# TEST RESULTS and REPORT

## for

# MCR Safety

## VL2 Photochromic Safety Glasses

**by**

COLTS | Laboratories™

Precision Testing. Definitive Results.

**COLTS Laboratories maintains A2LA accreditation to ISO/IEC 17025 for the tests listed on Certificate # 1612.01.**
**Any tests not included on this certificate have been identified on the appropriate test result page.**

**Also Certified for testing by the Safety Equipment Institute**

## Z-MCR011422-03

- Unless otherwise stated, results in this report apply only to the samples tested and not to lots from which they were taken.
- This report shall not be reproduced, except in full, without written approval from COLTS Laboratories.
- Unless otherwise requested, test samples will be discarded 21 days from the report date.
- Decision Rule: COLTS makes all statements of conformity (Pass/Fail) based on actual values reported, unless otherwise stated.

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# PRODUCT RESULTS SUMMARY

**A2LA Accredited Certificate # 1612.01**

## MCR Safety
## MCR011422-03

| COLTS Project ID | Test/Models(s) | Results Pass / Fail | Reason | Page |
|---|---|---|---|---|
| Z-MCR011422-03-01 | ANSI Z87.1-2020 Spectacle Base Model General Requirements<br>VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) | Pass | | 1 |
| Z-MCR011422-03-02 | ANSI Z87.1-2020 Spectacle Optional Claim (+,U)<br>VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) | Pass | | 5 |
| Z-MCR011422-03-03 | ANSI Z87.1-2020 6.2 Anti-Fog Properties (X) Tested with General Requirements<br>VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) | Pass | | 9 |

Report Date: 01/27/2022

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# Report Summary

**A2LA Accredited Certificate # 1612.01**

**Report To:**
MCR Safety
1255 Schilling Blvd West
Collierville, TN 38017

**Attn:** Glen Herald Jr
**Date:** January 27, 2022

**Project**
of Model(s): VL2 Photochromic Safety Glasses
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-03-01

**Product Description:** VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)

On January 14, 2022, COLTS Laboratories received Spectacles: VL2 Photochromic Safety Glasses from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Base Model General Requirements.

Detailed test results are included.

**Final Conclusion:**

The Spectacles: VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

Please contact us should you have any questions concerning this report.

**Respectfully submitted,**
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

**Report To:** MCR Safety
**Project No:** Z-MCR011422-03-01

COLTS™ Laboratories

**Sample ID:**
**VL2 Photochromic Safety Glasses**
**VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)**

**A2LA Accredited Certificate # 1612.01**

**Report Date:** 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Optical Quality | 5.1.1 | Protector lenses shall be free of: | | |
| | | striae, bubbles, waves and other visible defects which would impair the wearer's vision. | Acceptable | Pass |
| Luminous Transmittance | 5.1.2 | Clear lenses shall have a luminous transmittance of not less than 85%. | | |
| | | Luminous Transmittance | N/A | N/A |
| | | Left Eye | N/A | N/A |
| | | Right Eye | N/A | N/A |
| | | | No requirement for photochromic lens | |
| Haze – Clear Lenses Only | 5.1.3 | Clear plano lenses shall not exhibit more than 3% haze. | | |
| | | Haze | N/A | N/A |
| | | Left Eye | N/A | N/A |
| | | Right Eye | N/A | N/A |
| | | | No requirement for photochromic lens | |
| Spectacle - Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors | 5.1.4 | The tolerance on refractive power, astigmatism, resolving power, prism and prism imbalance shall be as indicated below. Filter lenses of shade 9 or higher are exempt from this section. | | |
| | | Refractive Power (±0.06) | Acceptable | Pass |
| | | Left Eye | -0.02 | Pass |
| | | Right Eye | 0.00 | Pass |
| | | Astigmatism (0.06 Max) | Acceptable | Pass |
| | | Left Eye | 0.04 | Pass |
| | | Right Eye | 0.04 | Pass |
| | | Resolving Power (Pattern 20) | Acceptable | Pass |
| | | Left Eye | Acceptable | Pass |
| | | Right Eye | Acceptable | Pass |
| | | Complete Prism (0.50 Max) | Acceptable | Pass |
| | | Left Eye | 0.158 | Pass |
| | | Right Eye | 0.158 | Pass |
| | | Prismatic Imbalance | Acceptable | Pass |
| | | Vertical (0.25 Max) | 0.00 | Pass |
| | | Horizontal Base In/Out (In 0.25 Max; Out 0.50 Max) | 0.10 out | Pass |

