WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

INSOLUBLE RESIDUE IN CARBONATE AGGREGATES

1.0 PURPOSE

1.1 To modify the testing procedure for determining the insoluble residue in carbonate aggregates based on the guidelines set forth in ASTM D 3042.

2.0 SCOPE

2.1 This procedure is designed to determine the percentage of insoluble residue in carbonate aggregates using Hydrochloric Acid (HCL) solution to dissolve the carbonates.

3.0 MODIFICATIONS TO ASTM PROCEDURE

3.1 Section 4: Apparatus

Subsection 4.1 Sieve sizes will include only the 300 µm, 100 µm, and 75 µm.

Subsection 4.4 Agitation Equipment, consisting of a high speed blender (stainless steel, 16,000 rpm, 1000 ml capacity) and glass stirring rods.

Subsection 4.11 Wash Bottle, 1000 ml capacity.

Subsection 4.12 Bulb Syringe, 100 ml capacity.

Subsection 4.13 Buchner Funnel, 292 mm diameter, California modified.

Subsection 4.14 Filtering Flasks, 1000 ml capacity.

Subsection 4.15 Vacuum pump.

3.2 Section 6: Samples

Subsection 6.1.1 The aggregate used in the test sample shall pass the 1.18 mm sieve and be retained on the 600 µm sieve.

Subsection 6.3 An oven dry sample weighing a minimum of 200 grams shall be used for the test.

3.3 Section 7: Procedure

Subsection 7.2 Only one test sample is necessary for each aggregate sampled.

Subsection 7.3 Substitute a 200 gram sample for the size specified. Use of undiluted HCL will be permitted providing extreme caution is employed. When concentrated HCL is used, it is suggested that the initial additions be confined to a quantity which produces a controlled effervescence. It is also suggested that 1000 ml of distilled water be readily available to control excessive effervescence and to wash the residue from the sides of the container.

Subsection 7.4 Stir the contents periodically with a glass rod.

Subsection 7.5 See note under Subsection 7.3.

Subsection 7.12 The nested sieves shall be the following series:

300 µm
150 µm
75 µm

3.4 Section 8: Procedure for Determining the Total Acid Insoluble Residue Content

Subsection 8.2 The nested sieves shall be the following series:

300 µm
150 µm
75 µm

Subsection 8.6 Filter the solution through rapid filtering paper placed in the Buchner Funnel connected to the vacuum pump.

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