

**ASTM C39/C39M-20 Test Report**

Job No.: 22-155-1A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description: Manufactured Stone Veneer - Mix Design  
Mix ID: "White Cement"

Date Samples Manufactured: 4/18/2022


Date Samples Received: 3/2/2022


**Summary of Test Results**

	ASTM		
	C1670-21b	Average	
	Specified	Test	
<u>Physical Property</u>	<u>Values</u>	<u>Results</u>	
Net Compressive Strength	2,100 min	7,570	psi

**Individual Unit Test Results**

<i>Cylinder* Compression Units</i>	Specimen	Received Weight lb	Average Diameter in	Average Height in	Net Area in <sup>2</sup>	Max. Load lb	Compressive Strength psi
	#1	6.657	4.00	8.04	12.57	97,370	7,750
Date Tested: 5/16/2022	#2	6.640	4.01	8.04	12.62	89,840	7,120
	#3	6.683	4.00	8.09	12.57	95,970	7,640
	#4	6.653	4.01	8.02	12.64	94,990	7,520
Specimen Age at Testing: 28 days	#5	6.664	4.01	8.02	12.64	98,600	7,800
	Average	6.659	4.01	8.04	12.61	95,350	7,570

  
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Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C666/C666M-15 Test Report**  
**Resistance of Concrete to Rapid Freezing and Thawing**

NCMA Project Number: 22-155-1B  
Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Specification: ASTM C1670/C1670M-21b  
Specimen Description:  
MSV Freeze Thaw Beams  
Mix ID: "White Cement"

Date Samples Were Produced: April 18, 2022  
Date Testing Began: May 18, 2022  
Age of Specimen at Start of Testing: 30 days

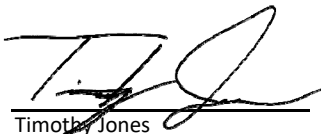
The client delivered constituent materials to the laboratory for freeze-thaw testing in accordance with Procedure A of ASTM C666/C666M-15. The laboratory batch these materials following the mix design provided by the client and cast five beams for freeze-thaw testing. Reported values of cumulative percent weight loss are provided as modified by ASTM C1670/C1670M-21b.

**Test Medium: WATER**

Nominal Beam Dimensions: 3x4x16 in. Cast Beam

Specimen Number	Specimen Weight Pre-Soak (g)	Initial Specimen Saturated Weight	Final Specimen Saturated Weight	Mass Loss (g)	Mass Loss (%)	Specimen Fracture?
Specimen 1	5,314.9	5,486.0	5,540.8	-54.8	-1.0	No
Specimen 2	5,323.5	5,461.4	5,511.6	-50.2	-0.9	No
Specimen 3	5,342.5	5,503.3	5,558.2	-54.9	-1.0	No
Specimen 4	5,325.8	5,484.9	5,541.2	-56.3	-1.0	No
Specimen 5	5,289.7	5,465.6	5,524.9	-59.3	-1.1	No

ASTM C1670/C1670M-21b requires that no single specimen exhibit a mass loss greater than 1.5% or show any fracture completely through the cross-section of the specimen.



Timothy Jones

Manager, Research and Development Laboratory



Jason Thompson

Vice President of Engineering

**ASTM C157/C157M-17 Test Report**  
**Length Change of Hardened Hydraulic-Cement Mortar and Concrete**

NCMA Project Number: 22-155-1C  
Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products  
Batching Party: NCMA Laboratory

Sample Description: MSV - Shrinkage Testing  
Mix ID: "White Cement"

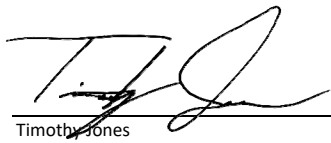
Date Specimen Casted: 4/27/2022

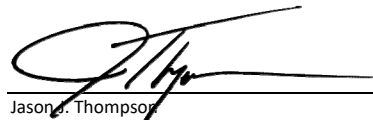
**Summary of Test Results**

	ASTM C1670-21 Specified Value	Average Test Result
Linear Drying Shrinkage (%)	-0.1 max	-0.08

