ICS® INC. LABORATORIES

Test Report T15006-02-1 Issue 1
ANSI/ISEA Z87.1-2020
China-Star Worldwide Corp
SY143 Goggles
08 October 2020

ACCREDITED
Test Laboratory
Certificate: 1722.01

Approved by:

Keith E. Whitten
Laboratory Manager

Prepared by:

Cathy Woloszyn
Lab Administrator

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e) Where applicable, test data not covered under our ISO/IEC 17025 Accreditation is uniquely identified in the test report.

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ACCREDITED Test Laboratory Certificate: 1722.01

Issued to: China-Star Worldwide Corp
No. 88 Shang Ding Road
Yung-Kang Dist, Tainan City 71046
Taiwan

Date: 08 October 2020
Report: T15006-02-1
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Objective:

Contract testing to ANSI/ISEA Z87.1-2020 "American National Standard for Occupational and Educational Personal Eye and Face Protection Devices".

Clause(s):
5. Fundamental Design Requirements for All Protectors -excluding Markings
6. Optional Design Characteristics
   6.2 Anti-Fog Properties (X)
7. Optional Hazard-Specific Protector Requirements
   7.1 Impact Protector Requirements
   7.2 Optical Radiation Protector Requirements -Ultraviolet Filters; Table 8 (U#)
   7.3 Droplet and Splash Protector Requirements
   7.3.1 Goggles (D3)
   7.4 Dust Protector Requirements (D4)
   7.5 Fine Dust Protector Requirements (D5)

Samples:

SY143 Goggles

Lens	Quantity	Sample ID
Clear	21	6A-x & 203961 (35-36)
	12	6A-2xx

SY143 Goggles with Rx Carriers

Lens	Rx Carrier Power	Quantity	Sample ID
Clear	+5.00	13	6B-x
Clear	-5.00	13	6C-x

Date(s) submitted: 09 July 2020, 20 July 2020 and 04 September 2020

Procedures:

Testing protocols in accord with good laboratory practice were employed for all tests.

All tests were conducted in a standard laboratory atmosphere unless otherwise specified.

Samples were randomly selected from the quantity provided and tested in the as-received condition unless otherwise stated.

Testing procedures as specified within Section 9 of ANSI/ISEA Z87.1-2020 were followed unless noted in results.

When applicable, samples were assessed on medium headform (64mm PD).

Assessment Summary:

Date(s) tested: 16 through 22 July 2020, 24 through 27 August 2020 and 24 through 28 September 2020

Samples as assessed meet the requirements of ANSI/ISEA Z87.1-2020 for Impact Rated Goggles without Ventilation as well as the requirements for protectors that provide protection against Droplet and Splash Hazard (D3) and Dust Hazards (D4 & D5).

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Assessment Summary (Continued):

ANSI/ISEA Z87.1-2020 Requirements	Compliant	Non-Compliant
5. Fundamental Design Requirements for All Protectors		
5.1 Optical Requirements		
5.1.1 Optical Quality	X	
5.1.2 Luminous Transmission (Clear Lenses)	X	
5.1.3 Haze - Clear Lenses Only	X	
5.1.4 Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	X	
5.1.5 Refractive Power, Astigmatism, Prism and Prism Imbalance for Prescription Protectors and Magnifiers	Not applicable	
5.2 Physical Requirements	X	
5.2.1 Drop Ball Impact Resistance	Not applicable	
5.2.2 Ignition	X	
5.2.3 Corrosion Resistance of Metal Components	Not applicable	
5.2.4 Minimum Coverage Area	X	
5.3 Markings	Excluded	
5.4 Other Requirements	Not applicable	
5.5 Replaceable Lenses	Not applicable	
5.6 Aftermarket Components and Accessories	Not applicable	
6. Optional Design Characteristics		
6.2 Anti-Fog Properties	X	
7. Optional Hazard-Specific Protector Requirements		
7.1 Impact Protector Requirements		
7.1.1 Protectors Marked for Impact Protection		
7.1.2 Frames and Shells		
7.1.3 Lateral (Side) Coverage	X	
7.1.4 Impact Requirements		
7.1.4.1 Protectors Acceptance Criteria		
7.1.4.2 High Mass Impact	X	
7.1.4.3 High Velocity Impact	X	
7.1.4.4 Penetration Test (Lens Only)	X	
7.1.4.5 Prescription Lens Material Qualification	Not applicable	
7.1.4.6 Prescription Lens Mounting Qualification	Not applicable	
7.1.4.7 Devices with Lift Fronts	Not applicable	
7.2 Optical Radiation Protector Requirements		
7.2.1 Protectors with Clear Lenses	See 5.1.2	
7.2.2 Protectors providing Filtration of Optical Radiation		
7.2.2.1 Filter Lenses		
7.2.2.1.1 Transmission Requirements	X	
7.2.2.1.2 Visible Light Filters (ANSI Z80.3-2018)	Not applicable	
7.2.2.1.3 Variations in Luminous Transmittance	Not applicable	
7.2.2.2 Transmittance of Non-Lens Components	X	
7.3 Droplet and Splash Protector Requirements		
7.3.1 Goggles (D3)	X	
7.4 Dust Protector Requirements (D4)*	X	
7.5 Fine Dust Protector Requirements (D5)*	X	

*Tests subcontracted to a Registered EU Notified Body, not ISO 17025 accredited.

