



**Florida Method of Test
for
DETERMINATION OF ACID INSOLUBLE MATERIAL
RETAINED ON THE 0.075mm (NO. 200) MESH SIEVE**

Designation: FM 5-510

1. SCOPE

- 1.1 This method describes a procedure for determining the amount of inherent silica particles as polish resistant material in aggregates for use in Asphalt Friction Course.

NOTE: The values stated in SI units are to be regarded as standard. The values in parenthesis are for information only.

2. APPARATUS

- 2.1 Balance - Accurate to 0.1 grams
- 2.2 Sample splitter, conforming to FM 1-T 248
- 2.3 2 L glass beaker for acid digestion
- 2.4 Stainless Steel mesh sieves No. 10 (2.00 mm) and No. 200 (0.075 mm)
- 2.5 Oven capable of maintaining a temperature of $110^{\circ}\pm 5^{\circ}\text{C}$ ($230^{\circ}\pm 9^{\circ}\text{F}$)
- 2.6 Container suitable to dry samples in oven

3. MATERIALS

- 3.1 Hydrochloric Acid (HCl), Reagent Grade
- 3.2 Deionized (DI) Water

4. PROCEDURE

- 4.1 Obtain a sample resulting in a minimum of 200 g sample retained on the No. 10 sieve (2.00 mm) by use of a sample splitter.
- 4.2 Remove the minus No. 10 material from the sample by washing over No. 10 (2.00 mm) sieve.

- 4.3 Dry the sample in accordance to AASHTO T 265.
- 4.4 Weigh $200\text{g} \pm 10\text{g}$ from dried sample and record the mass for use in calculations.
- 4.5 Place the sample in a 2 L beaker and add sufficient DI water to fully cover the sample (about 50 mL).
- 4.6 Slowly add 400 mL HCl (1:1 v/v) with sufficient pauses to prevent the foaming solution from overflowing the container
- 4.7 When the effervescence has subsided, stir and place beaker on a hot plate, keeping the temperature slightly below boiling.
- 4.8 After the reaction ceases, add an additional 200 mL of HCl (1:1 v/v). Continue adding acid and heat until the addition of acid does not cause effervescence.
- 4.9 Remove from heat and add DI water until container is nearly full. Stir and allow to settle until solution is clear. Decant as much liquid as is practical over the No. 200 sieve (0.075 mm).
- 4.10 Wash the residue over a No. 200 (0.075 mm) sieve using DI water and leave it to air dry overnight.
- 4.11 Record the mass of the container suitable for oven drying and transfer the residue from the sieve to the container.
- 4.12 Dry in accordance with AASHTO T 265 to constant mass.
- 4.13 Remove from oven, place in desiccator to cool and weigh. Record the mass of the container with residue.
- 4.14 Mass of insoluble material =

$\text{Mass of container} + \text{sample (step 4.13)} - \text{Mass of container (step 4.11)}$

5. **CALCULATION**

- 5.1 % Acid Insoluble material:

$$\frac{\text{Mass of insoluble material (from step 4.14)} \times 100}{\text{Mass of original sample (from step 4.4)}}$$



6. **REPORTING**

6.1 Report percent Acid Insoluble material to the whole number.

7. **LIMITATIONS**

7.1 This method is intended primarily for evaluating carbonate type aggregates or mixtures of carbonates and silica sand. When the test is applied to other types of aggregates such as slags (which are generally calcium or iron silicates), there may be a partial solution of the sample and the formation of gelatinous silicic, which will give false results.

When it is obvious that a sample is a slag, the report should be as follows:

This material is observed to be a slag which contains essentially 100% acid insoluble matter. Although insoluble, the composition is different from that of silica sand grains and may have different skid resistance qualities."