

ORGANIC IMPURITIES

ASTM C-40
AASHTO T-21

Test Procedure for

ORGANIC IMPURITIES IN FINE AGGREGATE FOR CONCRETE

Effective Date: October 19, 2011

1. SCOPE

- 1.1 This method determines the presence of organic compounds in fine aggregates to for use in cement mortar or concrete. The test provides a quick, relative measure to determine if further tests of the fine aggregate are necessary before approval for use.
 - 1.2 The value given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.
 - 1.3 This test may involve hazardous materials. It is the responsibility of the technician to ensure that proper safety precautions and material disposal methods are implemented. Sodium Hydroxide, also known as "lye" or "caustic soda" is utilized in this test. Safety goggle and other safety equipment are highly recommended.
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2. APPARATUS

- 2.1 *Glass bottles*, oval or round, 240-470 ml (8-16 fl. oz.) clear glass, graduated in milliliters (ounces), with screw type caps or rubber stoppers.
 - 2.2 *Sodium hydroxide solution*, 3% solution prepared by dissolving 30 g of sodium hydroxide (NaOH) crystals in 970 ml (33 fl. oz.) of distilled water.
 - 2.3 *Glass color standard*, mounted in a plastic holder with five organic color numbers, One through five (Gardner Color Standard Numbers 5, 8, 11, 14 and 16, ASTM D 1544 [06.01]).
 - 2.4 As an alternative to the glass color standards above, AASHTO T21 includes a procedure for producing a reference color standard solution.
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3. PROCEDURE

- 3.1 Obtain a 450 g air-dried sample in accordance with Ohio Aggregate Technician Level I sampling and sample reduction methods including AASHTO T2 and AASHTO T248.

- 3.2 Fill the glass bottle to the 130 ml (4.5 fl. oz.) mark with the material to be tested.
 - 3.3 Add enough NaOH solution to the bottle to cover sample. Place cap or stopper on jar and shake jar vigorously to remove air bubbles.
 - 3.4 Bring the solution level up to the 200 ml (7 fl. oz.) mark, stopper, and shake again.
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- 3.5 Allow the bottle and contents to stand undisturbed for 24 hours.
- 3.6 At the end of the 24-hour standing period, compare the color of the supernatant liquid above the test sample with that of the Glass Color Standard, Organic Color No. 3 (Gardner No. 11), as described under section 2.

Note 1 – Do not disturb the contents while handling the bottles when making the color comparison since this could cause the liquid to become cloudy.

4. REPORTING

- 4.1 When using the Glass Color Standard (Section 2.3) report the number of the organic plate number which is nearest to the color of the supernatant liquid above the test specimen.
- 4.2 When using the alternate procedure (Section 2.4) report the test results as "lighter", "darker" or "equal" to the color standard.

Samples rated "darker" than organic plate No. 3 or darker than the standard color solution should be testing in accordance with AASHTO T71.