Summary of Optical Radiation Requirements:

Lens	Filter Scale Met
Clear	U6

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Results:

5.1.1 Optical Quality; Result: Pass

Lenses are free of striae, bubbles, waves and other visible defects which would impair their optical quality.

5.1.2 Luminous Transmittance (Tv) - ILLA (Clear Lenses)

Sample ID	Left (%)	Right (%)	Left/Right	Pass	Fail
6A-2	87.1	87.2	0.999	X	
Requirement:	≥ 85		N/A		

5.1.3 Haze - Clear Lens Only

Sample ID	Left (%)	Right (%)	Pass	Fail
6A-2	0.18	0.15	X	
Requirement:	≤ 3			

Measured relative to Illuminate A.

5.1.4 Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors

Refractive Power & Astigmatism

Sample ID	Left (m^{-1})		Right (m^{-1})		Pass	Fail
	Refractive Power	Astigmatism	Refractive Power	Astigmatism		
6A-205	-0.03	0.04	-0.04	0.03	X	
Requirement:	+/- 0.06	≤ 0.06	+/- 0.06	≤ 0.06		

Tested on headform using a 19mm aperture.

Resolving Power

Sample ID	Pattern Resolved (Yes/No)		Pass	Fail
	Left	Right		
6A-205	Yes	Yes	X	
Requirement:	Resolve Pattern 20			

Tested on headform using a 19mm aperture.

Prism and Prism Imbalance

Sample ID	Prismatic Power (cm/m)		Vertical Imbalance(cm/m)	Horizontal Imbalance(cm/m)	Pass	Fail
	Left	Right				
6A-205	0.05	0.06	<0.05	0.15 Base Out	X	
Requirement:	≤ 0.25		≤ 0.125	Base Out ≤ 0.50 Base In ≤ 0.125		

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5.2 Physical Requirements; Results: Pass

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

5.2.1 Drop Ball Impact Resistance

Protectors meeting the requirements of 7.1.4 are exempt from drop ball impact testing

5.2.2 Ignition; Results: Pass

Components tested (Lens, Frame (Plastic and Rubber), Outrigger, Strap Adjuster) did not ignite or continue to glow once the rod is removed.

5.2.4 Minimum Coverage Area; Result: Pass

The frames, lens housings or carriers and lens(es) cover in plain 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 pupil centers of test headform.

6.2. Anti-fog properties

Sample ID	Time free of fogging (s)	Pass	Fail
6A-201L	>45	X	
6A-202R	>45	X	
6A-203L	>45	X	
6A-204R	>45	X	
Requirement:	≥ 8		

Note: After conditioning in water, samples were dried with filtered compressed air instead of being dabbed dry.

7.1.1 Protectors Marked for Impact Protection

Protectors and replaceable components marked for impact protection in accordance with Table 3 shall meet applicable requirements of Section 7.1.

7.1.2 Frames and Shells

Frames and shells shall meet the requirements for high mass impact and high velocity impact in order to be impact-rated. These components shall be tested as a complete device. For frames and shells to be used with prescription lenses, they shall be fitted with representative test lenses having a nominal plano power and the minimum lens thickness to be used by the manufacturer, in no case less than 2.0mm (0.079in). Frames and shells are exempt from the penetration requirement.

7.1.3 Lateral (Side) Coverage; Result: Pass

When mounted on the medium headform protectors provide continuous lateral coverage (i.e. no openings greater than 1.5mm (0.06 in.) in diameter) from the vertical plane of the lenses tangential to a point not less than 10 mm (0.394 in.) posterior to the corneal plane and not less than 10 mm (0.394 in.) in height above and not less than 10 mm (0.394in.) in height below the horizontal plane centered on the eyes of the headform. The probe does not contact the headform within the defined coverage area.

7.1.4.1 Protector Acceptance Criteria

When each type test is conducted as indicated in Sections 7.1.4.2, 7.1.4.3 and 7.1.4.4 and, as applicable Section 7.1.4.6, 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.

In the case of plano protectors with a prescription lens carrier, contact of the prescription lens carrier with the headform does not constitute a failure.

