

**Standard Method of Test for
Field Determination of Percent Lime in Asphalt
Mixtures**

SCDOT Designation: SC-T-71 (9/08)

1. SCOPE

- 1.1. To determine the percent lime being entered into an asphalt mixture at the production site.

2. REFERENCED DOCUMENT

- 2.1. SC-T-2, SC-T-23.

3. SIGNIFICANCE AND USE

- 3.1. The purpose of this procedure is to check the lime rate to ensure that the lime rate meets SCDOT specifications to prevent asphalt mixtures from stripping.

4. APPARATUS

- 4.1. Heavy-duty large plastic garbage bag, scale, timing.

5. TEST SPECIMEN

- 5.1. Hydrated lime.

6. PROCEDURE

- 6.1. The plant's cold feed production rate at the time of sampling the lime shall be obtained from the computer display in the control room. The cold feed rate shall be the rate of aggregate and moisture in tons per hour (TPH).

- 6.2. Determining Moisture Content:

- 6.2.1. The moisture content of the aggregate is determined by stopping the cold feed belt and obtaining a representative sample of aggregate from the belt. The belt sample should be obtained by following the procedure outlined in SC-T-2, "Methods of Sampling Fine Aggregates." The aggregate moisture content shall be determined in accordance with SC-T-23, "Determining Moisture Content of Soils by Pan Drying Method." To account for the presence of coarse aggregate, use a sample of 2000 to 3000 grams stated in SC-T-23.

6.3. Sampling the Lime:

- 6.3.1. Using a pre-weighed bag, divert the lime to flow from the silo into the bag and immediately start a timer. After reaching a predetermined time (normally 10 or 15 seconds), allow the lime flow to return to the cold feed belt and remove the bag.
- 6.3.2. Fasten the bag containing the lime to a scale and record the weight. Subtract the weight of the bag to determine the actual weight of the lime sampled.

7. CALCULATIONS

- 7.1. The calculations may be performed using either Method A, a unit analysis procedure, or Method B, a direct formula procedure used on Form 400.13 – Weekly Lime Anti-Stripping Additive Report. Both methods will yield the same result. Examples of each calculation are shown below:

7.1.1. Method A — Unit Analysis Procedure:

- A = Cold Feed Rate (aggregate & moisture, TPH)
- B = Moisture in Aggregate (%)
- C = Time Length of Lime Sample (sec)
- D = Weight of Sample (lbs)
- E = Dry Aggregate (TPH)
- F = Lime (TPH)

$$E = \frac{A}{(1 + (B/100))}$$

$$F = \frac{D}{C} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \frac{60 \text{ sec}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}}$$

$$\text{Rate of Lime (\%)} = (F/E) \times 100$$

7.1.2. Method B — Direct Formula Procedure:

- A = Cold Feed Rate (aggregate & moisture, TPH)
- B = Moisture in Aggregate (%)
- C = Time Length of Lime Sample (sec)
- D = Weight of Sample (lbs)

$$\text{Rate of Lime (\%)} = \frac{D(180 + 1.8B)}{(A)(C)}$$

8. REPORT

- 8.1. Record the percent lime on SCDOT Form 400.13 – Hydrated Lime Anti-Stripping Additive Report.