



Standard Specification for Serpentine Dimension Stone¹

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1. Scope

1.1 This specification covers the material characteristics, physical requirements, and sampling appropriate for the selection of serpentine (serpentine marble) for general building and structural purposes. Refer to Guides C 1242 and C 1528 for the appropriate selection and use of serpentine dimension stone.

1.2 Dimension serpentine shall include stone that is sawed, cut, split, or otherwise finished or shaped and shall specifically exclude molded, cast, or otherwise artificially aggregated units composed of fragments, and also crushed and broken stone.

2. Referenced Documents

2.1 ASTM Standards:²

- C 97 Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
- C 99 Test Method for Modulus of Rupture of Dimension Stone
- C 119 Terminology Relating to Dimension Stone
- C 170 Test Method for Compressive Strength of Dimension Stone
- C 241 Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic
- C 880 Test Method for Flexural Strength of Dimension Stone
- C 1242 Guide for Selection, Design, and Installation of Dimension Stone Anchoring Systems
- C 1353 Test Method Using the Taber Abraser for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic
- C 1528 Guide for Selection of Dimension Stone for Exterior Use

¹ This specification is under the jurisdiction of ASTM Committee C18 on Dimension Stone and is the direct responsibility of Subcommittee C18.03 on Material Specifications.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology C 119.

4. Physical Properties

4.1 Serpentine supplied under this specification shall conform to the physical requirements prescribed in Table 1.

4.2 Serpentine shall be free of minerals that may cause objectionable staining under normal environments of use.

4.3 Warping of serpentine due to localized water absorption is a natural characteristic of the material and shall be taken into account in assessing the permissible natural variations suitable for a particular application. Setting serpentine with a non-water-based setting material in a full-coverage setting bed over a rigid substrate can prevent warping from occurring after installation.

4.4 Alteration of the color and finish of serpentine with exposure to the weather can occur and shall be taken into account in assessing the suitability of serpentine for a particular application. Alteration of serpentine, due to weather exposure, can result in whitish mineral deposits on the surface of the stone and can also result in a faded appearance and loss of polish.

4.5 The desired color and texture, with their permissible natural variations in material characteristics for material to be produced for the project, shall be established by control samples. Representative samples shall be selected prior to production by viewing a sufficient number of samples that show the complete range of variations in color and texture of the serpentine specified.

5. Sampling

5.1 Samples, if required, for testing to determine the characteristics and physical properties shall be representative of the serpentine to be used.

6. Keywords

- 6.1 serpentine; serpentine marble

TABLE 1 Physical Requirements

NOTE—The values in **Table 1** were established using samples prepared according to the individual test methods. Finishes, other than those specified in the individual test methods, may result in a deviation from established values.

Physical Property	Test Requirements	Classifications	Test Methods
Absorption by weight, max, %	0.20 0.60	I Exterior II Interior	C 97
Density, min, lb/ft ³ (kg/m ³)	160 (2560)	I, II	C 97
Compressive strength, min, psi (MPa)	10000 (69)	I, II	C 170
Modulus of rupture, min, psi (MPa)	1000 (6.9)	I, II	C 99
Abrasion resistance, min, $H_a^{A,B,C}$	10	I, II	C 241/C 1353
Flexural strength, min, psi (MPa)	1000 (6.9)	I, II	C 880

^A Pertains to foot traffic only. Where two or more stone varieties are combined for color and design effects, there should be no greater difference than five points in abrasion resistance.

^B The supplier of the No. 60 Alundum abrasive, Norton, has indicated that the formula for Norton treatment 138S has been changed. The new abrasive is currently more aggressive, resulting in lower abrasion resistance values (H_a) than when the standard was initially established. As such, care should be taken when interpreting H_a values from tests using the new abrasive, particularly with regard to current ASTM stone standard specification requirements for abrasion resistance, which were developed when the original abrasive was still in use.

^C It is not necessary to perform both tests. Availability of the proper equipment and materials by the testing laboratory may determine which test is performed.

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