**Individual Specimen Test Results**

Specimen No.	Change in Specimen Length: 24-Hour Reference (%)						7 to 35-Day Relative Change (%)
	Initial 24-Hour Reference Reading (%)	Initial 7-Day Moist Cure Reading (%)	11-Day Air Cure Reading (%)	14-Day Air Cure Reading (%)	21-Day Air Cure Reading (%)	35-Day Air Cure Reading (%)	
No. 1	0.000	-0.001	-0.003	-0.009	-0.026	-0.082	-0.081
No. 2	0.000	0.018	0.003	-0.002	-0.065	-0.053	-0.071
No. 3	0.000	0.019	-0.022	-0.028	-0.096	-0.081	-0.100
Change in Specimen Length: 7-Day Reference (%)							
No. 1		0.000	-0.002	-0.008	-0.025	-0.081	
No. 2		0.000	-0.015	-0.020	-0.083	-0.071	
No. 3		0.000	-0.041	-0.047	-0.115	-0.100	

  
Timothy Jones  
Manager, Research and Development Laboratory

  
Jason J. Thompson  
Vice President of Engineering

**ASTM C39/C39M-20 Test Report**

Job No.: 22-155-2A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description: Manufactured Stone Veneer - Mix Design  
Mix ID: "Grey Cement"

Date Samples Manufactured: 4/7/2022


Date Samples Received: 3/2/2022


**Summary of Test Results**

Physical Property	ASTM	Average	psi
	C1670-21b Specified Values	Test Results	
Net Compressive Strength	2,100 min	4,980	

**Individual Unit Test Results**

Cylinder Compression Units	Specimen No.	Received	Average	Average	Net	Max.	Compressive
		Weight lb	Diameter in	Height in	Area in <sup>2</sup>	Load lb	Strength psi
Date Tested: 5/5/2022	#1	6.526	4.00	8.05	12.58	62,400	4,960
	#2	6.477	4.00	8.02	12.59	62,560	4,970
	#3	6.438	4.00	8.02	12.58	60,970	4,850
	#4	6.508	3.99	8.01	12.51	61,520	4,920
	#5	6.516	4.00	8.00	12.54	65,270	5,200
Specimen Age at Testing: 28 days	Average	6.493	4.00	8.02	12.56	62,540	4,980

  
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Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C666/C666M-15 Test Report**  
**Resistance of Concrete to Rapid Freezing and Thawing**

NCMA Project Number: 22-155-2B

Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Specification: ASTM C1670/C1670M-21b

Date Samples Were Produced: April 7, 2022

Specimen Description:

Date Testing Began: May 12, 2022

MSV Freeze Thaw Beams

Age of Specimen at Start of Testing: 35 days

Mix ID: "Grey Cement"

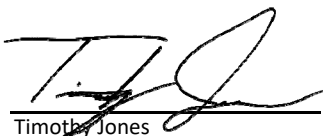
The client delivered constituent materials to the laboratory for freeze-thaw testing in accordance with Procedure A of ASTM C666/C666M-15. The laboratory batched these materials following the mix design provided by the client and cast five beams for freeze-thaw testing. Reported values of cumulative percent weight loss are provided as modified by ASTM C1670/C1670M-21b.

**Test Medium: WATER**

Nominal Beam Dimensions: 3x4x16 in. Cast Beam

Specimen Number	Specimen Weight Pre-Soak (g)	Initial Specimen Saturated Weight	Final Specimen Saturated Weight	Mass Loss (g)	Mass Loss (%)	Specimen Fracture?
Specimen 1	5,075.5	5,277.4	5,283.9	-6.5	-0.1	No
Specimen 2	5,264.0	5,458.3	5,463.2	-4.9	-0.1	No
Specimen 3	5,099.3	5,283.6	5,290.9	-7.3	-0.1	No
Specimen 4	5,162.2	5,340.6	5,356.0	-15.4	-0.3	No
Specimen 5	5,169.8	5,353.7	5,366.4	-12.7	-0.2	No

ASTM C1670/C1670M-21b requires that no single specimen exhibit a mass loss greater than 1.5% or show any fracture completely through the cross-section of the specimen.



