

ICS[®]
INC. LABORATORIES

Test Report T7251-01-1 Issue 1
ANSI/ISEA Z87.1-2010

91713 Spectacles
03 May 2012



Certificate 1722.01

Approved by:

A handwritten signature in blue ink that reads 'Keith E. Whitten'.

Keith E. Whitten
Laboratory Manager

Prepared by:

A handwritten signature in blue ink that reads 'Cathy Woloszyn'.

Cathy Woloszyn
Laboratory Assistant

- a) Reports are issued pursuant to the ICS standard Terms and Conditions agreement.
- b) The contents of this test report are confidential. Reproduction of the report is prohibited except in full, unless approved in writing by ICS Laboratories, Inc.
- c) Unless otherwise indicated, the test results contained in this report apply only to the samples tested and not to lots or batches from which they were taken.
- d) Test data provided by subcontractor is uniquely identified in the test report.
- e) Test data not covered under our ISO/IEC 17025 Accreditation is uniquely identified in the test report.

ICS Laboratories, Inc. • 1072 Industrial Parkway North • Brunswick, Ohio 44212 USA
Phone: 330.220.0515 Fax: 330.220.0516

Objective:

Contract testing to ANSI/ISEA Z87.1-2010 “American National Standard for Occupational and Educational Personal Eye and Face Protection Devices”.

- Clause(s): 5. General Requirements
 -excluding Marking Requirements
 6. Impact Protector Requirements
 7. Optical Radiation Protector Requirements
 -Ultraviolet Filters (Table 7)
 -Visible Light Filters (Table 9)
 -Special Purpose Lenses (Table 10)

Samples:

91713 Spectacles

Lens Color	Quantity	Sample ID
Clear	20	1A
Smoke	5	1B

Date submitted: 12 April 2012

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 Z87.1-2010 were followed unless noted in results.

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

Prismatic Power, Refractive Power, and Resolving Power are a function of lens geometry, not tint, therefore these tests were performed only on one tint variant of each lens type.

Assessment Summary:

Date tested: 01 through 02 May 2012

Samples as assessed meet the requirements of ANSI/ISEA Z87.1-2010 for Impact Rated spectacles, and they meet the following Optical Radiation Protector Requirements:

Lens	Filter Scale Met		Z80.3-2008 Transmittance Requirements Met
	Ultraviolet	Visible Light	
Clear	U6	-	-
Smoke	U6	L3	Medium to Dark, Ultraviolet High or Prolong Exposure, Suitable for Driving

Assessment Summary-Continued:

ANSI/ISEA Z87.1-2010 Requirements	Compliant	Non Compliant
5. General Requirements		
5.1 Optical Requirements		
5.1.1 Optical Quality	X	
5.1.2 Luminous Transmission (Clear Lenses)	X	
5.1.3 Haze	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	Not applicable	
5.2 Physical Requirements	X	
5.2.1 Drop Ball Impact Resistance	X	
5.2.2 Protector Acceptance Criteria		
5.2.3 Ignition	X	
5.2.4 Corrosion Resistance of Metal Components	Not applicable	
5.2.5 Minimum Coverage Area	X	
5.3 Minimum Lens Thickness	Not applicable	
5.4 Marking Requirements	Not assessed	
5.5 Other Requirements	Not applicable	
5.6 Replaceable Lenses	Not applicable	
5.7 Aftermarket Components	Not applicable	
6. Impact Protector Requirements		
6.1 General		
6.1.1 Impact Rated Protectors		
6.1.2 Frames and Shells	See 6.2.2 and 6.2.3	
6.1.3 Lateral (Side) Coverage	X	
6.2 Impact Requirements		
6.2.1 Protector Acceptance Criteria		
6.2.2 High Mass Impact	X	
6.2.3 High Velocity Impact	X	
6.2.4 Penetration Test (Lens Only)	X	
6.2.5 Prescription Lens Material Qualification	Not applicable	
6.2.6 Prescription Lens Mounting Qualification	Not applicable	
6.3 Additional Impact Requirements for Specific Protector Types	Not applicable	
7. Optical Radiation Protector Requirements		
7.1 Transmittance of Lenses		
7.1.1 Optional Transmittance Attributes (Markings)	See 5.4	
7.1.2 Clear and Filter Lenses	X	
7.1.3 Automatic Darkening Welding Filter Lenses	Not applicable	
7.1.4 Visible Light Filters	X	
7.1.5 Variation in Luminous Transmittance (Welding Filters)	Not applicable	
7.2 Transmittance of Housings	Not applicable	
8. Droplet and Splash, Dust, and Fine Dust Protector Requirements	Not applicable	

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 Transmission (Clear Lenses)

Sample ID	Left (%)	Right (%)	Left/Right	Pass	Fail
1A-2	89.7	89.5	1.002	X	
Requirement:	$100 \geq T_L \geq 85$		N/A		

5.1.3 Haze (Clear Lens Only)

Sample ID	Left (%)	Right (%)	Pass	Fail
1A-2	0.19	0.26	X	
Requirement:	≤ 3			

Illuminate C used instead of 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			
1A-1	0.03	0.01	0.02	0.01	-0.02	0.03	X	
Requirement:	± 0.06	≤ 0.06		± 0.06	≤ 0.06			

Note: Tested in a simulated as worn position using a 19mm aperture.

