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All-Logic Int'l Laboratory

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Testing Laboratory 3579

Test Report

ANSI Z87.1-2015
Personal Eye Protection

Report no./報告號碼:	AL-200210(D)-01
Client /客戶名稱:	Bullard Asia Pacific Pte Ltd
Client Order(s) /客戶訂單/委託案號:	2718/ 200210(D)
Test Criteria /依據標準:	ANSI Z87.1-2015
Order Received /收件日期:	2020/1/30
Model(s) /型號:	SE4CAF
Sample Group Description /產品說明:	Clear lens
Specimen quantity/ no. /樣本數量/編號:	15 pcs/ (D)-1 to (D)-15
Date(s) of Tests /測試日期:	2020/1/31
Assessment /最終結論:	The test results are summarized on page 3.

Approved by:

Kant Wu
Laboratory Manager

Prepared by:

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Lab Senior Technician

TERMS AND CONDITION

1. Client acknowledges All-Logic Int'l Laboratory performs testing services only as specified by the client. All-Logic Laboratory does not design. Warrant, supervise or monitor compliance of products or services except as specifically agreed in writing by their very nature. Testing, analysis and other All-Logic Int'l Laboratory services are limited in scope and subject to expected measurement variability.
2. Client or client's authorized representative shall be afforded the opportunity to clarify test requests and reasonable access to monitor client.
3. All-Logic Int'l Laboratory shall keep document and information related to the client's confidentiality and will not disclose any such information to third parties without client permission. All-Logic Int'l Laboratory will, however, disclose any such information in response to compulsory legal process after providing the client with a copy of such process.
4. The results contained in this report apply only to the samples tested and not to lots from which they were taken.
5. All-Logic Int'l Laboratory shall retain copies of testing job file for a period of at least 10 years.
6. Specimens will be disposed of 2 months from the date of this report, unless otherwise instructed.
7. The report may be reproduced and distributed to the client, provided that it is reproduced and distributed in full.
8. Tests marked ☒ are not included in ISO/IEC 17025 of TAF scope accreditation.
9. If the client suggests that any extra-report conclusions should be provided and/or endorsed by All-Logic Int'l Laboratory, then no warranty or guarantee is included or intended in this.
10. Reporting is required when information on uncertainty is relevant to the validity or application of the test results, when the client requires it or when the uncertainty affects compliance with a specification limit.
11. All-Logic Int'l Laboratory tested these samples in accordance with ANSI Z87.1-2015 as requested by the client.

Summary of assessment

Clause	Requirement	Assessment
5.1.1	Optical Quality☒	PASS
5.1.2	Luminous Transmittance	PASS
5.1.3	Haze - Clear Lenses Only	PASS
5.1.4	Refractive Power,	PASS
	Astigmatism	PASS
	Resolving Power	PASS
	Prism Imbalance	PASS
5.2	Physical Requirements	PASS
5.2.1	Drop Ball Impact Resistance☒	N/A*
5.2.2	Ignition☒	PASS
5.2.3	Corrosion Resistance of Metal Components☒	PASS
5.2.4	Minimum Coverage Area☒	PASS
5.3	Required Protector Markings☒	PASS
6.1.1	Protectors Marked for Impact	PASS
6.1.2	Frames and Shells☒	PASS
6.1.3	Lateral (Side) Coverage☒	PASS
6.2.2	High Mass Impact	PASS
6.2.3	High Velocity Impact	PASS
6.2.4	Penetration Test	PASS
7.1	Protectors with Clear Lenses	See 5.1.2
7.2.1.1	Filter Lenses Transmission Requirement	PASS
7.2.1.2	Visible Light Filters	See 7.2.1.1

* : Meeting the requirements of Clause 6.2 are exempt from drop ball impact testing.

Paragraph Test / Property

5.1 Optical Requirement

5.1.1 Optical Quality

Sample ID：(D)-1

Testing in accordance with Section 9.1, protector lenses shall be free of: striae, bubbles, waves and other visible defects which would impair the wearer's vision.

Pass

5.1.2 (7.1) Luminous Transmittance

Requirements	Clear Lenses > 85 %			
Sample ID	Left Ocular (%)	Right Ocular (%)	Pass	Fail
(D)-1	91.23	91.67	V	

5.1.3 Haze

Requirements	≦ 3 %			
Sample ID	Left Ocular (%)	Right Ocular(%)	Pass	Fail
(D)-1	0.59	0.33	V	

5.1.4 Refractive Power

Requirements	≦ ±0.06 D			
Sample ID	Left Ocular (D)	Right Ocular(D)	Pass	Fail
(D)-1	+0.01	+0.01	V	

Astigmatism

Requirements	≦ 0.06 D			
Sample ID	Left Ocular (D)	Right Ocular(D)	Pass	Fail
(D)-1	0.02	0.02	V	

Resolving Power

Requirements	NBS Pattern 20 Min			
Sample ID	Left Ocular	Right Ocular	Pass	Fail
(D)-1	20	20	V	

Prism and Prism Imbalance

Requirements	Prism ≦ 0.5		Prism Imbalance V ≦ 0.25, H ≦ 0.25 in, 0.50 out			
Sample ID	Left Eye	Right Eye	Vertical	Horizontal	Pass	Fail
(D)-1	0.05	0.05	0.05	0.10 out	V	

5.2 Physical Requirements

Sample ID：(D)-1

Protectors shall be free from: projections, sharp edges or other defects which are likely to cause discomfort or injury during use.

