

GDT 53

A. Scope

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

Use this test method to measure the reduction in Marshall Stability that results from the action of water on compacted bituminous mixtures containing viscosity-grade asphalt. The reduced stability is determined by comparing the stability of specimens that have been immersed in water for a prescribed period.

B. Apparatus

The apparatus is the same as outlined in AASHTO T 245.

C. Sample Size and Preparation

1. Prepare at least 6 standard Marshall test specimens for each test.
 - a. Prepare each specimen according to the procedure described in AASHTO T 245.
 - b. Make each specimen 4 in (100 mm) diameter and 2-1/2 in, $\pm 1/8$ in (65 mm, ± 3 mm) high.
 - c. Compact the specimen with 50 blows on each end.

D. Procedures

1. Weigh each test specimen in air and in water.
2. Calculate the bulk specific gravity of each test specimen as follows:

$$\text{Bulk Specific Gravity} = \frac{A}{A-B}$$

where:

A = Weight of specimen in air, in grams

B = Weight of specimen in water, in grams

3. Sort the test specimens into two groups so that the average specific gravity of the specimens in Group 1 is essentially the same as that of Group 2.
4. Test the specimens in Group 1 for Marshall stability and flow as described in AASHTO T 245.
5. Immerse the Group 2 specimens in a water bath maintained at 140 °, ± 1.8 °F (60 °, ± 1 °C) for 24 hours.
6. Remove the specimens from the water and test immediately for stability and flow as described in AASHTO T 245.

E. Calculations

Express the resistance of bituminous mixtures to the detrimental effect of water as a percentage of the original stability as follows:

$$\% \text{ Retained Stability} = \frac{S1}{S2} \times 100$$

Where:

S1 = Marshall Stability of Group 1 (average)

S2 = Marshall Stability of Group 2 (average)

F. Report

Record the retained stability on the appropriate DOT form.