Resolving Power

Sample ID	Left	Right	Pass	Fail
1A-1	≥ 20	20	X	
Requirement:	\geq Pattern 20			

Note: Tested in a simulated as worn position 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				
1A-1	0.13	0.11	0.11	0.07 Base Out	X	
Requirement:	≤ 0.50		≤ 0.25	Base Out ≤ 0.50 Base In ≤ 0.25		

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

Sample ID	Location	Pass	Fail
1A-3	Left	X	
1A-4	Right	X	
1A-5	Left	X	
1A-6	Right	X	

5.2.2 Protector Acceptance Criteria

When each type test is conducted as indicated above, 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

5.2.3 Ignition; Result: Pass

Samples (Lenses, Temple, Frame, Exposed Nosepad and Ear pad) did not ignite or continue to glow after removal of the steel rod.

5.2.5 Minimum Coverage Area; Result: Pass

The eye wire and lens 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 64mm (2.52 in.) PD.

6.1.3 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 (0.394 in.) 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.

6.2.1 Protector Acceptance Criteria

When each type test is conducted as indicated in Sections 6.2.2, 6.2.3 and 6.2.4 and, as applicable Section 6.2.6, 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
- ∞ 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.

6.2.2 High Mass Impact

Sample ID	Location	Pass	Fail
<i>Clear</i>			
1A-7	Right	X	
1A-8	Left	X	
1A-9	Right	X	
1A-10	Left	X	
<i>Smoke</i>			
1B-3	Right	X	
1B-3	Left	X	

6.2.3 High Velocity Impact

Sample ID	Location	Velocity (ft/sec)	Pass	Fail
<i>Clear</i>				
1A-11	Right 0°	151	X	
1A-12	Right 30°	153	X	
1A-13	Right 90° ↑ 10mm	153	X	
1A-14	Left 0°	152	X	
1A-15	Left 30°	153	X	
1A-16	Left 90° ↓ 10mm	153	X	
<i>Smoke</i>				
1B-4	Right 0°	153	X	
1B-5	Left 0°	152	X	

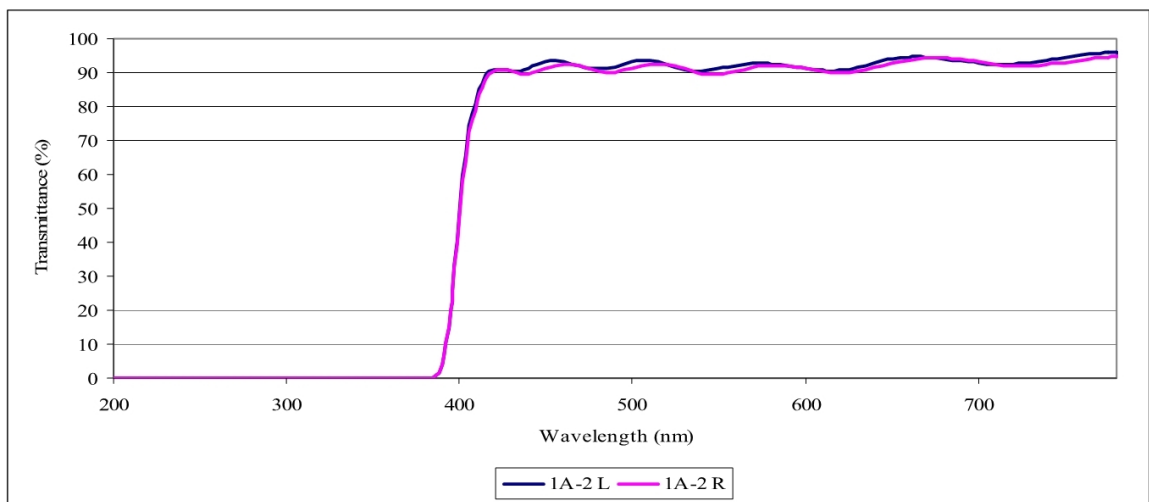
6.2.4 Penetration Test (Lenses Only)

Sample ID	Location	Pass	Fail
<i>Clear</i>			
1A-17	Right	X	
1A-18	Left	X	
1A-19	Right	X	
1A-20	Left	X	

7.1.2 Transmittance of Lenses; Clear and Filter Lenses – Clear

-Ultraviolet Filters (Table 7)

