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Test Report: IEI-01851-R.01, Issue: 1

CAN/CSA Z94.3:20

Innovative Eyewear, Inc.

Lucyd Armor Smart Safety Glasses

January 07, 2025

ACCREDITED
Test Laboratory
Certificate # 1612.01

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Authorized By:

Jacob Gary
Director of Operations

Reviewed By:

Jason Fawell
Technical Engineer

Report Summary

Product Description: Lucyd Armor Smart Safety Glasses: Black Frame, Photochromic Lenses
Date Received: December 18, 2024
Date(s) Tested: January 06, 2025 to January 06, 2025
Standard: CAN/CSA Z94.3:20
Laboratory Conditions: 21°C, 51% RH

Final Conclusion:

The Spectacle Sample: Class 1 Lucyd Armor Smart Safety Glasses (Black Frame, Photochromic Lenses) does comply with CAN/CSA Z94.3:20 for the test(s) included in this report.

Test Name	Result
CAN/CSA Z94.3:20 Base Model	
6.1.3.1 Impact Resistance - Class 1 Plano Protector	**Pass**
6.2 Ignition Resistance - Class 1	**Pass**
6.4.2.1 Refractive (residual) Power	**Pass**
6.4.3 Resolving Power	**Pass**
6.4.4 Prismatic Deviation	**Pass**
6.4.5.1 Haze - Class 1 or 2 (Clear Lenses)	**Pass**
6.4.6 Luminous Transmittance (Clear Lenses)	**Pass**
6.8 Minimum Frontal Coverage - Class 1 and 2	**Pass**
6.9 Side Protection - Class 1 and 2	**Pass**
7.1 Field of View - Class 1	**Pass**
7.2.1 Side Protection - Class 1	**Pass**
7.2.2 Side protection - Class 1	**N/A**
7.2.3 Side protection - Ventilation	**Pass**
13.2 Manufacturer/Supplier Marking	**Pass**
13.4 Special Purpose Statement	**Pass**
13.6 User Information	**Pass**
CAN/CSA Z94.3:20 Sun Protection for Outdoor Workers	
16.2.1 Luminous Transmittance	**Pass**
16.2.2 Mean Transmittance	**Pass**
16.2.3.1 Colour Limits	**Pass**
16.2.3.2 Traffic Signal Transmittance	**Pass**
16.2.4 Ultraviolet Transmittance	**Pass**
16.2.5 Photochromic Lenses	**Pass**

Report Comments:

IEI-01851-01-R.01: Retest due to failure on 6.1.3.1 Impact Resistance.

Test Results - IEI-01851-01-R.01/Lucyd Armor Smart Safety Glasses Black Frame, Photochromic Lenses

CAN/CSA Z94.3:20 Base Model

6.1.3.1 Impact Resistance - Class 1 Plano Protector

Test	Specification	Pass
All Classes: Midpoint of the distance between the pupils (nasal area)	46.0/47.0	46.0 (m/s)
All Classes: Midpoint of the distance between the pupils (nasal area)		Pass
Left Eye - 0 degrees	46.0/47.0	46.7 (m/s)
Plano Lens - geometric centre (Result)		Pass
Left Eye - 15 mm temporally	46.0/47.0	46.5 (m/s)
Left Eye - 15 mm temporally		Pass
Right Eye - 0 degrees	46.0/47.0	46.5 (m/s)
Right Eye - 0 degrees		Pass
Right Eye - 15 mm temporally	46.0/47.0	46.6 (m/s)
Right Eye - 15 mm temporally		Pass
Dual Lens: Frontal impact - thinnest eyewire point or eyewire screw assembly	46.0/47.0	46.6 (m/s)
Dual Lens: Frontal Impact		Pass
Frontal Impact - Endpiece to eyewire (one side)		N/A
Lateral impact - Temple attaches to endpiece (one side)	46.0/47.0	46.7 (m/s)
Lateral impact - Temple attaches to endpiece (one side)		Pass
10 mm behind, 10 mm above cornea (one side)	46.0/47.0	46.6 (m/s)
10 mm behind, 10 mm above cornea (one side)		Pass
10 mm behind, 10 mm below cornea (one side)	46.0/47.0	46.7 (m/s)
10 mm behind, 10 mm below cornea (one side)		Pass
10 mm behind cornea (one side)	46.0/47.0	46.4 (m/s)
10 mm behind cornea (one side)		Pass

