GDT 25

A. Scope

For a complete list of GDTs, see the Table of Contents.

Use this test method to determine the centrifuge correction factor to establish the quantity of fines [minus No. 200 (75 µm) sieve material] that is lost while extracting bitumen from a mixture sample. The loss varies with each type of mixture and with different types of aggregates. Therefore, determine the correction factor on each project and with each type of mixture being produced.

B. Apparatus

The apparatus consists of the following:

1. Extraction apparatus to be calibrated
2. Filter Rings: Use WR-5 for 3.3 lbs (1500 g) Centrifuge or WR-6 for 6.6 lbs (3000 g) Centrifuge.
3. Filter Paper: Use WP-3 for 3.3 lbs (1500 g) Centrifuge or WP-7 for 6.6 lbs (3000 g) Centrifuge.
4. Thermometer: Use a dial type, range 50 °F (10 °C) to 500 °F (260 °C) (WT-04-1).
5. Mixing Bowl: (WB-12)
6. Scales: Use scales that have at least 5.5 lbs (2500 g) capacity, sensitive to 0.002 lbs (1.0 g).
7. Spatula or Spoon: (WS-10) or (WS-14)
8. Stove: (OS-1O)
9. Paint Brush: Use a 1-1/2 to 2 in (37.5 to 50 mm) brush (OB-02).
10. Solvent: Use solvent as described in GDT 37.

C. Sample Size and Preparation

1. Before determining the centrifuge correction factor, ensure that the plant is in operation and the mix has been established.
2. Obtain representative samples from the hot bins of the mixing plant or cold feed bins at drum plants.

D. Procedures

1. Blend the material from the bins in the same proportions as the plant settings to obtain a composite sample approximating the capacity of the bowl being calibrated.

EXAMPLE

Plant Bin	Plant Settings	Calculation	Blend for Correction Factor
Bin No. 1	50%	0.50 x 1000 g	1.1 lbs (500 g)
Bin No. 2	20%	0.20 x 1000 g	0.44 lbs (200 g)
Bin No. 3	30%	0.30 x 1000 g	0.66 lbs (300 g)
Asphalt Cement	6.5%	see below*	0.15 lbs (69.5 g)
	Total Aggregate =		2.2 lbs (1000 g)

$$AC = \frac{Agg.\ Wt.\ \times\ \%AC\ total\ mix}{\%Agg\ of\ total\ mix\ for\ total\ mix} = \frac{1000\ g\ \times\ 6.5}{93.5} = 69.5$$

2. Place the aggregate quantities in a clean mixing bowl and heat to 325 °F (162 °C).
3. Add the calculated quantity of asphalt cement at 285 ° to 325 °F (140 ° to 162 °C) and mix thoroughly.
4. Transfer this mixture to the centrifuge bowl. Remember to wash the mixing bowl and mixing spoon with liquid solvent and pour into extractor bowl.

5. Tighten the lid on the bowl and mark the exact position of the lid on the bowl.

6. Place bowl in machine and run as described in GDT 37. This bowl should always be used with marks matched.

7. When sample is thoroughly cleaned, remove it from the bowl. Be careful not to lose or spill any material.

8. Dry and weigh the sample.

E. Calculations

1. Calculate the bowl correction factor by the following method:

    where: Correction Factor = % AC (known) - $\left\{ \dfrac{W1 - W2}{W1} \right\} \times 100$

    W1 = Weight of initial sample (including AC)

    W2 = Weight of extracted mineral matter

2. Repeat the test three times.

3. Average the results of the three tests to obtain actual bowl correction factor.

F. Report

Report the bowl correction factor on Form 159-5.