Designation: C556 – 16

# Standard Test Method for Resistance of Overglaze Decorations to Attack by Detergents[1]

This standard is issued under the fixed designation C556; 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.

## 1. Scope

1.1 This test method[2] covers the determination and evaluation of the resistance of overglaze decorations on ceramic whitewares to attack by normal household soaps and liquid detergents under normal household conditions.

1.2 This test method applies primarily to overglaze decorations applied to dinnerware for domestic use wherein household soaps and detergents are used for cleaning the soiled ware by either hand or machine operations.

1.3 The values stated in SI units are to be regarded as standard. The inch-pound units given in parentheses are for information only.

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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 limitation prior to use.*

## 2. Significance and Use

2.1 This test method provides an indication of service life under detergent exposure.

## 3. Apparatus

3.1 *Stainless Steel Beaker,* 4 L (4.2 qt) capacity, fitted with a stainless steel lid.

3.2 *Stainless Steel Supports* to hold specimens off the bottom of the beaker.

3.3 *Steam Bath* or other heating device capable of maintaining bath temperature at 95 ± 1.1°C (203 ± 2°F).

## 4. Reagents and Materials

4.1 *Sodium Carbonate Solution* made by dissolving anhydrous sodium carbonate in distilled water in the ratio of 5 g of sodium carbonate per litre (1.14 qt) of water.

4.2 *Clean Muslin Cloth.*

## 5. Sampling

5.1 Whole pieces or segments of ware are selected so as to be representative of the decoration to be tested.

## 6. Test Specimens

6.1 The size of the specimens shall be such that the ratio of the total surface area of three specimens to volume of test solution shall be not greater than 100 $cm^2$ (15.5 $in.^2$) of surface to 3 L (3.2 qt) solution. Four identical specimens (identical as to decoration, not necessarily as to size or shape) are required for each test.

## 7. Procedure

7.1 Place the stainless steel specimen support in the bottom of the 4-L (4.2-qt) stainless steel beaker, and pour 3 L (3.2 qt) of sodium carbonate standard test solution into the beaker. Cover the beaker and let it remain covered throughout the test except for brief intervals when temperature measurements are made or when specimens are inserted or withdrawn. Place the beaker on the steam bath or other heat source, and heat the test solution to 95 ± 1.1°C (203 ± 2°F) throughout the test.

NOTE 1—The mean temperature at which this test must be conducted is just below (approximately 1°C (or 2°F)) the boiling point of water. If the test is conducted at altitudes above sea level, appropriate adjustment should be made where steam baths are not used.

7.2 Degrease the specimens just prior to testing by washing in warm distilled water, rinsing with acetone until the surface films uniformly with distilled water, rinsing finally with fresh acetone, and then air drying. When the test solution has reached temperature, insert three of the specimens in the beaker in such a manner that they are completely covered with solution and do not overlap each other.

7.3 After 2 h, remove one specimen from the beaker and rub the decorated area vigorously with a bit of muslin cloth, four plies thick, which has been dampened with test solution. Rinse

[1] This test method is under the jurisdiction of ASTM Committee C21 on Ceramic Whitewares and Related Products and is the direct responsibility of Subcommittee C21.03 on Methods for Whitewares and Environmental Concerns.

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[2] This test method has been adapted from the FB2C test method developed by the United States Potters Association.