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7.1.4.2 High Mass Impact

Sample ID	Location	Pass	Fail
Without Rx Carrier			
6A-3	Right	X	
6A-4	Left	X	
6A-5	Right	X	
6A-6	Left	X	
With +5 Rx Carrier			
6B-1	Right	X	
6B-2	Left	X	
6B-3	Right	X	
6B-4	Left	X	
With -5 Rx Carrier			
6C-1	Right	X	
6C-2	Left	X	
6C-3	Right	X	
6C-4	Left	X	

7.1.4.3 High Velocity Impact

Sample ID	Location	Velocity (ft/sec)	Pass	Fail
Without Rx Carrier				
6A-206	Right 0°	250.9	X	
6A-207	Right 30°	250.9	X	
6A-208	Right 90° ↑ 10mm	250.6	X	
6A-209	Left 0°	250.8	X	
6A-210	Left 30°	250.7	X	
6A-211	Left 90° ↓ 10mm	250.7	X	
With +5 Rx Carrier				
6B-5	Right 0°	251.3	X	
6B-6	Right 30°	251.4	X	
6B-7	Right 90° ↑ 10mm	251.5	X	
6B-8	Left 0°	252.2	X	
6B-9	Left 30°	252.1	X	
6B-10	Left 90° ↓ 10mm	251.7	X	
With -5 Rx Carrier				
6C-5	Right 0°	251.4	X	
6C-6	Right 30°	252.0	X	
6C-7	Right 90° ↑ 10mm	251.9	X	
6C-8	Left 0°	251.8	X	
6C-9	Left 30°	251.7	X	
6C-10	Left 90° ↓ 10mm	251.3	X	

7.1.4.4 Penetration Test (Lenses Only)

Sample ID	Location	Pass	Fail
6A-3	Left	X	
6A-4	Right	X	
6A-5	Left	X	
6A-6	Right	X	

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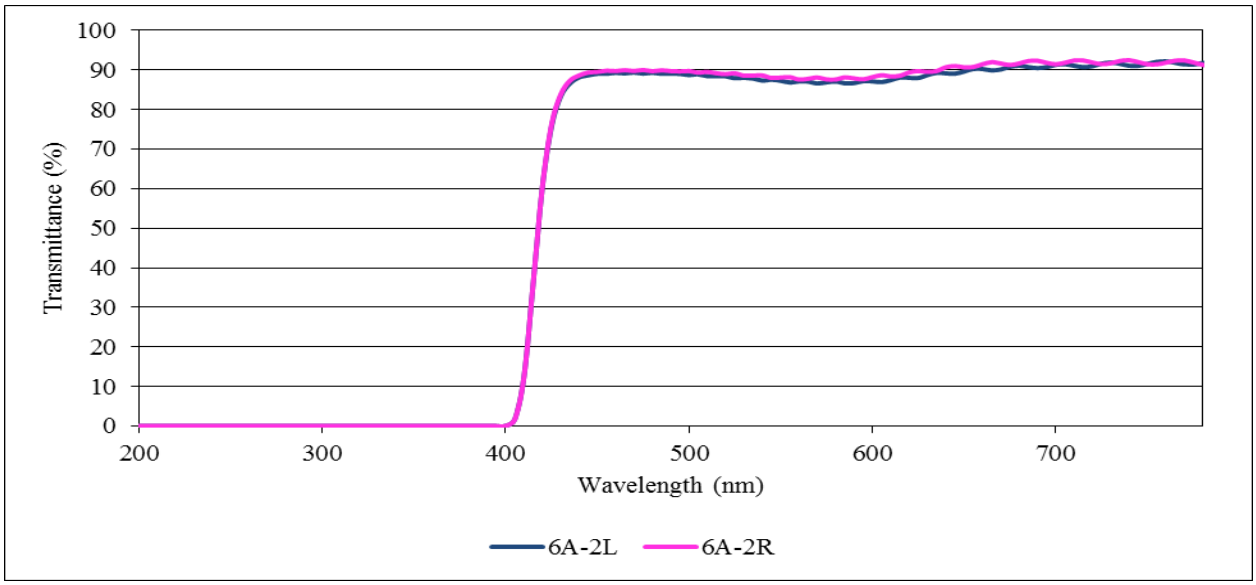
7.2.2.1.1 Transmission Requirements

-Ultraviolet Filters (Table 8)

Sample ID:	6A-2L	6A-2R	Requirement (U6)	Pass	Fail
Far-Ultraviolet (200 to 315nm) (%)	0.00014	0.00015	≤ 0.01	X	
Near-Ultraviolet (315 to 380nm) (%)	0.00014	0.00015	≤ 0.1	X	



-Thinnest Point

Not applicable, theoretical transmittance at the thinnest point is not greater than one shade/scale number less than that claimed/measured for the filter.