6.2 Ignition Resistance - Class 1

Test	Specification	Pass
Lens		Pass
Temple		Pass
Front		Pass
Nose Piece		Pass
Other		N/A

6.4.2.1 Refractive (residual) Power

Test	Specification	Pass
Left Eye	-0.120/0.120	-0.060 (Diopters)
Right Eye	-0.120/0.120	-0.050 (Diopters)

6.4.3 Resolving Power

Test	Specification	Pass

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Left Eye		Pass
Center	Max: 60	40
3 mm from Edge	Max: 60	40
Right Eye		Pass
Center	Max: 60	40
3 mm from Edge	Max: 60	40

6.4.4 Prismatic Deviation

Test	Specification	Pass
Center		Pass
Vertical Imbalance	0.00/0.25	0.10 (Diopters)
Horizontal Imbalance (Out)	0.00/0.75	0.10 (Diopters)
10 mm Left		Pass
Vertical Imbalance	0.00/0.25	0.10 (Diopters)
Horizontal Imbalance (Out)	0.00/0.75	0.00 (Diopters)
10 mm Right		Pass
Vertical Imbalance	0.00/0.25	0.10 (Diopters)
Horizontal Imbalance (Out)	0.00/0.75	0.10 (Diopters)
10 mm Up		Pass
Vertical Imbalance	0.00/0.25	0.10 (Diopters)
Horizontal Imbalance (Out)	0.00/0.75	0.15 (Diopters)
10 mm Down		Pass
Vertical Imbalance	0.00/0.25	0.05 (Diopters)
Horizontal Imbalance (Out)	0.00/0.75	0.10 (Diopters)

6.4.5.1 Haze - Class 1 or 2 (Clear Lenses)

Test	Specification	Pass
Left Eye		0.56 (%)
Right Eye		0.49 (%)

6.4.6 Luminous Transmittance (Clear Lenses)

Test	Specification	Pass
Left Eye	Min: 85.00	86.70 (%)
Right Eye	Min: 85.00	85.90 (%)

6.8 Minimum Frontal Coverage - Class 1 and 2

Test	Specification	Pass
Coverage		Pass

6.9 Side Protection - Class 1 and 2

Test	Specification	Pass
Side Protection		Pass

7.1 Field of View - Class 1

Test Results - IEI-01851-01-R.01/Lucyd Armor Smart Safety Glasses Black Frame, Photochromic Lenses

Test	Specification	Pass
Horizontal Meridian		Pass
Vertical Meridian		Pass

7.2.1 Side Protection - Class 1

Test	Specification	Pass
Side Protection		Pass

7.2.2 Side protection - Class 1

Test	Specification	N/A
Opening		N/A

7.2.3 Side protection - Ventilation

Test	Specification	Pass
Class		1A
Ventilation		Non-ventilated

13.2 Manufacturer/Supplier Marking

Test	Specification	Pass
Markings		Pass

13.4 Special Purpose Statement

Test	Specification	Pass
Special Purpose Statement		Pass

13.6 User Information

Test	Specification	Pass
User Information		Pass

Test Results - IEI-01851-01-R.01/Lucyd Armor Smart Safety Glasses Black Frame, Photochromic Lenses

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16.2.1 Luminous Transmittance

Test	Specification	Pass
Primary Function (Table 7)		Cosmetic
Luminous Transmittance		Pass
Left Eye		48.46 (%)
Right Eye		44.60 (%)

16.2.2 Mean Transmittance

Test	Specification	Pass
UV A - Result		Pass
Left Eye	Min: 0.00	0.00 (%)
Right Eye	Min: 0.00	0.00 (%)
UV B - Result		Pass
Left Eye	Min: 0.00	0.00 (%)
Right Eye	Min: 0.00	0.00 (%)

