FLORIDA DEPARTMENT OF TRANSPORTATION
State Materials Office
5007 NE 39th Avenue
Gainesville, Florida 32609

February 8, 2018

Florida Method of Test
for
Laboratory Testing the Effectiveness of Anti-Strip Additives

Designation: FM 5-508

1. SCOPE

This test method contains procedures for determining the effectiveness of an anti-stripping additive on the indirect tensile strength of unconditioned and conditioned asphalt mixture specimens. This method is used to determine whether a product is suitable to be placed on the Department's Approved Products List (APL). It should be noted that demonstrated poor field performance is justification to remove a product from the APL even if the conditions of this procedure have been met.

This standard does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. APPLICABLE DOCUMENTS

Florida Test Methods:

FM 1-T 283, Resistance of Compacted Bituminous Mixture to Moisture-Induced Damage

3. SUMMARY OF TEST METHOD

This procedure utilizes Florida Test Method FM 1-T 283 to evaluate an anti-strip additive by testing eight mix designs for sensitivity to moisture induced damage. The eight mix designs are comprised of four aggregate types and two nominal maximum aggregate sizes. If a tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 psi is obtained for all eight mix designs, then the anti-stripping agent is approved and included on the APL.

4. SIGNIFICANCE AND USE

This test method provides a means for determining if an anti-strip additive is effective at minimizing the effect of moisture damage, as measured by indirect tensile strength for eight different asphalt mixtures. Once an anti-strip additive passes the requirements contained in this method and is included on the Department's APL, it may be used in any asphalt mixture at the dosage rate approved without further testing, except for mixtures containing aggregate from the Honduran mine HN717. A mix design containing aggregate from mine HN717 must be tested by the Department

during mix design verification, in accordance with test method FM 1-T 283. In addition, for new aggregate sources or for existing aggregate sources suspected of being sensitive to moisture damage, the Department reserves the right to test mixtures in accordance with FM 1-T 283.

5. APPARATUS

5.1 Electric drill and paddle bit – A hand-held electric drill and a paddle bit designed for mixing viscous liquids.

5.2 Balance – A balance conforming to the requirements of AASHTO M 231, Class G2.

6. SUBMITTAL AND PREPARATION OF TEST SAMPLES

6.1 The anti-strip supplier (or contracted mix design company) shall submit a minimum of eight pre-batched aggregate samples for each of four aggregate types shown in the table below to the FDOT State Materials Office at 5007 NE 39th Avenue, Gainesville, FL 32609.

Aggregate Type	FDOT Mine No.
Alabama Limestone	AL149
Georgia Granite	GA383 or GA553
Nova Scotia Granite	NS315
Southeast Florida Limestone	87339

The pre-batched samples for each aggregate type must be representative of an existing mix design currently approved for use by the Department. One 9.5 mm and one 12.5 mm nominal maximum aggregate size mix design (structural or friction course) must be used for each aggregate type, for a total of eight mix designs, and at least 60% of one of these aggregate types must be present in any design that is tested. In addition to the minimum 60% aggregate type requirement, 20% or less reclaimed asphalt pavement (RAP) may be present in the GA383 or GA553, NS315 and AL149 aggregate blends. RAP is not permitted in the test samples of the 87339 aggregate blends. The liquid anti-strip agent will be tested at a dosage rate of 0.5% by weight of asphalt binder (unless a different dosage rate is agreed upon by the supplier and the Department). Submit the pre-batched aggregate specimens along with a sample of the liquid anti-strip agent to the Department. The Department will provide PG 67-22 asphalt binder and blend it with the supplied liquid anti-strip agent.

6.2 Prepare the asphalt binder with anti-strip additive as follows: add 0.5% anti-strip additive (by total weight of the binder) to preheated (300 ± 5 ºF) unmodified

PG 67-22 binder in a quart or gallon metal can. For example, if the total weight of binder is 1000 grams, then add 5 grams of anti-strip additive to 995 grams of unmodified binder. Mix the anti-strip additive and unmodified binder thoroughly with a paddle-mixing bit attached to an electric drill. Heat the modified binder in a covered can in an oven at 300 ± 5 ºF for a minimum of 12 hours, but no more than 24 hours. A small hole should be made in the lid of the can to prevent excessive pressure buildup.

7. TESTING

7.1 Of the eight pre-batched specimens per aggregate type, test six of the specimens in accordance with FM 1-T 283.

8. CALCULATIONS

8.1 Calculate tensile strengths and tensile strength ratios per FM 1-T 283.

8.2 If a tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 psi is obtained for all eight mix designs, then the anti-stripping agent is approved and included on the APL.