Timothy Jones

Manager, Research and Development Laboratory



Jason Thompson

Vice President of Engineering

**ASTM C157/C157M-17 Test Report**  
**Length Change of Hardened Hydraulic-Cement Mortar and Concrete**

NCMA Project Number: 22-155-2C  
Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products  
Batching Party: NCMA Laboratory

Sample Description: MSV - Shrinkage Testing  
Mix ID: "Grey Cement"

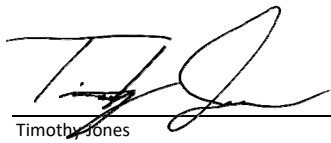
Date Specimen Casted: 5/12/2022

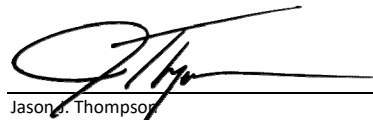
**Summary of Test Results**

	ASTM C1670-21 Specified Value	Average Test Result
Linear Drying Shrinkage (%)	-0.1 max	-0.03

**Individual Specimen Test Results**

Specimen No.	Change in Specimen Length: 24-Hour Reference (%)						
	Initial 24-Hour Reference Reading (%)	Initial 7-Day Moist Cure Reading (%)	11-Day Air Cure Reading (%)	14-Day Air Cure Reading (%)	21-Day Air Cure Reading (%)	35-Day Air Cure Reading (%)	7 to 35-Day Relative Change (%)
No. 1	0.000	-0.029	-0.032	-0.018	-0.022	-0.046	-0.017
No. 2	0.000	-0.087	-0.079	-0.084	-0.113	-0.111	-0.024
No. 3	0.000	0.007	-0.034	-0.027	-0.039	-0.054	-0.061
	Change in Specimen Length: 7-Day Reference (%)						
No. 1		0.000	-0.003	0.011	0.007	-0.017	
No. 2		0.000	0.008	0.003	-0.026	-0.024	
No. 3		0.000	-0.041	-0.034	-0.046	-0.061	

  
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Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C39/C39M-20 Test Report**

Job No.: 22-155-3A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description: Manufactured Stone Veneer - Mix Design  
Mix ID: "Grey/White Blend Cement"

Date Samples Manufactured: 4/20/2022

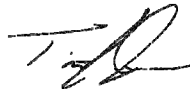
Date Samples Received: 3/2/2022

**Summary of Test Results**

	ASTM		
	C1670-21b	Average	
	Specified	Test	
<u>Physical Property</u>	<u>Values</u>	<u>Results</u>	
Net Compressive Strength	2,100 min	6,170	psi

**Individual Unit Test Results**

<i>Cylinder</i>		Received	Average	Average	Net	Max.	Compressive
<i>Compression</i>	Specimen	Weight	Diameter	Height	Area	Load	Strength
<i>Units</i>	No.	lb	in	in	in <sup>2</sup>	lb	psi
	#1	6.589	4.01	8.08	12.61	74,040	5,870
Date Tested:	#2	6.588	4.01	8.04	12.65	79,750	6,310
5/18/2022	#3	6.662	4.00	8.08	12.57	82,730	6,580
	#4	6.553	4.01	8.04	12.60	73,040	5,800
Specimen Age at Testing:	#5	6.547	4.00	8.03	12.57	78,990	6,280
28 days	Average	6.588	4.01	8.05	12.60	77,710	6,170



Timothy Jones  
Manager, Research and Development Laboratory



Jason J. Thompson  
Vice President of Engineering

**ASTM C666/C666M-15 Test Report**  
**Resistance of Concrete to Rapid Freezing and Thawing**

NCMA Project Number: 22-155-3B  
Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Specification: ASTM C1670/C1670M-21b  
Specimen Description:  
MSV Freeze Thaw Beams  
Mix ID: "Grey/White Blend Cement"

Date Samples Were Produced: April 20, 2022  
Date Testing Began: May 20, 2022  
Age of Specimen at Start of Testing: 30 days

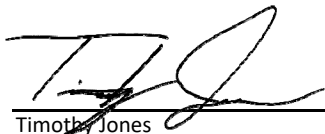
The client delivered constituent materials to the laboratory for freeze-thaw testing in accordance with Procedure A of ASTM C666/C666M-15. The laboratory batched these materials following the mix design provided by the client and cast five beams for freeze-thaw testing. Reported values of cumulative percent weight loss are provided as modified by ASTM C1670/C1670M-21b.

