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GRAFFITI SHIELD, INC.
TEST REPORT

SCOPE OF WORK
ASTM D3330 90° PEEL ADHESION, ASTM D1003 HAZE AND LUMINOUS TRANSMITTANCE, AND ASTM D3652 THICKNESS EVALUATION OF GLASS SHIELD MULTI-LAYER FILM BY GRAFFITI SHIELD

REPORT NUMBER
P2482.01.01-106-31 R0

TEST DATES
10/04/22 - 10/12/22

ISSUE DATE
10/27/22

RECORD RETENTION END DATE
10/12/26

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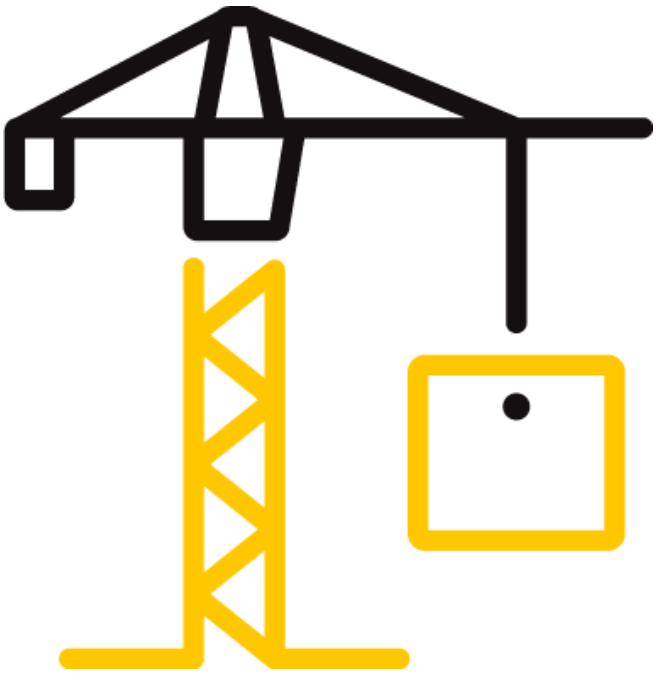

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Report No.: P2482.01.01-106-31 R0
Date: 10/27/22

REPORT ISSUED TO

GRAFFITI SHIELD, INC.
2940 E. LA Palma Avenue Suite D
Anaheim, California 92806

SECTION 1

SCOPE

Products: Glass Shield Multi-Layer Film by Graffiti Shield

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Graffiti Shield, Inc. to evaluate Glass Shield Multi-Layer Film by Graffiti Shield in accordance with ASTM D3330 90° Peel Adhesion, ASTM D1003 Haze and Luminous Transmittance, and ASTM D3652 Thickness. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called “Shared Risk approach,” of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

COMPLETED BY:	Cag S. Saylor	**REVIEWED BY:**	Dawn M. Chaney
TITLE:	Technician II Materials Laboratory	**TITLE:**	Technician Team Lead Materials Laboratory
SIGNATURE:	Digitally Signed by: Cag Saylor	**SIGNATURE:**	Digitally Signed by: Dawn M. Chaney
DATE:	10/27/22	**DATE:**	10/27/22

CSS:dmc/kf

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SECTION 2
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM D3330/D3330M-04 (Reapproved 2018), *Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape*, Test Method F

ASTM D1003-13, *Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics*

ASTM D3652-01 (Reapproved 2020), *Standard Test Method for Thickness of Pressure-Sensitive Tapes*

SECTION 3
MATERIAL SOURCE

The materials were provided by Graffiti Shield, Inc. The following was received in good condition on 09/23/22:

- Seven (7) ASTM D3330 Samples at 3" x 18"
- Five (5) ASTM D1003 Samples at 4" x 4"
- Ten (10) ASTM D3652 Samples at 1" x 7"

Refer to the product description photo in Section 9. The materials were tested as received. Representative materials/test specimens will be retained by Intertek B&C for a minimum of four years from the test completion date.

SECTION 4
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Cag S. Saylor	Intertek B&C
Dawn M. Chaney	Intertek B&C

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SECTION 5
TEST PROCEDURES

All conditioning of test specimens and test conditions were at standard laboratory conditions, unless otherwise reported. Refer to the test related photos in Section 9. Calibration certificates are available upon request.

ASTM D3330, Peel Adhesion, Test Method F
The peel strength of the tape was determined utilizing an INSTRON Model UTM (ICN: 005740) equipped with a 500-N load cell (ICN: INT01424) operating at a crosshead speed of 12.0 in/min. Each specimen was mounted in a sled to maintain a 90° angle with one tape end held in a self-tightening grip. Dimensions were measured with a digital caliper (ICN: 65460).

ASTM D1003, Haze
The haze was determined utilizing a GretagMacbeth Color i5 Spectrophotometer (ICN: 004725) with a diffuse spherical geometry and a xenon lamp, CIELab color space, C illuminant, 10° observer, and the specular component was included.