16.2.3.1 Colour Limits

Test	Specification	Pass
Left Eye		Pass
Right Eye		Pass

16.2.3.2 Traffic Signal Transmittance

Test	Specification	Pass
Red		Pass
Left Eye	Min: 8.00	55.50 (%)
Right Eye	Min: 8.00	58.60 (%)
Yellow		Pass
Left Eye	Min: 6.00	43.40 (%)
Right Eye	Min: 6.00	47.30 (%)
Green		Pass
Left Eye	Min: 6.00	46.10 (%)
Right Eye	Min: 6.00	49.80 (%)

16.2.4 Ultraviolet Transmittance

Test	Specification	Pass
UV A - Result		Pass
Left Eye		0.00 (%)
Right Eye		0.00 (%)
UV B - Result		Pass
Left Eye		0.00 (%)
Right Eye		0.00 (%)

16.2.5 Photochromic Lenses

Test Results - IEI-01851-01-R.01/Lucyd Armor Smart Safety Glasses Black Frame, Photochromic Lenses

Test	Specification	Pass
Faded Luminous Transmittance	Min: 40	82.66 (%)
Darkened Luminous Transmittance	8/40	40.36 (%)
Ratio T(vo)/T(v1)		2.048
Faded UV A		0.00 (%)
Faded UV B		0.00 (%)
Faded State Primary Function		Cosmetic
Darkened State Primary Function		Cosmetic
Darkened UV A		0.00 (%)
Darkened UV B		0.00 (%)
Faded Color Limits		Pass
Darkened Color Limits		Pass
Faded Red Signal	Min: 8.00	85.30 (%)
Faded Yellow Signal	Min: 6.00	82.60 (%)
Faded Green Signal	Min: 6.00	82.70 (%)
Darkened Red Signal	Min: 8.00	51.10 (%)
Darkened Yellow Signal	Min: 6.00	39.00 (%)
Darkened Green Signal	Min: 6.00	41.90 (%)

Test Results - IEI-01851-01-R.01/Lucyd Armor Smart Safety Glasses Black Frame, Photochromic Lenses

Observations:

Test Name		Observation
13.2 Manufacturer/Supplier Marking	Markings	Assessed using artwork
13.4 Special Purpose Statement	Special Purpose Statement	Assessed using artwork
13.6 User Information	User Information	Assessed using artwork

APPENDIX 1

CSA Z94.3:20 Measurement Uncertainty Values

Section	Requirement	Uncertainty
6.4.1	Filter/Cover Plates	0.17 mm
	Faceshield Window	0.17 mm
6.4.2.1	Refractive Power	0.018D
6.4.2.2	Segment Power	0.01D
6.4.4	Prismatic Deviation	0.048Δ
6.4.5	Haze	0.19%
6.4.6	Transmittance	0.08%
	Clear – W3.0	0.19%
	W4	0.0018287%
	W5	0.0003283%
	W6	0.0003605%
	W7	0.0000961%
	W8	0.0001944%
	W9	0.0000459%
	W10	0.0000706%
	W11	0.0000068%
	W12	0.0000055%
	W13	0.0000028%
	W14	0.0000017%
6.5.2.4	EFUV	0.0000551%
	NUV	0.0000576%
	IR	0.010395%
6.5.3	Luminous Transmitance	See 6.5.2.1 Table 1
6.5.4	Automatic Darkening Welding Filters - Transmittance	See 6.4.6 & 6.5.2.4
6.5.4.5	Switching Index	0.0192 mSec
6.6	Size, residual power, resolving power, and prismatic deviation	See 6.4.1 - 6.4.5
8.3.2	Housing Transmittance	See 6.5.2.1 W8
9.2.3	Housing Transmittance	See 6.5.2.1 W14
9.3.3	Transmittance limit for materials	See 6.5.2.1 W14
9.3.5	Filter plates, cover plates, and mounting frames	See 6.4.1
10.2.3	Resolving power, prismatic deviation and Haze	See 6.4.3 - 6.4.5
10.2.4	Welding Filter Windows	See 6.5