



Standard Specification for Quartz-Based Dimension Stone¹

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1. Scope

1.1 This specification covers the material characteristics, physical requirements, and sampling appropriate to the selection of quartz-based dimension stone for general building and structural purposes. Refer to Guides [C1242](#) and [C1528](#) for the appropriate selection and use of quartz-based dimension stone.

1.2 Quartz-based dimension stone 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.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

2. Referenced Documents

2.1 ASTM Standards:²

[C97/C97M](#) Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone

[C99/C99M](#) Test Method for Modulus of Rupture of Dimension Stone

[C119](#) Terminology Relating to Dimension Stone

[C170/C170M](#) Test Method for Compressive Strength of Dimension Stone

[C241/C241M](#) Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic

[C1242](#) Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems

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.

[C1353](#) Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform, Double-Head Abraser

[C1528](#) Guide for Selection of Dimension Stone

3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology [C119](#).

4. Classification

4.1 Quartz-based dimension stone sandstone shall be classified according to the free silica content as follows:

4.1.1 *I Sandstone*, with 60 % minimum free silica content.³

4.1.2 *II Quartzitic Sandstone*, with 90 % minimum free silica content.

4.1.3 *III Quartzite*, with 95 % minimum free silica content.

5. Physical Properties

5.1 Quartz-based dimension stone supplied under this specification shall conform to the physical requirements in [Table 1](#).

5.2 Quartz-based dimension stone shall be sound, durable, and free of spalls, cracks, open seams, pits, or other defects that are likely to impair its structural integrity in its intended use.

5.3 The desired color and texture, with their permissible natural variations in material characteristics for all material to be produced for the project, shall be established by control samples. Select representative samples by viewing a sufficient number of physical samples prior to production that show the complete range of variations in color and texture of the quartz-based dimension stone specified.

6. Sampling

6.1 Samples, if required, for testing to determine the characteristics and physical properties shall be representative of the quartz-based dimension stone to be used.

7. Keywords

7.1 ashlar; Bluestone; Quartzite; Sandstone

³ Free silica consists of detrital quartz grains plus authigenic silica.

TABLE 1 Physical Requirements

NOTE 1—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.

Property	Test Requirements	Classifications	Test Method(s)
Absorption by weight, max, %	8	I Sandstone	C97/C97M
	3	II Quartzitic Sandstone	
	1	III Quartzite	
Density, min, lb/ft ³ [kg/m ³]	125 [2000]	I Sandstone	C97/C97M
	150 [2400]	II Quartzitic Sandstone	
	160 [2560]	III Quartzite	
Compressive strength, min, psi (MPa)	4000 [28]	I Sandstone	C170/C170M
	10000 [69]	II Quartzitic Sandstone	
	20000 [140]	III Quartzite	
Modulus of rupture min, psi (MPa)	350 [2.4]	I Sandstone	C99/C99M
	1000 [6.9]	II Quartzitic Sandstone	
	2000 [13.8]	III Quartzite	
Abrasion resistance, min H ^{aA,B,C}	2 ^D	I Sandstone	C241/C241M/C1353
	8	II Quartzitic Sandstone	
	8	III Quartzite	

^A Pertains only to stone subject to foot traffic.

^B The supplier of the abrasive, Norton, has indicated that the formula for No. 60 Alundum abrasive (Norton Treatment 138S) has been changed. The new abrasive is currently more aggressive, resulting in lower H_a values than when the standard was initially established. As such, care should be taken when interpreting H_a test results, both with regard to this standard and with regard to historical data from the same quarry source. Committee C18 is actively studying alternatives to deal with this issue.

^C Abrasion Resistance Test Method C1353 will eventually replace Test Method C241/C241M and 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.

^D Not recommended for paving in areas subject to heavy foot traffic.

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