7.2.2.2 Transmittance of Non-Lens Components - Frame/Housing

Sample ID:	6A-2	Requirement (U6)	Pass	Fail
Far-Ultraviolet (200 to 315nm) (%)	<0.00001	≤ 0.01	X	
Near-Ultraviolet (315 to 380nm) (%)	<0.00001	≤ 0.1	X	

Location(s) measured determined using the coverage requirements as defined in EN207:2017 clause 3.9.

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7.3.1 Droplets and Splash Hazard - Goggles

Sample ID	Observation	Pass	Fail
6A-8	None	X	
Requirement:	No red coloration within 40mm circles		

7.4 Dust Hazard

Sample ID	Ratio of Mean Reflectance After Exposure to Mean Reflectance Before Exposure	Pass	Fail
203961 35	0.99	X	
Requirement:	≥ 0.80 within the 40mm circles		

7.5 Fine Dust Hazard

Sample ID	Observation	Pass	Fail
203961 36	None	X	
Requirement:	No red coloration within 40mm circles		

Sample Photographs:

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8. Test reports are valid for certification purposes for one year from date of issue, inclusive of retest or variant additions, which must be performed within one year of date of issue to avoid full retest.
9. Client is responsible for procuring, at its cost, insurance protecting the value of its property, extending to provided samples.
10. For the safety of our personnel, Client must advise if samples are known or suspected to contain hazardous substances. Safety Data Sheets must be provided upon request.
11. ICS represents that Services shall be performed according to terms and specification agreed to by Client, and in a manner consistent with good laboratory practice. No other Representations to client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any other report or document related to the services. ICS does not guarantee product performance or compliance.
12. Schedules are confirmed upon acceptance of quotation. All reasonable efforts will be made to comply with provided timeline. Guarantees are neither implied nor promised.
13. Certain work may be subcontracted to ICS-approved laboratories as required or applicable. Client will be notified of this in advance.
14. Client agrees to pay any and all additional costs associated with unexpected or above-standard communications and/or consultations with Client or third parties as designated by Client.
15. Client agrees to pay any and all additional costs for work additional to the original scope of work as agreed to by Client.
16. Client understands and agrees that ICS, in entering into this Contract and by performing services hereunder, does not assume, abridge, abrogate or undertake to discharge any duty or responsibility of Client to any other party or parties. No one other than Client shall have any right to rely on any Report or other representation or conduct of ICS and ICS disclaims any obligations of any nature whatsoever with respect to such third parties.
17. For statements of conformity (pass/fail/"meets") regarding qualitative test results, ICS utilizes simple acceptance as its basis. For most statements of conformity relating to quantitative test results, the decision rule and associated uncertainty is inherent in the standard method. As such, simple acceptance is typically applied. Results on or near pass/fail thresholds or otherwise upon Client request or appeal will be evaluated with reference to the measurement uncertainty of relevant testing practices, equipment and other inputs/variables.
18. Client agrees, in consideration of ICS undertaking to perform the test(s) hereunder, to protect, defend and indemnify ICS from any and all claims, damages, expenses either direct or consequential for injuries to persons or property arising out of or in consequence of the performance of the testing, inspection and reporting hereunder and/or the performance of the products tested or inspected hereunder, unless caused by the negligence of ICS.
19. It is agreed that if ICS should be found liable for any losses or damages attributable to the services hereunder in any respect, its liability shall not exceed the amount of the fee paid by Client for services rendered and Client's sole remedy at law or in equity shall be the right to recover that sum.
20. Quotations are valid for 30 days from date of issue. Standard Terms: 30% Laboratory/Testing fees invoiced and payable upon acceptance of quotation. 15 days net. Any change to these terms requires written approval by the President, Executive Vice President or Accounting Manager. ICS retains the right to require prepayment in full at any time. Cancelled jobs will be invoiced for work performed and/or set-up costs incurred. Shipping costs incurred by ICS will be invoiced at cost +10% handling fee. A minimum USD $25.00 handling fee will be invoiced on all sample returns. Shipping costs incurred by ICS will be invoiced $25.00 or cost +10%, whichever amount is higher.
21. ICS hereby objects to any conflicting terms contained in any order, acceptance or other subsequent correspondence submitted by Client.
22. In the event that payment is not received within 15 days of invoice date, Client agrees to pay a late payment charge on the unpaid balance equal to 1-1/2% per month or the maximum charge allowed by law, whichever is less, and all costs and expenses, including attorney's fees where recovery of the same is not prohibited by law, incurred by ICS in collecting such invoices.
23. All costs associated with compliance with any subpoena (s) for documents, testimony in a court of law, or for any other purpose relating to work performed by ICS in connection with work performed for that Client, shall be paid by Client. Client shall also pay costs related to deposition and trial testimony.
24. Cancelled/discontinued orders: Client responsible for all administrative and testing charges up to point of cancellation.