Pass

5.2.1 Drop Ball Impact Resistance

See “Summary of assessment” on Page.3.

Pass

5.2.2 Resistance to ignition

Sample ID：(D)-2

No part of the sample tested ignited or continued glow after removal of the steel rod.

Pass

5.2.3 Resistance to corrosion

Sample ID：(D)-3

Following testing, all metal of the sample displayed smooth surfaces and were free from corrosion.

Pass

5.2.4 Minimum Coverage Area

Sample ID：(D)-1

The frames, lens housings or carriers and lens(es) shall cover in plane view an area of not less than 40 mm (1.57 in.) in width and 33 mm (1.30 in.) in height (elliptical) in front of each eye, centered on the geometrical center of the lens.

Pass

5.3 Required Protector Markings (Spectacles)

Sample ID：(D)-1

Pass

6.1.1 Protectors Marked for Impact

Sample ID：(D)-1

Protectors and replaceable components marked for impact protection shall meet applicable requirements of Section 6.

Pass

6.1.2 Frames and Shells

Sample ID：(D)-1

Frames and shells shall meet the requirements for high mass impact and high velocity impact in order to be impact-rated.

Pass

6.1.3 Lateral (Side) Coverage

Sample ID：(D)-1

The sample tested covered the specified lateral region.

Pass

6.2.2 High Mass Impact

Sample ID	位置（Location)	Pass	Fail
(D)-2	Left eye	V	
(D)-3	Left eye	V	
(D)-4	Right eye	V	
(D)-5	Right eye	V	

6.2.3 High Velocity Impact

Sample ID	位置（Location)	ft/sec	Pass	Fail
(D)-6	Left Eye Center	155	V	
(D)-7	Left Eye 30˚	159	V	
(D)-8	Right Eye Center	157	V	
(D)-9	Right Eye 30˚	156	V	
(D)-10	One Side 90˚at10mm Above	159	V	
(D)-11	One Side 90˚at10mm Below	158	V	

6.2.4 Penetration Test

Sample ID	位置 (Location)	Pass	Fail
(D)-12	Left Eye	V	
(D)-13	Left Eye	V	
(D)-14	Right Eye	V	
(D)-15	Right Eye	V	

7.2.1.1 Transmittance Requirement

Sample ID	(D)-1	Left Eye	Right Eye	Requirement	Pass	Fail
Ultraviolet Filters (U6)	Far-Ultraviolet average %	0.00	0.00	< 0.01	V	
	Near Ultraviolet average %	0.00	0.00	< 0.1	V	
Visible Light Filters	Transmittance %	91.23	91.67	> 85 %	V	

Estimates of the uncertainty of measurement

Clause	Requirement		Uncertainty
5.1.1	Optical Quality☒		See note 1
5.1.2	Luminous Transmittance		0.078414%
5.1.3	Haze - Clear Lenses Only		0.044%
5.1.4	Refractive Power,		0.005D
	Astigmatism		0.005D
	Resolving Power		See note 1
	Prism Imbalance		0.02△
5.2	Physical Requirements		See note 1
5.2.2	Ignition☒		See note 1
5.2.3	Corrosion Resistance of Metal Components☒		See note 1
5.2.4	Minimum Coverage Area☒		See note 1
5.3	Required Protector Markings☒		See note 1
6.1.1	Protectors Marked for Impact		See note 1
6.1.2	Frames and Shells☒		See note 1
6.1.3	Lateral (Side) Coverage☒		See note 1
6.2.2	High Mass Impact		See note 1
6.2.3	High Velocity Impact		See note 1
6.2.4	Penetration Test☒		See note 1
7.1	Protectors with Clear Lenses		0.078414%
7.2.1.1	Filter Lenses Transmission Requirement	Range (nm)	
7.2.1.2	Visible Light Filters	380 to 780	0.078414%
		200 to 315	0.018762%
		315 to 380	0.013442%
		400 to 700	0.095504%
		780 to 2000	0.045468%

Note 1 The acceptance criterion for this test is a straightforward “Pass/Fail”, rather than a numerical value. Consequently, as there is no value to be reported, uncertainty has not been reported either.

Note 2 The uncertainty value is based on a standard uncertainty multiplied by a coverage factor *k*= 2, which provides for a confidence level of approximately 95%.

Note 3 The requirement is not included in ISO/IEC 17025 of TAF scope accreditation. Consequently, the estimate of the uncertainty of measurement is not provided.

ANNEX

This Annex comprises one section.

-----END OF REPORT-----

Bullard Asia Pacific Pte Ltd's model SE4CAF safety spectacle

Laboratory Testing Services' specimen number (D)-1