

Recommend Approval: <u>J. W. Hall III</u> 9/21/2011 Team Leader Date <u>[Signature]</u> 09/21/2011 Division Chief Date	Maryland Department of Transportation State Highway Administration Office of Materials Technology MARYLAND STANDARD METHOD OF TESTS	
Approved: <u>Jim Smith</u> 10/31/11 Director Date	FIELD DETERMINATION OF THE AMOUNT OF STABILIZATION AGENT IN BASES AND SUBBASES	MSMT 254

SCOPE:

These procedures are used for determining the amount of solid or liquid type stabilization agent in stabilized bases and subbases.

MATERIALS AND EQUIPMENT:

1. Scale or balance conforming to M 231, Class G 100 having a minimum capacity of 100 lb.
2. Sample containers.
3. Bench Brush.
4. Dust pan.
5. Large spoon or scoop.
6. Sampling mat consisting of a sheet of plywood or canvas with a minimum surface area of 1 yd².
7. Tape measure.
8. Conveyor belt template sampling devices.

TEST PROCEDURE:

ROADWAY SAMPLING

1. Weigh then measure the sampling mat.
2. Pulverize and level the area to be stabilized. Then, place the sampling mat on the leveled area prior to application of the stabilization agent. Place the mat in a manner that will not disturb the normal operation of the spreading equipment.
3. The spreading apparatus shall pass over the sampling mat in normal operation.

4. Pick up the sampling mat with the stabilization agent and carefully place it on the scale and weigh. If a canvas sampling mat is used, fold the corners into the center to avoid spillage.
5. Compute the area of the sampling mat, the amount of stabilization agent retained on the sampling mat, and the weight per yd^2 as shown in **CALCULATIONS**.

PLANT SAMPLING SOLID TYPES

1. Using the conveyor belt template sampling device, obtain a sample of the base material from a minimum of a 1 ft length of the belt at a randomly chosen location prior to the addition of the stabilization agent.
2. Remove the material from the sampling area and weigh.
3. Dry the sample, then weigh.
4. Sample the stabilization agent without the base material from a 10 ft length of the conveyor belt.
5. Remove the stabilization agent from the sampling area and weigh.
6. Repeat Steps 1 thru 5 a minimum of three times to establish an initial uniformity of plant operations,

TEST PROCEDURE:

PLANT SAMPLING LIQUID TYPES

1. Sample the material from a 1 ft section of the conveyor belt prior to the addition of the stabilization agent.
2. Dry the sample, then weigh.
3. Divert the flow of the liquid stabilization agent for one minute into a container and weigh.
4. Repeat Steps 1 thru 3 a minimum of three times to establish an initial uniformity of plant operations.

CALCULATIONS:

ROADWAY SAMPLING

1. Calculate the area of the sampling mat as follows:

$$A_1 = \underline{L \times W}$$

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where:

A_1 = area of sampling mat, yd^2 ,

L = length in inches, and

W = width in inches.

2. Calculate the amount of stabilization agent retained on the sampling mat as follows:

$$S = W_1 - W_2$$

where:

S = weight of stabilization agent,

W_1 = weight of sampling mat and stabilization agent, and

W_2 = weight of sampling mat.

3. Calculate the amount of stabilization agent per yd^2 as follows:

$$S_1 = \frac{S}{A_1}$$

where:

S_1 = weight of stabilization agent in lb/yd^2 ,

S = weight of stabilization agent on sampling mat, and

A_1 = area of sampling mat.

4. Calculate the weight of compacted material in lb/yd^2 as follows:

$$W = 0.75 \times T \times D_d$$

where:

W = weight in lb/yd^2 ,

0.75 = empirical factor,

T = thickness, in inches of the base course, and

D_d = maximum dry density in lb/ft^3 from the compaction chart furnished by the Regional Laboratory.

5. Calculate the percent of stabilization agent by weight as follows:

$$P = \frac{S_1}{W} \times 100$$

where:

P = percent of stabilization agent,

S_1 = weight of stabilization agent per yd^2 , and

W = weight of compacted material in lb/yd^2 .

PLANT SAMPLING SOLID TYPES

1. Calculate the weight of stabilization agent on the conveyor belt as follows:

$$S = \frac{G}{10}$$

where:

S = weight of stabilization agent on 1 ft of conveyor belt, and

G = weight of stabilization agent on 10 ft of conveyor belt.

2. Calculate the percent of stabilization agent of the mixture as follows:

$$Q = \frac{S}{R/T} \times 100$$

where:

Q = percent of stabilization agent,

S = weight of stabilization agent,

R = weight of dry material without the stabilization agent, and

T = length of the belt sample with base material.

PLANT SAMPLING LIQUID TYPES

1. Calculate the total weight of material on the conveyor for one minute as follows:

$$M = E \times F$$

where:

M = weight of dry material in lb/minute,

E = dry weight of material on 1 ft belt section, and

F = speed of belt in ft/minute.

2. Calculate the percent of liquid stabilization agent as follows:

$$H = \frac{K}{M} \times 100$$

where:

H = the percent of stabilization,

K = weight of liquid stabilization for one minute, and

M = weight of dry material for one minute.

REPORT:

Report the cement and asphalt emulsion to the nearest 0.1 percent.