**Test Medium: WATER**

Nominal Beam Dimensions: 3x4x16 in. Cast Beam

Specimen Number	Specimen Weight Pre-Soak (g)	Initial Specimen Saturated Weight	Final Specimen Saturated Weight	Mass Loss (g)	Mass Loss (%)	Specimen Fracture?
Specimen 1	5,314.9	5,434.9	5,465.2	-30.3	-0.6	No
Specimen 2	5,300.0	5,412.0	5,438.2	-26.2	-0.5	No
Specimen 3	5,421.8	5,531.0	5,565.9	-34.9	-0.6	No
Specimen 4	5,433.6	5,550.1	5,584.4	-34.3	-0.6	No
Specimen 5	5,383.1	5,507.2	5,542.8	-35.6	-0.6	No

ASTM C1670/C1670M-21b requires that no single specimen exhibit a mass loss greater than 1.5% or show any fracture completely through the cross-section of the specimen.



Timothy Jones

Manager, Research and Development Laboratory



Jason Thompson

Vice President of Engineering



**ASTM C157/C157M-17 Test Report**  
**Length Change of Hardened Hydraulic-Cement Mortar and Concrete**

NCMA Project Number: 22-155-2C  
Report Date: July 6, 2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products  
Batching Party: NCMA Laboratory

Sample Description: MSV - Shrinkage Testing  
Mix ID: "Grey/White Blend Cement"

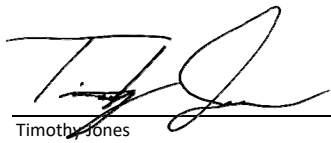
Date Specimen Casted: 5/17/2022

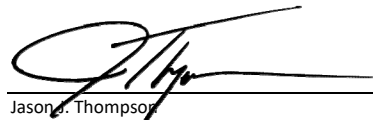
**Summary of Test Results**

	ASTM C1670-21 Specified Value	Average Test Result
Linear Drying Shrinkage (%)	-0.1 max	-0.02

**Individual Specimen Test Results**

Specimen No.	Change in Specimen Length: 24-Hour Reference (%)						7 to 35-Day Relative Change (%)
	Initial 24-Hour Reference Reading (%)	Initial 7-Day Moist Cure Reading (%)	11-Day Air Cure Reading (%)	14-Day Air Cure Reading (%)	21-Day Air Cure Reading (%)	35-Day Air Cure Reading (%)	
No. 1	0.000	-0.028	-0.030	-0.021	-0.023	-0.040	-0.012
No. 2	0.000	-0.013	-0.014	2.857	-0.031	-0.030	-0.017
No. 3	0.000	0.011	0.033	0.035	0.009	-0.006	-0.017
Change in Specimen Length: 7-Day Reference (%)							
No. 1		0.000	-0.002	0.007	0.005	-0.012	
No. 2		0.000	-0.001	2.870	-0.018	-0.017	
No. 3		0.000	0.022	0.024	-0.002	-0.017	

  
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Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C1670/C1670M-21b Test Report**

Job No.: 22-155-4A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description:

MSV Unit - Absorption and Unit Weight  
Mix ID: "White Cement"  
Unit Profile: "Old Country Ledge"

Date Samples Received: 3/2/2022

**Summary of Test Results**

Physical Property	ASTM C1670-21b Specified		Average Test Results	Physical Property	ASTM C1670-21b Specified		Maximum Test Results
	Values	Results			Values	Results	
Density	****	104.6	pcf	Net Cross-Sectional Area	5 max	0.45	ft <sup>2</sup>
Absorption	****	16.1	pcf	Unit Face Dimension	36 max	13.07	in
Saturated Unit Weight	15 max	10.4	lb/ft <sup>2</sup>				
Average Thickness	2.625 max	1.195	in.				


