Test Procedure for

FLAKINESS INDEX

TxDOT Designation: Tex-224-F

Effective Date: April 2022

1. SCOPE

1.1 Use this test method to determine the percentage of coarse aggregate that has a thickness of less than approximately two-thirds of its nominal size.

2. APPARATUS

2.1 *Forced-draft oven,* capable of maintaining a minimum temperature of 140 ± 9°F.

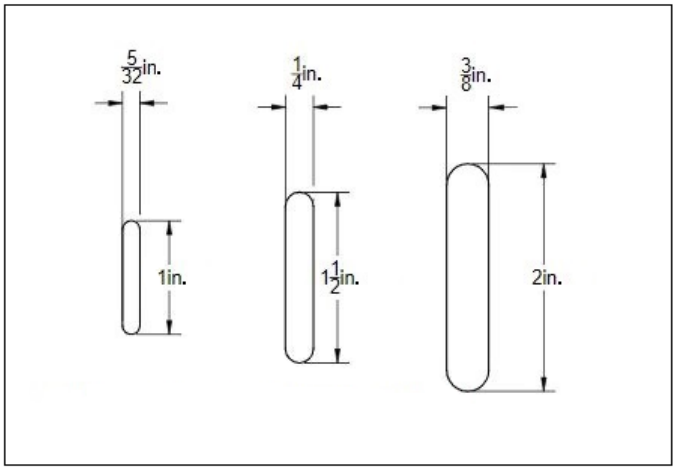
2.2 *Metal thickness gauge,* metal plate with dimensions as shown in Figure 1.

2.3 *Miscellaneous laboratory equipment,* including a scoop, brass wire brush, bristle brush, metal pan, and gloves.

2.4 *Sample splitter,* quartering machine or quartering cloth.

2.5 *Standard U.S. sieves,* meeting the requirements of Tex-907-K, in the following sizes:

- 7/8 in.
- 5/8 in.
- 3/8 in.
- 1/4 in.



Tolerance for the width of the slot openings is ± 0.0075 in.
Tolerance for the length of the slot openings is ± 0.05 in.
Thickness of the flakiness index gauge plate is 0.105 ± 0.002 in.

Figure 1—Flakiness Index Metal Gauge Plate.

3. REPORTING

3.1 Report all data and information pertinent to this testing using SiteManager form 'Tx224.xlsm'.

Note 1-This form is available from the Materials & Tests Division/Soils & Aggregates Section. It is also available online at the following link https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/forms/site-manager.html.

4. MATERIAL SAMPLING AND PREPARATION

4.1 Obtain a representative sample of processed aggregates in accordance with Tex-221-F.

4.2 Oven dry the sample to a constant weight at 230 ± 9ºF. Oven dry Limestone Rock Asphalt (LRA) at 140 ± 9°F.

4.3 Allow the sample to cool to room temperature.

5. PROCEDURE

5.1 *This test procedure does not claim to address the safety concerns associated with its use. It is the responsibility of the user of this test procedure to establish the appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations before use.*

5.2 Quarter the sample using a quartering machine or cloth.

5.3 Sieve the quartered sample through the 7/8-in., 5/8-in., 3/8-in., and 1/4-in. sieves to obtain a minimum of 200 particles passing the 7/8-in. sieve and retained on the 1/4-in. sieve.

5.4 Count the particles obtained in Section 5.3. If less than 200 particles are obtained repeat Section 5.2 to obtain additional test material.

5.5 Discard the aggregate retained on the 7/8-in. sieve and passing the 1/4-in. sieve.

5.6 Test each particle retained on the 5/8-in. sieve by attempting to pass it through the 3/8-in. slot of the thickness gauge.

5.6.1 Create two piles of tested particles that do not pass through the 3/8 in. slot and those that pass through the 3/8 in. slot.

5.6.2 Count the number of particles in each pile and report in Tx224.xlsm.

5.7 Test each particle retained on the 3/8-in. sieve by attempting to pass it through the 1/4-in. slot of the thickness gauge.

5.7.1 Create two piles of tested particles that do not pass through the slot and those that pass through the slot.

5.7.2 Count the number of particles in each pile and report in Tx224.xlsm.

5.8 Test each particle retained on the 1/4-in. sieve by attempting to pass it through the 5/32-in. slot of the thickness gauge.

5.8.1 Create two piles of tested particles that do not pass through the slot and those that pass through the slot.

5.8.2 Count the number of particles in each pile and report in Tx224.xlsm.

6. CALCULATIONS

6.1 Calculate Flakiness Index:

$$Flakiness\ Index = \left\lfloor \frac{Total\ Passing\ Particles}{Total\ Particles} \right\rfloor x\ 100$$

Where: Total Passing Particles = Total number of particles that pass through the slot openings.

7. REPORT

7.1 Use the 'Tx224.xlsm' Excel SiteManager template to report all data and information.

7.2 Report the Flakiness Index to the nearest whole number.

8. ARCHIVED VERSIONS

8.1 Archived versions are available.