ASTM D1003, Luminous Transmittance
The average luminous transmission was determined utilizing a GretagMacbeth Color i5 Spectrophotometer (ICN: 004725) with a diffuse spherical geometry and a xenon lamp, CIELab color space, C illuminant, 2° observer, and the specular component was included.

ASTM D3652, Thickness
The specimens were placed under the foot of the digital indicator (ICN: Y060125) and the presser foot was gently placed upon the surface of the tape. Readings were recorded to the nearest 0.0001 in. one second after the lowering the foot. Three readings were made for each specimen and an average value was calculated.

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SECTION 6
TEST SPECIMEN DESCRIPTIONS

TEST PROCEDURE	NUMBER OF SPECIMENS	NOMINAL SPECIMEN DIMENSIONS
ASTM D3330	5	3" x 18"
ASTM D1003	3	4" x 4"
ASTM D3652	5	1" x 7"

SECTION 7
TEST RESULTS

ASTM D3330, Peel Adhesion

Specimen 1

SPECIMEN	WIDTH (mm)	PEAK LOAD (N)	AVERAGE LOAD (N)	PEEL STRENGTH (N/10 mm width)
Layer - #1	25.3	2.75	1.87	0.739
Layer - #2	25.3	2.49	1.74	0.688
Layer - #3	25.3	2.74	1.89	0.745
Layer - #4	25.3	13.8	12.4	4.91
Average		**5.45**	**4.48**	**1.77**

Specimen 2

SPECIMEN	WIDTH (mm)	PEAK LOAD (N)	AVERAGE LOAD (N)	PEEL STRENGTH (N/10 mm width)
Layer - #1	25.3	3.22	1.80	0.711
Layer - #2	25.3	2.68	1.77	0.698
Layer - #3	25.3	2.64	1.94	0.768
Layer - #4	25.3	14.9	14.2	5.61
Average		**5.86**	**4.93**	**1.95**

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Specimen 3

SPECIMEN	WIDTH (mm)	PEAK LOAD (N)	AVERAGE LOAD (N)	PEEL STRENGTH (N/10 mm width)
Layer - #1	25.4	2.88	1.79	0.705
Layer - #2	25.4	2.44	1.75	0.687
Layer - #3	25.4	2.41	1.84	0.726
Layer - #4	25.4	13.9	13.0	5.13
Average		**5.41**	**4.60**	**1.81**

Specimen 4

SPECIMEN	WIDTH (mm)	PEAK LOAD (N)	AVERAGE LOAD (N)	PEEL STRENGTH (N/10 mm width)
Layer - #1	25.4	2.85	1.86	0.730
Layer - #2	25.4	2.47	1.78	0.700
Layer - #3	25.4	2.50	1.92	0.757
Layer - #4	25.4	14.8	14.2	5.58
Average		**5.66**	**4.94**	**1.94**

Specimen 5

SPECIMEN	WIDTH (mm)	PEAK LOAD (N)	AVERAGE LOAD (N)	PEEL STRENGTH (N/10 mm width)
Layer - #1	25.4	2.99	1.70	0.669
Layer - #2	25.4	2.59	1.70	0.668
Layer - #3	25.4	2.53	1.89	0.745
Layer - #4	25.4	11.7	11.1	4.36
Average		**4.95**	**4.10**	**1.61**

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ASTM D1003 - Haze and Luminous Transmittance

Specimen 1

SPECIMEN ID	HAZE (%)	L*	OPACITY (%)
4 - Layers	0.84	94.39	83.37
3 - Layers	0.53	94.85	84.81
2 - Layers	0.31	94.42	84.30
1 - Layer	0.07	94.23	84.43
Glass	0.00	95.88	88.96

Specimen 2

SPECIMEN ID	HAZE (%)	L*	OPACITY (%)
4 - Layers	0.90	94.33	83.18
3 - Layers	0.62	94.77	84.56
2 - Layers	0.34	94.36	84.12
1 - Layer	0.09	94.36	84.71
Glass	0.00	95.89	89.00

Specimen 3

SPECIMEN ID	HAZE (%)	L*	OPACITY (%)
4 - Layers	0.86	94.33	83.13
3 - Layers	0.60	94.75	84.51
2 - Layers	0.36	94.33	84.01
1 - Layer	0.09	94.39	84.75
Glass	0.00	95.90	89.01

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ASTM D3652 - Thickness Measurements