**Individual Unit Test Results**

Absorption Units	Specimen No.	Avg Width	Avg Length	Max Face Dimension	Net Area	Average Thickness*
		in.	in.	in.	ft <sup>2</sup>	in.
Date Tested: 3/24/2022	#1	4.48	11.39	11.46	0.35	1.207
	#2	4.44	10.82	11.12	0.33	1.268
	#3	5.05	12.89	13.07	0.45	1.110
	#4	4.22	11.77	11.81	0.34	NA
	#5	4.87	12.28	12.38	0.41	NA
	#6	4.99	12.22	12.31	0.42	NA
	Average	4.67	11.89	12.03	0.39	1.195

\*Unit thickness is determined in accordance with the procedure outlined in the Annex of ASTM C1670/C1670M-21b.

Date Tested:	Specimen No.	Received Weight	Immersed Weight	Saturated Weight	Oven-Dry Weight	Saturated Unit Weight	Absorption	Density	Net Volume
		lb	lb	lb	lb	lb/ft <sup>2</sup>	pcf	pcf	ft <sup>3</sup>
3/29/2022 to 3/31/2022	#1	3.46	1.49	3.71	3.26	10.5	16.0	104.2	0.0356
	#2	3.44	1.48	3.68	3.24	11.0	15.9	104.5	0.0352
	#3	4.07	1.79	4.39	3.85	9.7	16.4	105.2	0.0418
	Average	3.65	1.59	3.93	3.45	10.4	16.1	104.6	0.0375

  
Timothy Jones  
Manager, Research and Development Laboratory

  
Jason J. Thompson  
Vice President of Engineering

**ASTM C482-20 Test Report**  
**Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste**

Client: Prestige Stone Products  
9290 Winesburg Road  
Dundee, OH 44624

Job No: 22-155-4B  
Report Date: 7/6/2022

Testing Agency: National Concrete Masonry Assoc.  
Research and Development Laboratory  
Address: 13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Description: Manufactured Stone Veneer Unit - Shear Bond  
Mix ID: "White Cement"  
Unit Profile: "Old Country Ledge"

Sampling Party: Prestige Stone Products

Date Received: 3/2/2022

The client provided five manufactured stone veneer units for shear bond testing. Shear bond assemblies were constructed in accordance with ASTM C482-20 utilizing the mortar substrate for non-vitreous tile, as modified by ASTM C1670/C1670M-21b, and portland cement paste substrate as a bonding matrix. Each assembly was tested for shear bond strength in accordance with ASTM C482-20 as modified by ASTM C1670/C1670M-21b.

**Individual Unit Test Results**

*Date Fabricated: 5/11/2022*

*Date Tested: 5/18/2022*

*Shear Bond Specimens*

	Stone Sample		Shear Bond Area* (in. <sup>2</sup> )	Maximum Load (lb)	Shear Bond Strength (psi)
	Avg. Width (in.)	Avg. Height (in.)			
	Unit #1	4.15			
Unit #2	4.16	4.17	17.35	1140	66
Unit #3	4.06	4.04	16.41	1650	101
Unit #4	4.18	4.13	17.26	3590	208
Unit #5	4.04	4.14	16.74	1190	71
Average	4.12	4.10	16.89	1926	114

\* Shear bond area calculated by multiplying the width and length of manufactured stone sample.

ASTM C1670/C1670M-21b requires a minimum average shear bond strength of 50 psi.



Timothy Jones  
Manager, Research and Development Laboratory



Jason J. Thompson  
Vice President of Engineering

**ASTM C1670/C1670M-21b Test Report**

Job No.: 22-155-5A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description:

MSV Unit - Absorption and Unit Weight  
Mix ID: "Grey Cement"  
Unit Profile: "Old Country Ledge"

Date Samples Received: 3/2/2022

**Summary of Test Results**


Physical Property	ASTM C1670-21b Specified		Average Test Results	Physical Property	ASTM C1670-21b Specified		Maximum Test Results
	Values	Results			Values	Results	
Density	****	107.8	pcf	Net Cross-Sectional Area	5 max	0.47	ft <sup>2</sup>
Absorption	****	14.9	pcf	Unit Face Dimension	36 max	12.92	in
Saturated Unit Weight	15 max	10.8	lb/ft <sup>2</sup>				
Average Thickness	2.625 max	1.204	in.				