**Report To:** MCR Safety
**Project No:** Z-MCR011422-03-01

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**Sample ID:**
**VL2 Photochromic Safety Glasses**
**VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)**

**A2LA Accredited Certificate # 1612.01**

**Report Date:** 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Physical Requirements | 5.2 | Protectors shall be free from: | | |
| | | projections, sharp edges or other defects which are likely to cause discomfort or injury during use. | Acceptable | Pass |
| Ignition (Spectacle) | 5.2.2 | Protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of metals, textiles or elastic bands) shall be tested. | | |
| | | Lens | Acceptable | Pass |
| | | Front | Acceptable | Pass |
| | | Temple | Acceptable | Pass |
| | | Other | N/A | N/A |
| Corrosion Resistance of Metal Components | 5.2.3 | Metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion and the protector can be worn as intended. Lenses and electrical components are excluded from these requirements. | | |
| | | Corrosion Resistant | Acceptable | Pass |
| Minimum Coverage Area | 5.2.4 | Protectors shall cover an area of not less than 40 mm in width and 33 mm in height (elliptical) in front of each eye, centered on the pupil centers of the test headform.<br><br>Protectors designed for small head sizes shall cover an area of not less than 34 mm in width and 28 mm in height (elliptical), centered on the pupil centers of the test headform. | | |
| | | Minimum Coverage Area | Acceptable | Pass |
| Placement of Markings (Spectacles) | 5.3.2 | All protectors shall bear the permanent and legible markings in specified locations.<br>Markings for lens type and use applications shall be required only when claims for protection against the hazard or indicated use are made by the manufacturer.<br>Protector markings shall be placed in relatable proximity to each other on the product in the sequence specified below: | | |
| | | Markings permanent, legible and in relatable proximity and in the correct sequence. | Acceptable | Pass |
| | | Markings representative of other standards shall not interfere with or be intermixed with the markings required by this standard. | Acceptable | Pass |

# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Placement of Markings (Spectacles) | 5.3.2 | All protectors shall bear the permanent and legible markings in specified locations.<br>Markings for lens type and use applications shall be required only when claims for protection against the hazard or indicated use are made by the manufacturer.<br>Protector markings shall be placed in relatable proximity to each other on the product in the sequence specified below: | | |
| | | Replaceable Lens Markings | Acceptable | Pass |
| | | Manufacturer's Mark or Logo | Acceptable | Pass |
| | | + Mark | Acceptable | Pass |
| | | Lens Type (multiple claim sequence W,U,L,R,V,S) | Acceptable | Pass |
| | | X Anti-Fog | Acceptable | Pass |
| | | Spectacle Frame Front Markings | Acceptable | Pass |
| | | Manufacturer's Mark or Logo | Acceptable | Pass |
| | | Z87 Mark (Z87-2 for Rx) | Acceptable | Pass |
| | | + Mark | Acceptable | Pass |
| | | At Least One Temple Marked | Acceptable | Pass |
| | | Manufacturer's Mark or Logo | Acceptable | Pass |
| | | Z87 Mark (Z87-2 for Rx) | Acceptable | Pass |
| | | + Mark | Acceptable | Pass |
| Aftermarket Components and Accessories | 5.6 | All original equipment manufacturers (OEM) and non-OEM aftermarket components or accessories not sold with the original device shall be tested.<br><br>The entity claiming compliance of the component or accessory is responsible for testing the original complete device assembled with the components or accessories and shall provide evidence of compliance upon request. | | |
| | | Aftermarket Components and Accessories | Manufacturer requirement | Not testable |

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# Report Summary

**A2LA Accredited Certificate # 1612.01**

**Report To:**
MCR Safety
1255 Schilling Blvd West
Collierville, TN 38017

**Attn:** Glen Herald Jr
**Date:** January 27, 2022

**Project**
of Model(s): VL2 Photochromic Safety Glasses
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-03-02

**Product Description:** VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)

On January 14, 2022, COLTS Laboratories received Spectacles: VL2 Photochromic Safety Glasses from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Optional Claim (+,U).

