

ATT-49/95 FLAKINESS INDEX

1.0 SCOPE

This method describes the procedure for determining the flakiness index of aggregates to be used in the construction of seal coat chips.

2.0 EQUIPMENT

See ATT-26, SIEVE ANALYSIS, 20 000 Fm Minus, Section 2.0 Equipment. Additional equipment:

	Metric Sieves	(Imperial Sieves)
sieves (normal)	14 000 Fm (topsize)	($\frac{1}{2}$ ")
	6 300 Fm	($\frac{1}{4}$ ")
slotted sieves	20 000 Fm - 14 000 Fm	($\frac{3}{4}$ " - $\frac{1}{2}$ ")
	14 000 Fm - 10 000 Fm	($\frac{1}{2}$ " - d ")
	10 000 Fm - 6 300 Fm	(d " - $\frac{1}{4}$ ")
log book		

3.0 PROCEDURE

1. Obtain a 3 000 gram sample of representative aggregate as directed in ATT-38, SAMPLING, Gravel and Sand.
2. Perform a wash sieve analysis as directed in test method ATT-26, nesting the 6 300 Fm sieve between the 10 000 Fm and 5 000 Fm sieves, and replacing the 12 500 Fm sieve with the 14 000 Fm sieve.
3. Place the aggregate retained on each sieve in a separate container after the weight retained has been determined.
4. Set up a table as shown in Figure 1.

SLOTTED SIEVE	WEIGHT RETAINED	WEIGHT PASSING	TOTAL WEIGHT	FLAKINESS INDEX
Fm	g	g	g	%
20 000 -14 000	12	2	14	14.3
14 000 - 10 000	628	77	705	10.9
10 000 - 6 300	971	148	1 119	13.2
Sum of Weights		227	1 838	
Total Flakiness Index				12.4

FIGURE 1

5. Try to fit each aggregate particle retained on the 14 000 Fm sieve through the openings in the 20 000 Fm - 14 000 Fm slotted sieve.

6. Weigh the portion retained on the slotted sieve and record as Wt. Retained, in the line opposite the corresponding sieve size as shown in Figure 1.
7. Weigh the aggregate that passed the slotted sieve and record as Wt. Passing, in the line opposite the corresponding sieve size.
8. Repeat steps 5 to 7 for the +10 000 Fm aggregate using the 14 000 -10 000 Fm slot, and for the + 6 300 Fm aggregate using the 10 000 - 6 300 Fm slot.
9. Add the Wt. Retained to the Wt. Passing on each slotted sieve size and record as Total Weight.
10. Calculate the Flakiness Index for each sieve size as follows:

$$\text{Flakiness Index } (\%) = \frac{\text{Weight Passing}}{\text{Total Weight}} \times 100\%$$

11. Total the weights in the "Weight Passing" and "Total Weight" columns, entering the figures in the "Sum of Weights" line.
12. Calculate the Total Flakiness Index in percent as follows:

$$\text{Total Flakiness Index } (\%) = \frac{\text{Sum of Weights (Weight Passing)}}{\text{Sum of Weights (Total Weight)}}$$

3.1 Median Aggregate Particle Size at 50% Passing

1. Plot the grading of the aggregate on a Aggregate Gradation Chart, MAT 6-7.
2. Connect the points to form a smooth grading curve.
3. Draw a horizontal line at 50% passing from the vertical scale to intersect with the grading curve.
4. At the intersection, draw a vertical line to the horizontal scale on the bottom of the chart. Pick off the scale the median particle size of the aggregate in mm.

4.0 HINTS AND PRECAUTIONS

1. This procedure shall be performed as a part of ATT-26, SIEVE ANALYSIS, 20 000 Fm Minus on seal coat crushing projects. The flakiness index and the median particle size shall be reported (by Comment) along with the sieve analysis results on the Daily Gradation Report, MAT 6-72 for these projects.