READING	1750-M (in.)	1834-M (in.)	1837-M (in.)	1889-M (in.)	1770-M (in.)	AVERAGE (in.)
4-Layers #1	0.0200	0.0205	0.0200	0.0205	0.0205	**0.0203**
4-Layers #2	0.0200	0.0205	0.0205	0.0205	0.0205	**0.0204**
4-Layers #3	0.0200	0.0200	0.0200	0.0200	0.0205	**0.0201**
Average	**0.0200**	**0.0203**	**0.0202**	**0.0203**	**0.0205**	**0.0203**
3-Layers #1	0.0155	0.0155	0.0155	0.0155	0.0155	**0.0155**
3-Layers #2	0.0155	0.0155	0.0155	0.0155	0.0155	**0.0155**
3-Layers #3	0.0155	0.0155	0.0155	0.0155	0.0155	**0.0155**
Average	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**
2-Layers #1	0.0105	0.0105	0.0105	0.0105	0.0105	**0.0105**
2-Layers #2	0.0110	0.0105	0.0105	0.0105	0.0105	**0.0106**
2-Layers #3	0.0100	0.0105	0.0105	0.0105	0.0105	**0.0104**
Average	**0.0105**	**0.0105**	**0.0105**	**0.0105**	**0.0105**	**0.0105**
1-Layer #1	0.0055	0.0055	0.0055	0.0055	0.0055	**0.0055**
1-Layer #2	0.0055	0.0055	0.0055	0.0055	0.0055	**0.0055**
1-Layer #3	0.0055	0.0055	0.0055	0.0055	0.0055	**0.0055**
Average	**0.0055**	**0.0055**	**0.0055**	**0.0055**	**0.0055**	**0.0055**

SECTION 8
CONCLUSION

The requested test methods do not contain specific performance requirements. Results are reported as obtained.

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SECTION 9
PHOTOGRAPHS

Photo No. 1
Material as Received

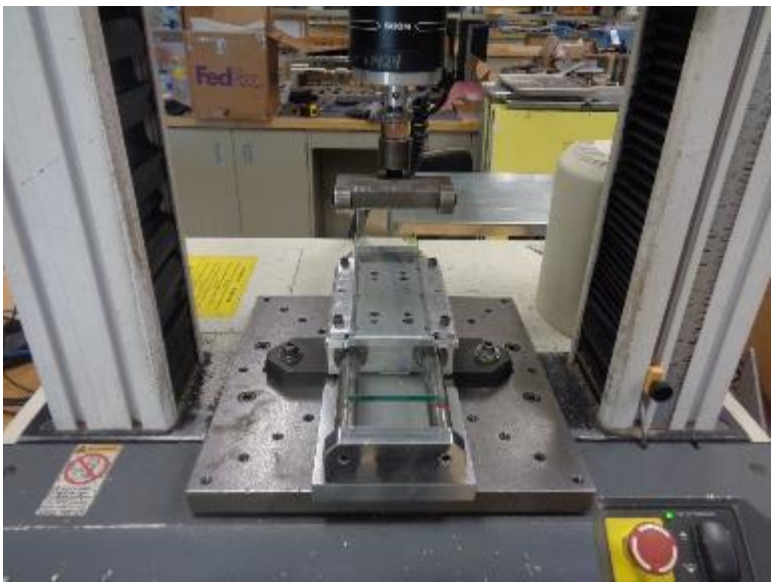

Photo No. 2
ASTM D3330 Test Setup

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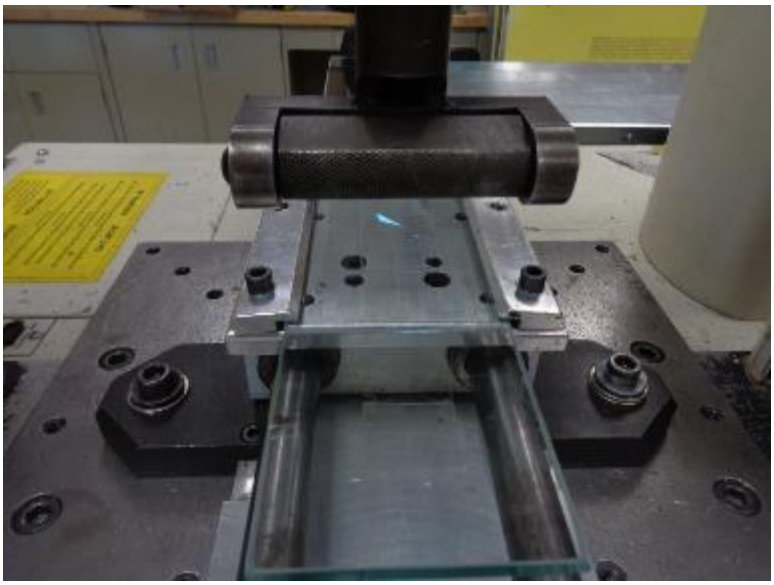

Photo No. 3
ASTM D3330 Test at Start

Photo No. 4
ASTM D3330 Test in Progress

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Photo No. 5
ASTM D1003 Luminous Transmittance Reading

Photo No. 6
ASTM D1003 Luminous Transmittance Reading

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Photo No. 7
ASTM D3652 Thickness Setup

Photo No. 8
ASTM D3652 Thickness Reading

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SECTION 10
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/27/22	N/A	Original Report Issue