Detailed test results are included.

**Final Conclusion:**

The Spectacles: VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

Please contact us should you have any questions concerning this report.

**Respectfully submitted,**
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Lateral (Side) Coverage | 7.1.3 | Impact-rated protectors shall provide continuous lateral coverage. The probe shall not contact the headform within the defined coverage area. | | |
| | | Lateral (Side) Coverage | Acceptable | Pass |
| High Mass Impact | 7.1.4.2 | The complete device shall meet the protector acceptance criteria when impacted by a pointed projectile weighing a minimum of 500 g (17.6 oz) dropped from a height of at least 127 cm (50.0 in.).<br><br>The lens shall fail if any of the following occurs:<br>• 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;<br>• fracture;<br>• 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;<br>• lens not retained | | |
| | | Left Eye Sample 1 | Acceptable | Pass |
| | | Left Eye Sample 2 | Acceptable | Pass |
| | | Right Eye Sample 3 | Acceptable | Pass |
| | | Right Eye Sample 4 | Acceptable | Pass |
| High Velocity Impact (Spectacle) | 7.1.4.3 | The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second.<br><br>When tested in accordance with this section, the lens shall fail if any of the following occurs:<br>• 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;<br>• fracture;<br>• 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;<br>• lens not retained;<br>• the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device. | | |
| | | Left Eye Center | 155 fps | Pass |
| | | Left Eye 30° | 154 fps | Pass |
| | | Right Eye Center | 154 fps | Pass |

**Report To:** MCR Safety
**Project No:** Z-MCR011422-03-02

COLTS™ Laboratories

**Sample ID:**
**VL2 Photochromic Safety Glasses**
**VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)**

**A2LA Accredited Certificate # 1612.01**

**Report Date:** 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| High Velocity Impact (Spectacle) | 7.1.4.3 | The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second.<br><br>When tested in accordance with this section, the lens shall fail if any of the following occurs:<br>• 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;<br>• fracture;<br>• 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;<br>• lens not retained;<br>• the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device. | | |
| | | Right Eye 30° | 154 fps | Pass |
| | | One Side 90° at 10mm Above (H - 8mm) | 153 fps | Pass |
| | | Opposite Side 90° at 10mm Below (H - 8mm) | 155 fps | Pass |
| Penetration Test (lenses only) | 7.1.4.4 | Lenses for all complete devices shall meet the protector acceptance criteria when penetrated by a weighted needle with a minimum total weight of 44.2 g (1.56 oz) dropped from a height of at least 127 cm (50.0 in.). | | |
| | | Left Eye Sample 1 | Acceptable | Pass |
| | | Left Eye Sample 2 | Acceptable | Pass |
| | | Right Eye Sample 3 | Acceptable | Pass |
| | | Right Eye Sample 4 | Acceptable | Pass |

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# Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Ultraviolet Filter Lenses - Transmission Requirements | 7.2.2.1.1 | U.V. filters shall comply with requirements of Table 8.<br><br>U.V. filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge.<br><br>Edge measurements are allowed ± 1 scale number. | | |
| | | U.V. Near | Acceptable | Pass |
| | | Left Eye | 0.000% | Pass |
| | | Left Eye Edge | 0.000% | Pass |
| | | Right Eye | 0.000% | Pass |
| | | Right Eye Edge | 0.000% | Pass |
| | | U.V. Far | Acceptable | Pass |
| | | Left Eye | 0.000% | Pass |
| | | Left Eye Edge | 0.000% | Pass |
| | | Right Eye | 0.000% | Pass |
| | | Right Eye Edge | 0.000% | Pass |

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# Report Summary

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1255 Schilling Blvd West
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**Attn:** Glen Herald Jr
**Date:** January 27, 2022

**Project**
of Model(s): VL2 Photochromic Safety Glasses
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-03-03

**Product Description:** VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)

On January 14, 2022, COLTS Laboratories received Spectacles: VL2 Photochromic Safety Glasses from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 6.2 Anti-Fog Properties (X) Tested with General Requirements.