Sample:	1A-2L	1A-2R	Requirement (U6)	Pass	Fail
Far-Ultraviolet (200 to 315nm)	0.00019	0.00019	≤ 0.01%	X	
Near-Ultraviolet (315 to 380nm)	0.00067	0.00064	≤ 0.1%	X	



7.1.2 Transmittance of Lenses; Clear and Filter Lenses – Smoke

-Ultraviolet Filters (Table 7)

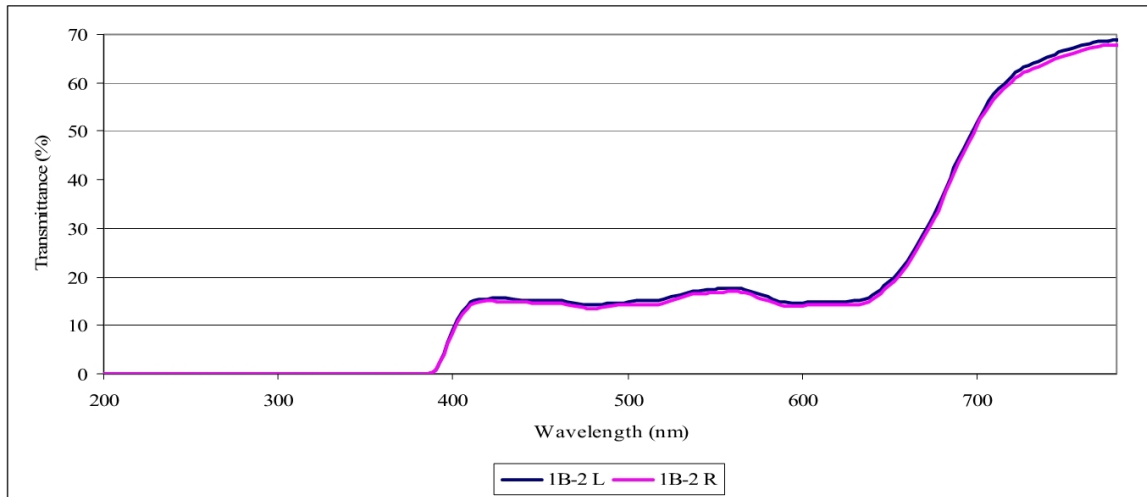
Sample:	1B-2L	1B-2R	Requirement (U6)	Pass	Fail
Far-Ultraviolet (200 to 315nm)	0.00012	0.00012	$\leq 0.01\%$	X	
Near-Ultraviolet (315 to 380nm)	0.00037	0.00034	$\leq 0.1\%$	X	

-Visible Light Filters (Table 9)

Sample:	1B-2L	1B-2R	Requirement (L3)	Pass	Fail
Luminous (T_L)-ILLA	16.4	15.7	8.5 to 18%	X	

-Special Purpose Lenses (Table 10)

Sample ID	Left (%)	Right (%)	Left/Right	Pass	Fail
1B-2	15.7	15.0	1.047	X	
Requirement:					
Tinted:	$85 > T_L \geq 8$		$1.10 \geq L/R \geq 0.90$		
Extra Dark:	$8 > T_L \geq 0.2$		$1.20 \geq L/R \geq 0.80$		



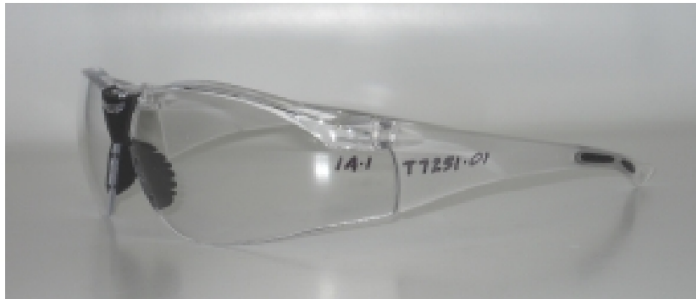
Date: 03 May 2012
Report: T7251-01-1
Issue: 1
Page: 8 of 8

7.1.4 Visible Light Filters (ANSI Z80.3-2008) Transmittance Requirements -Smoke

Sample ID:	1B-2L	1B-2R	Requirement (Medium to Dark)	Pass	Fail
4.6.1 Luminous Transmittance					
Luminous (Tv) - ILLC	16.2	15.5	8 to 40%	X	
4.6.2 Mean Transmittance					
UVB (280 to 315nm)	0.00033	0.00032	≤ 1%	X	
UVA (315 to 380nm)	0.00037	0.00034	≤ 0.5Tv	X	
4.6.3 Transmittance Properties Related to Traffic Signal Recognition					
4.6.3.1 Color Limits					
Yellow (x,y)	0.577, 0.422	0.578, 0.422	See ANSI Z80.3 Figure 1	X	
Green (x,y)	0.213, 0.414	0.213, 0.414		X	
D65 (x,y)	0.319, 0.339	0.319, 0.339		X	
4.6.3.2 Traffic Signal Transmittance					
Luminous (Tv) - ILLC	16.2	15.5	≥ 8%	X	
Red	18.5	17.7	≥ 8%	X	
Yellow	16.5	15.8	≥ 6%	X	
Green	16.2	15.5	≥ 6%	X	
4.6.3.3 Spectral Transmittance					
Min. 475 to 650nm	14.2	13.5	≥ 0.2Tv	X	

UVB and UVA limits are for High or Prolonged Exposure.