**Individual Unit Test Results**

Absorption Units	Specimen No.	Avg Width	Avg Length	Max Face Dimension	Net Area	Average Thickness*
		in.	in.	in.	ft <sup>2</sup>	in.
Date Tested: 3/25/2022	#1	4.71	12.07	12.18	0.39	1.195
	#2	4.70	11.70	11.85	0.38	1.201
	#3	5.76	10.82	10.83	0.43	1.216
	#4	5.63	10.63	10.85	0.42	NA
	#5	5.60	12.15	12.31	0.47	NA
	#6	5.04	12.85	12.92	0.45	NA
Average		5.24	11.70	11.82	0.42	1.204

\*Unit thickness is determined in accordance with the procedure outlined in the Annex of ASTM C1670/C1670M-21b.

Date Tested:	Specimen No.	Received Weight	Immersed Weight	Saturated Weight	Oven-Dry Weight	Saturated Unit Weight	Absorption pcf	Density pcf	Net Volume
		lb	lb	lb	lb	lb/ft <sup>2</sup>			ft <sup>3</sup>
3/29/2022 to 3/31/2022	#1	3.99	1.76	4.21	3.74	10.7	14.8	107.3	0.0392
	#2	3.94	1.77	4.16	3.69	10.9	15.3	108.7	0.0382
	#3	4.49	1.97	4.71	4.19	10.9	14.5	107.4	0.0439
Average		4.14	1.84	4.36	3.87	10.8	14.9	107.8	0.0404

  
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Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C482-20 Test Report**  
**Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste**

Client: Prestige Stone Products  
9290 Winesburg Road  
Dundee, OH 44624

Job No: 22-155-5B  
Report Date: 7/6/2022

Testing Agency: National Concrete Masonry Assoc.  
Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Description: Manufactured Stone Veneer Unit - Shear Bond  
Mix ID: "Grey Cement"  
Unit Profile: "Old Country Ledge"

Address:  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Sampling Party: Prestige Stone Products

Date Received: 3/2/2022

The client provided five manufactured stone veneer units for shear bond testing. Shear bond assemblies were constructed in accordance with ASTM C482-20 utilizing the mortar substrate for non-vitreous tile, as modified by ASTM C1670/C1670M-21b, and portland cement paste substrate as a bonding matrix. Each assembly was tested for shear bond strength in accordance with ASTM C482-20 as modified by ASTM C1670/C1670M-21b.

**Individual Unit Test Results**

Date Fabricated: 5/4/2022  
Date Tested: 5/11/2022

*Shear Bond Specimens*

	Stone Sample		Shear Bond Area* (in. <sup>2</sup> )	Maximum Load (lb)	Shear Bond Strength (psi)
	Avg. Width (in.)	Avg. Height (in.)			
Unit #1	4.18	4.12	17.21	3090	180
Unit #2	4.11	4.07	16.75	3230	193
Unit #3	4.06	4.09	16.61	3110	187
Unit #4	3.82	4.00	15.30	2390	156
Unit #5	4.15	4.02	16.67	3820	229
Average	4.07	4.06	16.51	3128	189

\* Shear bond area calculated by multiplying the width and length of manufactured stone sample.

ASTM C1670/C1670M-21b requires a minimum average shear bond strength of 50 psi.



Timothy Jones  
Manager, Research and Development Laboratory



Jason J. Thompson  
Vice President of Engineering

**ASTM C1670/C1670M-21b Test Report**

Job No.: 22-155-6A  
Report Date: 7/6/2022

Client: Prestige Stone Products  
Address: 9290 Winesburg Road  
Dundee, OH 44624

Testing Agency: National Concrete Masonry Association  
Address: Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Standard Specification: ASTM C1670/C1670M-21b

Sampling Party: Prestige Stone Products

Unit Description:

MSV Unit - Absorption and Unit Weight  
Mix ID: "Grey/White Blend Cement"  
Unit Profile: "Old Country Ledge"

Date Samples Received: 3/2/2022

**Summary of Test Results**


Physical Property	ASTM C1670-21b Specified		Average Test Results	Physical Property	ASTM C1670-21b Specified		Maximum Test Results
	Values	Results			Values	Results	
Density	****	110.0	pcf	Net Cross-Sectional Area	5 max	0.40	ft <sup>2</sup>
Absorption	****	14.3	pcf	Unit Face Dimension	36 max	14.48	in
Saturated Unit Weight	15 max	10.6	lb/ft <sup>2</sup>				
Average Thickness	2.625 max	1.159	in.				


