens Components — Clause 7.2.2.2

Claim Scale No.: U6

Sample No.	ID No	Non-Lens Components		Ultraviolet Filter Lenses				Results
				Left		Right		
		TEFUV (%)	TNUV (%)	TEFUV (%)	TNUV (%)	TEFUV (%)	TNUV (%)	
2412222-01	01	0.001	0.011	0.000	0.000	0.001	0.001	P
2412222-18	02	0.001	0.010	0.000	0.000	0.000	0.000	P
2412222-35	03	0.000	0.008	0.000	0.000	0.000	0.008	P
2412222-52	04	0.001	0.011	0.000	0.000	0.000	0.000	P

Requirements:

Table 8. Transmittance Requirements for Ultraviolet Filter Lenses

Scale	Maximum Effective Far- Ultra-Violet Average Transmittance, τ_{EFUV} (%)	Maximum Near Ultra-Violet Average Transmittance, τ_{NUV} (%)
U2	0.1	3.7
U2.5	0.1	2.3
U3	0.07	1.4
U4	0.04	0.5
U5	0.02	0.2
U6	0.01	0.1

Measurement Uncertainty (if necessary):

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Transmission Requirement of Visible Light Filters — Clause 7.2.2.1.2& 9.2

Sample No.:			2412222-18		2412222-34	
ID No.			02		04	
Test Items		Requirements	Left	Right	Left	Right
*T _L (380~780nm) (Claimed Scale: ID02_L1.7, ID04_L3)		See below table	37.5 (L1.7)	38.7 (L1.7)	11.7 (L3)	12.8 (L3)
High and Prolonged Exposure (%)	τ _{UVB} (280~315nm)	≡ 1%	0.0	0.0	0.0	0.0
	τ _{UVA} (315~380nm)	≡ 0.5 T _L	0.0	0.0	0.0	0.0
**Transmittance of Traffic Signal	Spectral transmittance (475~650nm)	≥ 0.2 T _L	0.87 T _L	0.88 T _L	0.88T _L	0.28 T _L
	τ _(Red) (%)	≥8	41.96	15.14	16.80	88.60
	τ _(Yellow) (%)	≥6	39.31	12.05	13.29	87.50
	τ _(Green) (%)	≥6	36.32	11.44	12.51	79.47
**Color limits (traffic signals)	Yellow	Comply with prescribed regions on the CIE (1931) standard chromaticity diagram.	Meet	Meet	Meet	Meet
	Green		Meet	Meet	Meet	Meet
	For average daylight(D65)		Meet	Meet	Meet	Meet
Results			P		P	

Table: Transmittance requirement for Visible Light Filters

Shade number	Luminous transmittance (%)		
	Maximum	Nominal	Minimum
L1.3	85	74.5	67
L1.5	67	61.5	55
L1.7	55	50.1	43
L2	43	37.3	29
L2.5	29	22.8	18
L3	18	13.9	8.5
L4	8.5	5.18	3.16

Measurement Uncertainty (if necessary):

Remark: 1. $*T_L$ =Luminous transmittance;

2. ** Transmittance of Traffic Signal and *Color limits (traffic signals) Apply for visible light filters in the range of L1.3 through L3.

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Variations in Luminous Transmittance — Clause 7.2.2.1.3 & 9.2

Test Items	Requirements	ID No.	Sample No.	Left	Right	Results
T_L (380-780nm)	☒ For shades 1.3 through 3.0: $0.90 \leq R \leq 1.11$	02	2412222-18	37.5	38.7	--
		04	2412222-50	11.7	12.8	--
Variations in Luminous Transmittance(R^{**})	☐ For shades 4 through 14: $0.80 \leq R \leq 1.25$	02	2412222-18	0.97		P
		04	2412222-50	0.91		P

Measurement Uncertainty (if necessary):

Remark: R^{**} is the ratio of the two measured transmittances, one for each lens of a pair, or at points directly in front of each eye for a single lens.

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

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