

**AMBER CONSULTING COMPANY**

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March 7, 2020  
Buckingham Slate Company  
P. O. Box 8  
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A summary of test results on Buckingham Slate per ASTM C629 Slate Dimension Stone are as follows:

1. Water Absorption, C121-15, 0.087 % (ASTM max. for Class I Exterior slate is 0.25%).
2. Modulus of Rupture, C120-15a:  
    Across Grain is: 11365 psi (ASTM min. for Class I Exterior slate is 9000 psi).  
    Along Grain is: 10305 psi (ASTM min. for Class I Exterior Slate is 7200 psi)
3. Acid Resistance, C217-15a, 0.0004 in. (ASTM max. for Class I Exterior slate is 0.015 in.).
4. Density/Specific Gravity, C1353-15a, 174.7 lbs/cu.ft / 2.815. Previous values were 174.5 lbs/cu.ft / 2.815.
5. Abrasion Resistance, C1353-15, 20 lw (ASTM min. for Class 1 ExteriorSlate is 8.0 lw)
6. Compressive Strength, C170-17, 26695 psi. Previous value was 26970 psi.

Tables 1 thru 6 list the individual tests. From the specimens tested, this variety of slate qualifies as a Class I Exterior/Interior Dimension Slate per the requirements of ASTM C629-15 Table 1 (Specification for Slate Dimension Stone).

Modulus of Rupture and Compression Strength tests were conducted on a Tinius Olsen Testing Machine calibrated February 2020 and a Satec Universal Testing Machine calibrated August 24, 2016 respectively. The Weather Resistance tests were conducted using the hand scraping method. Thickness measurements were taken at three (3) different locations along the scrape track. The average depth of softening was recorded.

Very truly yours,

Thomas H. Olson, Test Engineer

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FINAL RESULTS- Buckingham Slate Company

SLATE DIMENSION STONE- Buckingham, Quarry: Arvonja, Virginia

**TABLE 1- WATER ABSORPTION  
(ASTM C121)**

| Specimen No.   | Absorption %  |
|----------------|---------------|
| B1A            | 0.079         |
| B2A            | 0.083         |
| B3A            | 0.103         |
| B4A            | 0.086         |
| B5A            | 0.092         |
| B6A            | 0.078         |
| <b>Average</b> | <b>0.087%</b> |

**(Exterior 0.25% max  
ASTM C629)**

**TABLE 2 – MODULUS OF RUPTURE (ASTM C120)**

| Specimen No.   | Load Perpendicular to Grain |                  | Specimen No. | Load Parallel to Grain |                  |
|----------------|-----------------------------|------------------|--------------|------------------------|------------------|
|                | Cut Across the Grain        | psi              |              | Cut With the Grain     | psi              |
| B1PD           |                             | 10974            | B7PL         |                        | 10874            |
| B2PD           |                             | 11545            | B8PL         |                        | 10266            |
| B3PD           |                             | 12323            | B9PL         |                        | 9863             |
| B4PD           |                             | 11528            | B10PL        |                        | 11333            |
| B5PD           |                             | 9980             | B11PL        |                        | 10316            |
| B6PD           |                             | 11842            | B12PL        |                        | 9181             |
| <b>Average</b> | <b>Across</b>               | <b>11365 psi</b> |              | <b>With</b>            | <b>10305 psi</b> |

ASTM C629 Exterior Min9000 psi                      7200 psi  
 Total Average (across and with the grain): . . . . .10835 psi

**TABLE 3 – ACID RESISTANCE (ASTM C217)**

| Specimen No.   | Depth of Softening inches |
|----------------|---------------------------|
| B1W            | 0.0003                    |
| B2W            | 0.0001                    |
| B3W            | 0.0008                    |
| <b>Average</b> | <b>0.0004in.</b>          |

**(Exterior 0.015 in. max  
ASTM C629)**

**TABLE 4 – BULK SPECIFIC GRAVITY/  
DENSITY/ABSORPTION (ASTM C97)**

| Specimen No.   | Absorption % | Density lb/cu.ft     | Specific Gravity |
|----------------|--------------|----------------------|------------------|
| B1SG           | 0.05         | 174.6                | 2.816            |
| B2SG           | 0.05         | 174.5                | 2.814            |
| B3SG           | 0.04         | 174.5                | 2.815            |
| B4SG           | 0.04         | 175.4                | 2.813            |
| B5SG           | 0.05         | 174.6                | 2.816            |
| <b>Average</b> | <b>0.04%</b> | <b>174.7lb/cu.ft</b> | <b>2.815</b>     |

**TABLE 5 – ABRASION RESISTANCE \* (ASTM C1353)**

| Specimen No.   | Index of Abrasion lw               |
|----------------|------------------------------------|
| B1AR           | 17                                 |
| B2AR           | 20                                 |
| B3AR           | 23                                 |
| <b>Average</b> | <b>20 lw (Exterior 8.0 lw min)</b> |

*\*Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser*

**TABLE 6 – COMPRESSION STRENGTH (ASTM C170-15)\***

*\* Load Perpendicular to the Grain/ Cut Across the Grain*

| Specimen No.   | *Area sq. in. | DRY       |                          | Specimen No. | *Area sq.in. | WET       |                          |
|----------------|---------------|-----------|--------------------------|--------------|--------------|-----------|--------------------------|
|                |               | Load lbs. | Compressive Strength-psi |              |              | Load lbs. | Compressive Strength-psi |
| B1CD           | 4.05          | 143500    | 35432                    | B1CW         | 3.88         | 86900     | 22397                    |
| B2CD           | 3.98          | 118600    | 28799                    | B2CW         | 3.96         | 82000     | 20707                    |
| B3CD           | 3.96          | 128500    | 32499                    | B3CW         | 3.94         | 80400     | 20406                    |
| B4CD           | 4.02          | 115400    | 28706                    | B4CW         | 4.01         | 86200     | 21496                    |
| B5CD           | 3.96          | 137400    | 34697                    | B5CW         | 3.90         | 81300     | 20846                    |
| <b>Average</b> |               |           | <b>Dry 32220 psi</b>     |              |              |           | <b>Wet 21170 psi</b>     |

Average Compressive Strength (Dry and Wet): 26695 psi

\*Specimen Nominal size- 2 inch cube