



Designation: C 1243 – 93 (Reapproved 2003)

# Standard Test Method for Relative Resistance to Deep Abrasive Wear of Unglazed Ceramic Tile by Rotating Disc<sup>1</sup>

This standard is issued under the fixed designation C 1243; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the deep abrasive wear by measuring the loss of volume resulting from abrasion of unglazed ceramic tile under given conditions by means of a rotating disc and the use of abrasive material.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- C 242 Terminology of Ceramic Whitewares and Related Products
- C 448 Test Methods for Abrasion Resistance of Porcelain Enamels
- C 501 Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
- C 1027 Test Method for Determining Visible Abrasion Resistance of Glazed Ceramic Tile

## 3. Terminology

### 3.1 Definitions:

3.1.1 For definitions of terms used in this test method, see Terminology C 242.

## 4. Significance and Use

4.1 This test method provides the means to measure the potential resistance to wear of unglazed ceramic tile intended for floor coverings. This test method does not consider physical appearance but is intended to measure durability. See Test Method C 1027 for the determination of visible abrasion resistance of glazed ceramic tile.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C21 on Ceramic Whitewares and Related Products and is the direct responsibility of Subcommittee C21.06 on Ceramic Tile.

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<sup>2</sup> 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.

4.1.1 See Test Method C 501 for an alternative method to determine deep abrasion.

## 5. Apparatus<sup>3</sup>

5.1 Abrasion apparatus (see Fig. 1) consisting essentially of a rotating disc, a storage hopper with a dispensing device for the abrasive material, a test specimen support, and a counterweight. The disc is made of Fe 360A steel (ISO 630-1980) with a diameter of  $200 \pm 0.2$  mm and thickness at the edge of  $10 \pm 0.1$  mm, and with a rate of revolution of 75 r/min. The pressure with which test specimens are held against the steel disc is determined by calibrating the apparatus against float glass (bathside). The pressure is adjusted such that, after 150 revolutions, a chord of  $24 \pm 0.5$  mm is produced.

NOTE 1—For the specification of float glass, see Test Method C 448, Table A1.4.

5.1.1 When the disc diameter has worn to 199 mm, the steel disc shall be replaced.

5.2 A linear measuring gage capable of measuring to 0.1 mm.

5.3 *Abrasive Material*—White fused aluminum oxide of grain size 80 (32 GB 1971) FEPA Bonded Abrasive Grain Size Standard Grits 8-220.

## 6. Test Specimen

6.1 *Types of Test Specimens*—Tests shall be carried out using whole tiles or test specimens of suitable dimensions. Before testing, small specimens shall be fixed with an adhesive onto a larger background, avoiding joints where possible.

6.2 *Sampling*—A minimum of five tiles shall be tested. Only tile that show no visible warpage when checked with a straightedge shall be used.

## 7. Procedure

7.1 Place a test specimen in the apparatus so that it is tangential against the disc. Ensure that the feed of abrasive material into the grinding zone is uniform at a rate of  $100 \text{ g} \pm 10 \text{ g}$  per 100 revolutions.

7.2 Rotate the steel disc for 150 revolutions. Remove the test specimen from the apparatus and measure the cord length

<sup>3</sup> Equipment source: Gabrielli S.R.L., Box 218, 50019 Sesto Fiorentino, Florence, Italy, Fax: 55-42-15-654.