Sample Photographs:



TERMS AND CONDITIONS

1. Client acknowledges that ICS Laboratories (ICS) performs testing services only as specified by Client. ICS does not design, warrant, supervise or monitor compliance of products or services except as specifically agreed to in writing. By their very nature, testing, analysis, and other ICS 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 test work, provisional to protecting the confidentiality of other clients.
3. ICS shall keep documents and information related to Client confidential and will not disclose any such information to third parties without client permission. ICS will, however, disclose any such information in response to legal process after providing Client with a copy of such process.
4. ICS Reports apply only to the standards or procedures identified therein and to the sample (s) tested and or inspection (s) made. Test and/or inspection results are not indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products.
5. ICS Reports are for the exclusive use of the Client. They and the name ICS Laboratories, Inc., or its seals or insignia, are not to be used by or on behalf of Clients under any circumstances for any purpose whatsoever, including but not limited to use in advertising, publicity material or in any other manner without ICS's prior written approval.
6. Any use by Client of ICS's Reports or the information contained therein is conditional upon timely payment of all fees.
7. The name (s) listed as the "Issued to" party on test reports may not reflect the actual entity submitting and/or contracting the assessment.
8. ICS shall retain copies of Reports and applicable evidentiary test samples for a period of five years, at which time they will be disposed. If Client requests additional copies of Reports during this period, an additional charge will apply for the preparation and delivery of such reports.
9. 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.
10. Samples and portions thereof not destroyed in testing remain the property of the Client, are retained a maximum of 30 days, and thereafter may be disposed of or returned to Client at ICS's option.
11. Client is responsible for procuring, at its cost, insurance protecting the value of its property and samples.
12. For the safety of our personnel, Client must advise if samples are known or suspected to contain hazardous substances. Material Safety Data Sheets must be provided upon request if available.
13. ICS represents that Services shall be performed within the limits agreed with 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, OPINION OR DOCUMENT RELATED TO THE SERVICES. ICS DOES NOT GUARANTEE PRODUCT COMPLIANCE OR CERTIFICATION.
14. ICS hereby objects to any conflicting terms contained in any order or acceptance submitted by Client.
15. Schedules confirmed upon acceptance of quotation. All reasonable efforts will be made to comply with conferred schedule. Guarantees are neither implied nor promised.
16. Certain work may be subcontracted to ICS authorized affiliate laboratories as required or applicable.
17. 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.
18. Client agrees to pay any and all additional costs for work additional to the original scope of work as agreed to by client.
19. 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 of conduct of ICS and ICS disclaims any obligations of any nature whatsoever with respect to such person. CLIENT AGREES, IN CONSIDERATION OF ICS UNDERTAKING TO PERFORM THE TEST(S) HEREUNDER, TO PROTECT, DEFEND, INDEMNIFY, SAVE HARMLESS AND EXONERATE 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, INSPECTIONS AND REPORTS HEREUNDER AND/OR THE PERFORMANCE OF THE PRODUCTS TESTED OR INSPECTED HEREUNDER, UNLESS CAUSED BY THE NEGLIGENCE OF ICS.
20. 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 IN NO EVENT EXCEED THE AMOUNT OF THE FEE PAID BY CLIENT FOR SUCH SERVICES AND CLIENT'S SOLE REMEDY AT LAW OR IN EQUITY SHALL BE THE RIGHT TO RECOVER UP TO SUCH AMOUNT.
21. Quotations are valid for 30 days from date of issue. Terms: 30% Laboratory/Testing fees invoiced and payable upon acceptance of quotation. Remaining Laboratory/Testing fees invoiced and payable upon completion of services, 15 days net. Cancelled jobs will be invoiced for work performed and/or set-up costs incurred. Cancelled Purchase Orders are subject to 10% service charge. Shipping costs incurred by ICS will be invoiced at cost +10% handling fee. A minimum USD \$25.00 handling fee will be invoiced. Shipping costs incurred by the client will be invoiced a USD \$25.00 handling fee.
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 ICS's then existing standard fee for consulting, deposition and trial testimony and all expenses related thereto.
24. Cancelled/discontinued orders: Client responsible for all administrative and testing charges up to point of cancellation.