Designation: C 568 – 03

# Standard Specification for Limestone Dimension Stone[1]

This standard is issued under the fixed designation C 568; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

## 1. Scope

1.1 This specification covers the material characteristics, physical requirements, and sampling appropriate to the selection of limestone for general building and structural purposes.

1.2 Dimension limestone shall include stone that is sawed, cut, split, or otherwise finished or shaped and shall specifically exclude molded, cast, or otherwise artificially aggregated units of composed 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 1353 Test Method Using the Taber Abraser for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic

## 3. Terminology

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

3.1.1 *limestone*, *n*—a sedimentary rock composed principally of calcium carbonate (the mineral calcite) or the double carbonate of calcium and magnesium (the mineral dolomite) or a mixture of the two.

## 4. Classification

4.1 Dimension limestone shall be classified into three categories, generally descriptive of those limestones having densities in approximate ranges, as follows:

4.1.1 *I* (*Low-Density*)—Limestone having a density ranging from 110 through 135 lb/ft$^3$ (1760 through 2160 kg/m$^3$).

4.1.2 *II* (*Medium-Density*)—Limestone having a density greater than 135 and not greater than 160 lb/ft$^3$ (2160 through 2560 kg/m$^3$).

4.1.3 *III* (*High-Density*)—Limestone having a density greater than 160 lb/ft$^3$ (2560 kg/m$^3$).

## 5. Physical Requirements

5.1 Limestone supplied under this specification shall conform to the physical requirements listed in Table 1.

5.2 Limestone 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 limestone specified.

## 6. Sampling

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

[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.

**TABLE 1 Physical Requirements**

NOTE—The material property 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 | Classification | | Test Method(s) |
|---|---|---|---|---|
| Absorption by weight, max, % | 12 | I | low-density | C 97 |
| | 7.5 | II | medium-density | |
| | 3 | III | high-density | |
| Density, min, lb/ft$^3$(kg/m$^3$) | 110 (1760) | I | low-density | C 97 |
| | 135 (2160) | II | medium-density | |
| | 160 (2560) | III | high-density | |
| Compressive strength, min, psi (MPa) | 1800 (12) | I | low-density | C 170 |
| | 4000 (28) | II | medium-density | |
| | 8000 (55) | III | high-density | |
| Modulus of rupture min, psi (MPa) | 400 (2.9) | I | low-density | C 99 |
| | 500 (3.4) | II | medium-density | |
| | 1000 (6.9) | III | high-density | |
| Abrasion resistance, min, hardness[A,B,C] | 10 | I | low-density | C 241/C |
| | 10 | II | medium-density | 1353 |
| | 10 | III | high-density | |

[A]Pertains only to stone subject to foot traffic.

[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 currrently more aggressive, resulting in lower abrasive hardness 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. Committee C-18 is actively studying alternatives to address this issue.

[C]Abrasion Resistance Test Method C 1353 will eventually replace Test Method C 241 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.