Detailed test results are included.

**Final Conclusion:**

The Spectacles: VL2 Photochromic Safety Glasses (VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

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**Project No:** Z-MCR011422-03-03

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**Sample ID:**
**VL2 Photochromic Safety Glasses**
**VL220PCPF Photochromic Lens, Carbon Frame and Temples (+U6VX)**

**A2LA Accredited Certificate # 1612.01**

**Report Date:** 1/27/2022

Lab Temp (C): 23
Lab Rh: 50

## Report of: ANSI Z87.1-2020

| Test/Property | Paragraph | Requirement | Test Results | Acceptance |
|---|---|---|---|---|
| Anti-Fog Properties | 6.2 | Lenses of protectors marked as having anti-fog properties shall remain free from fogging for a minimum of 8 seconds.<br><br>NOTE: This procedure applies to lenses only and does not assess resistance to fogging of the complete device.<br><br>Four (4) representative lenses for each type of protector shall be tested. | | |
| | | Remain fog-free for a minimum of 8 seconds. | Acceptable | Pass |
| | | Sample 1 - Left Eye | Acceptable | Pass |
| | | Sample 1 - Right Eye | Acceptable | Pass |
| | | Sample 2 - Left Eye | Acceptable | Pass |
| | | Sample 2 - Right Eye | Acceptable | Pass |

# APPENDIX 1

## ANSI Z87.1 - 2020 Measurement Uncertainty Values

| Section | Requirement | Uncertainty |
|---|---|---|
| 5.1.2 | Luminous Transmittance | 0.19% |
| 5.1.3 | Haze | 0.08% |
| 5.1.4 | Refractive Power | 0.018D |
| | Astigmatism | 0.018D |
| | Prism | 0.048Δ |
| 5.4.5 | Minimum Lens Thickness | 0.012 mm |
| 5.5.1 | Replaceable Lenses – Goggles | 0.17 mm |
| 5.5.2 | Replaceable Lenses – Welding Helmets and Handshields | 0.17 mm |
| 6.1 | Relaxed Optics Level | See 5.1.4 |
| 6.2 | Anti-Fog Properties | 1.79% |
| 7.2.1 | Optical Radiation - Clear Lenses | See 5.1.2 |
| 7.2.2.1.1 | Transmission Requirements | |
| | Table 7 (Welding Filters) | |
| | W1.3 – W3.0 | See 5.1.2 |
| | W4 | 0.0018287% |
| | W5 | 0.0003283% |
| | W6 | 0.0003605% |
| | W7 | 0.0000961% |
| | W8 | 0.0001944% |
| | W9 | 0.0000459% |
| | W10 | 0.0000707% |
| | W11 | 0.0000163% |
| | W12 | 0.0000055% |
| | W13 | 0.0000029% |
| | W14 | 0.0000017% |
| | EFUV | 0.0000551% |
| | NUV | 0.0000576% |
| | IR | 0.010395% |
| | Table 8 (UV Filters) | |
| | EFUV | 0.0000551% |
| | NUV | 0.0000576% |
| | Table 9 (IR Filters) | 0.010395% |
| | Table 10 (VIS Filters) | See 7.2.2.1.1 W1.3 – W10 |
| | Table 11 Tinted | See 5.1.2 |
| | Extra Dark | See 5.1.2 |
| 7.2.2.1.2 | Visible Light Filters | |
| | Visible Light (L1.3 - L3) | See 5.1.2 |
| | UVA | See Table 7 NUV |
| | UVB | See Table 7 EFUV |
| 7.2.2.2 | Transmittance of Non-lens Components | See 7.2.2.1.1 Table 7, 8 & 9 |
| 7.2.3.1 | Automatic Darkening Welding Filter Lenses - Luminous Transmittance | See 7.2.2.1.1 Table 7 |
| 7.2.3.2 | Automatic Darkening Welding Filter Lenses - UV/IR Transmittance | See 7.2.2.1.1 Table 7 |
| 7.2.3.3 | Switching Index | 0.0192 mSec |
| 7.2.3.5 | Angular dependence of luminous transmittance | See 7.2.2.1.1 Table 7 |