**Individual Unit Test Results**

Absorption Units	Specimen No.	Avg Width	Avg Length	Max Face Dimension	Net Area	Average Thickness*
		in.	in.	in.	ft <sup>2</sup>	in.
Date Tested: 3/16/2022	#1	4.09	12.73	12.84	0.36	1.047
	#2	4.04	14.36	14.48	0.40	1.095
	#3	4.28	11.95	11.95	0.35	1.336
	#4	3.63	10.23	10.25	0.26	NA
	#5	4.21	12.05	12.24	0.35	NA
	#6	4.59	10.80	10.83	0.34	NA
	Average	4.14	12.02	12.10	0.35	1.159

\*Unit thickness is determined in accordance with the procedure outlined in the Annex of ASTM C1670/C1670M-21b.

Date Tested:	Specimen No.	Received Weight	Immersed Weight	Saturated Weight	Oven-Dry Weight	Saturated Unit Weight	Absorption	Density	Net Volume
		lb	lb	lb	lb	lb/ft <sup>2</sup>	pcf	pcf	ft <sup>3</sup>
3/29/2022 to 3/31/2022	#1	3.40	1.53	3.50	3.13	9.7	14.4	111.1	0.0315
	#2	3.89	1.74	4.04	3.60	10.0	14.6	109.8	0.0368
	#3	4.14	1.84	4.31	3.85	12.1	14.0	109.1	0.0395
	Average	3.81	1.71	3.95	3.53	10.6	14.3	110.0	0.0359

  
\_\_\_\_\_  
Timothy Jones  
Manager, Research and Development Laboratory

  
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Jason J. Thompson  
Vice President of Engineering

**ASTM C482-20 Test Report**  
**Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste**

Client: Prestige Stone Products  
9290 Winesburg Road  
Dundee, OH 44624

Job No: 22-155-6B  
Report Date: 7/6/2022

Testing Agency: National Concrete Masonry Assoc.  
Research and Development Laboratory  
13750 Sunrise Valley Drive  
Herndon, VA 20171-4662

Unit Description: Manufactured Stone Veneer Unit - Shear Bond  
Mix ID: "Grey/White Blend Cement"  
Unit Profile: "Old Country Ledge"

Sampling Party: Prestige Stone Products

Date Received: 3/2/2022

The client provided five manufactured stone veneer units for shear bond testing. Shear bond assemblies were constructed in accordance with ASTM C482-20 utilizing the mortar substrate for non-vitreous tile, as modified by ASTM C1670/C1670M-21b, and portland cement paste substrate as a bonding matrix. Each assembly was tested for shear bond strength in accordance with ASTM C482-20 as modified by ASTM C1670/C1670M-21b.

**Individual Unit Test Results**

Date Fabricated: 4/25/2022


Date Tested: 5/2/2022

*Shear Bond Specimens*

	Stone Sample		Shear Bond Area* (in. <sup>2</sup> )	Maximum Load (lb)	Shear Bond Strength (psi)
	Avg. Width (in.)	Avg. Height (in.)			
Unit #1	3.94	3.98	15.64	1510	97
Unit #2	3.94	4.00	15.72	1170	74
Unit #3	3.94	3.99	15.68	2240	143
Unit #4	3.96	4.00	15.82	1840	116
Unit #5	3.92	3.85	15.05	2260	150
Average	3.94	3.96	15.58	1804	116

\* Shear bond area calculated by multiplying the width and length of manufactured stone sample.

ASTM C1670/C1670M-21b requires a minimum average shear bond strength of 50 psi.



Timothy Jones  
Manager, Research and Development Laboratory



Jason J. Thompson  
Vice President of Engineering