



Product name: Black Slate Natural Stone
Product No: VALANGO BLACK™

Material:

Natural Stone: Slate
Color: VALANGO BLACK™
Application: Interior and Exterior
Thickness: Standard thickness 1, 2, 3, 4, and 5 cm. Larger Available upon request
Dimensions: Slab up to 50 inches by 101 inches
Tile Standard Sizes available. Call or email for sizes
Custom: Thickness, Sizes and Shapes available upon request

Physical Properties:1

Density: ~192.3 lbs/ft3 (3 082 kg/m3)
Absorption: 0.023%
Modulus of Rupture Across Grain – Dry 10 600 psi
Modulus of Elasticity Across Grain – Dry 15.1 x 10^6
Abrasion Resistance 10.6 lw
Acid resistance 0.008 inches
Compressive Strength - Dry 43 500 psi
Modulus of Rupture – Dry 3 800 psi

Design Data:

DCOF – Wet2 0.52 (Cleaved Face)

Anchorage System Load -Wet

Kerf/Clip3 638 ASL
T-313 986 ASL

NOTES:

1. Tested in Accordance with ASTM C 629 Standard Specification for Slate Dimension Stone and ASTM C 170 Standard Test Method for Compressive Strength of Dimensional Stone and C 99 Standard Test Method for Modulus of Rupture of Dimensional Stone (Not Evaluated for Roofing tiles)

Physical Requirements

Table with 3 columns: Property, Test Requirements, and Classifications. Rows include Absorption, Modulus of rupture (Across grain, Along grain), Abrasion resistance, and Acid resistance.

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2. Tested in accordance with ANSI/NFSI B101.3-2012 “Test Method for Measuring Wet DCOF of Common Hard Surface Floor Materials”

Table 1.

Wet DCOF Value (μ D)	Slip Resistance Potential	Action
>0.45 (inclines) >0.42 (level)	High - Lower probability of slipping	Monitor DCOF regularly and maintain cleanliness.
0.30 - 0.45 (inclines) 0.30 – 0.42 (level)	Acceptable - Increased probability of slipping	Monitor DCOF regularly and maintain cleanliness. Consider traction enhancing products and practices where applicable for intended use
< 0.30	Low - Higher probability of slipping	Seek professional intervention. Consider replacing flooring and/or coating with high traction products.

NOTE: It is important to note that these categories are not indicative of all possible conditions. There are numerous variables that may add to, or take from the available slip resistance potential of any given floor surface. (ie: type or style of footwear, types and frequency contaminants, pedestrian preoccupation, etc). These ranges were established based on research done in Europe utilizing empirical and mathematical techniques and were validated in the laboratory and field through extensive testing with the following standardized methods: DIN 13287 - BST Tester; DIN 51130 – German Ramp; DIN 51131 – GMG 200 Tester. These values would be applicable to other test methods or devices which can produce an R correlation of greater than 0.80 to one of these three reference standards. . Data produced by tribometers which are not designed to measure wet DCOF do not necessarily correlate to the values listed in Table 1.

3. Tested in accordance with ASTM C 1354 Standard Test Method for Strength of Individual Stone Anchorages in Dimension Stone

Kerf/Clip Values based on 4.0” wide by 2.5” deep Plunge KERF with 2.5” Wide by 1.75” Stainless Steel Clip Anchor System

T-31 Values based on 3/8-16" Stainless Steel T-31 Bolt, Receiving Slot was filled with Dow Corning Silicone sealant placed into a 3/4" depth cut (pullout force was applied using an Attachment Nut to the T-31 Bolt).

4. Solar Reflectance and Emittance Rating

Testing was conducted in accordance with ASTM C 1549 “Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer” and ASTM C 1371 “Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emitters” and the Solar Reflectance value was calculated based on standard solar and ambient condition in accordance with ASTM E 1980 “Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces”

Solar Reflectance (SR) value and Emittance (ϵ_{spec})

SR – 0.26 (Average of 10 Readings)
 ϵ_{spec} – 0.78 (Average of 10 Readings)
 SRI – 0.28

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Comparative Values of Solar Reflectance and Emittance Values of Common Paving Materials⁴

Material	Solar Reflectance	Emittance	Solar Reflective Index
Valango Black™	0.26	0.78	28
Granite – Dark (Rough Surface)	0.28	0.93	30
Granite – Light (Rough Surface)	0.48	0.93	56
Limestone – Dark (Rough Surface)	0.27	0.90	31
Limestone – Light (Rough Surface)	0.53	0.89	62
Concrete Pavers – Dark (Patterned)	0.18	0.91	17
Concrete Pavers – Light (Patterned)	0.73	0.90	90
Bluestone	0.32	0.85	35
Brick – Dark (Rough Surface)	0.24	0.79	26
Brick – Light (Rough Surface)	0.72	0.89	87
Flagstone (Blended Colors)	0.51	0.92	56
Porcelain – Dark (Textured Surface)	0.17	0.90	15
Porcelain – Light (Textured Surface)	0.56	0.89	67

⁴ NOTE: Comparative Values are based upon averages of multiple sources and do not reflect a specific Quarry, Manufacturer, Product, Mixture or Coloring. Averages are for estimated comparison only. Porto Slate Importers makes no claims of the values presented other than the Test Values for Valango Black™ which are based upon actual testing.

- Solar Reflectance is the fraction of the solar energy that is reflected by a surface, expressed as a number between 0 and 1 or as a percentage. The higher the value, the better the surface reflects solar energy.
- Thermal Emittance is the amount of absorbed heat that is radiated from a surface, expressed as a number between 0 and 1 or as a percentage. The higher the value, the better the surface radiates heat.
- Solar Reflectance Index (SRI) indicates a surface's ability to reject solar heat, and is the combined value of reflectivity and emittance. It is defined so that a standard black is zero (reflectance 0.05, emittance 0.90) and a standard white is 100 (reflectance 0.80, emittance 0.90).

NOTE: Values are representative and may not demonstrate actual installation values. It is important that the user obtain current values before use and to follow ASTM, BSI, AIA and other applicable design and installation specifications.

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