

ALDOT-436-09
WARM MIX ASPHALT PROCESS/PRODUCT APPROVAL

1. Scope

This procedure establishes the requirements for process/products to be approved for the production of Warm Mix Asphalt (WMA). The WMA process/product will be evaluated in two phases:

1. Trial Production Mix phase and
2. Field Demonstration and Evaluation phase.

The National Center for Asphalt Technology (NCAT) offers The National Warm Mix Asphalt Certification that the producer/manufacture may elect to use in lieu of the evaluation as described in this procedure. The producer/manufacture is referred to Section 7.0 of this procedure if they elect to use the NCAT certification.

2.0 Referenced Documents.

- 2.1 Alabama Department of Transportation Standard Specifications for Highway Construction
- 2.2 AASHTO Standard Specifications
 - 2.2.1 AASHTO T 166; Standard Method of Test for Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Mixtures Using Saturated Surface-Dry Specimens
 - 2.2.2 AASHTO T 209; Standard Method of Test for Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
 - 2.2.3 AASHTO T 275; Standard Method of Test for Bulk Specific Gravity of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens
 - 2.2.4 AASHTO T 312; Standard Method of Test for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor
 - 2.2.5 AASHTO T 331; Standard Method of Test for Bulk Specific Gravity and Density of Compacted Hot Mix Asphalt (HMA) Using Automatic Vacuum Sealing Method
- 2.3 Alabama Department of Transportation Testing Manual Procedures
 - 2.3.1 ALDOT-361; Resistance of Compacted Hot-Mix Asphalt to Moisture Induced Damage

3.0 Procedure for Product Submittal

3.1 The Company requesting the product evaluation shall provide a written proposal to the Alabama Department of Transportation Product Evaluation Engineer.

3.1.1 The proposal shall include the date of the evaluation, information regarding the process/product, the project on which the evaluation is proposed, the type of mix and delivery temperature to be used during the evaluation, the name of the Contractor that will demonstrate.

3.1.2 Documentation shall be provided to demonstrate laboratory performance in terms of both moisture and rutting susceptibility compared to hot mix asphalt control mixtures and demonstration of field construction experience.

3.2 Submittal and testing fees shall be according to Department procedure ALDOT 355.

3.3 The Product Evaluation Board will review the proposal and shall forward the same to the State Bituminous Engineer.

3.4 The Manufacturer in coordination with Prime Contractor should notify and submit an outline plan for evaluation of the product/process to the ALDOT Bituminous Engineer at least two weeks prior to actual start of demonstration project.

3.5 The Company requesting the products evaluation will be responsible for all coordination and arrangements with the Prime Contractor and, if applicable, the Sub-contractor.

3.6 The mix design utilizing the warm mix process/product must be approved for use by ALDOT's Bituminous Engineer prior to actual demonstration date.

4.0 Production Trial Mix

4.1 The plant shall produce hot mix asphalt prior to the warm mix process in order to heat plant to production temperature.

4.2 The WMA demonstrated will be the ALDOT approved WMA job mix formula produced at the plant and tested after approximately 100 tons has been produced at the manufacturers recommended temperature and must maintain the temperature during production for 5 minutes prior to taking sample for testing.

4.3 The WMA produced during this phase will not be allowed on an ALDOT roadway project.

5.0 Testing

5.1 Mix volumetric testing and other laboratory testing will be performed on the production trial mix as stated in the Alabama Department of Transportation Standard Specifications for Highway Construction, Section 106, Table 1, Section 424 mixes.

5.2 The warm mix asphalt process/product will only be allowed to move forward to the field demonstration phase based on acceptable production laboratory results.

5.0 Evaluation Mix

- 5.1 The Manufacturer, in coordination with the Prime Contractor shall place a field demonstration section of a **minimum of 500 tons, or not more than a day's** production, of WMA placed on a preapproved state roadway with process being evaluated for six (6) months with any failing roadway replaced by the contractor at no cost to the State. The remainder of the project will be paved with an ALDOT approved 424 Hot Mix Asphalt (HMA) mix.
- 5.2 The manufacturer will notify ALDOT's Bituminous Engineer and the Division Engineer in which the demonstration project is placed, with date and time of the demonstration.
- 5.3 Evaluation Testing will be performed as stated in the Alabama Department of Transportation Standard Specifications for Highway Construction, Section 106, Table 1, Section 424 mixes.
- 5.4 The Department may utilize an infrared camera to verify roadway temperature during field demonstration phase.

7.0 Alternate Evaluation Process

An alternate evaluation process, "The National Warm Mix Asphalt Certification", is available at the National Center for Asphalt Technology (NCAT) and may be used in lieu of the procedure as given above. Once evaluated by NCAT, a formal report must be submitted to ALDOT's Bituminous Engineer for review and recommendation to the Product Evaluation Board. Information concerning NCAT's certification may be obtained by contacting NCAT at:

Mailing Address

National Center for Asphalt Technology
277 Technology Parkway
Auburn, AL 36830

Phone: 334.844.6857

Fax: 334.844.6853

Email: Comments or Questions: Buzz Powell (buzz@auburn.edu)

8.0 Report

8.1 Production trial mix reporting will include the following:

- The source of all materials (with all materials coming from an approved source).
- Aggregate gradation and gravities.
- Gyrotory compaction data at design gyrations.

- Mix properties.
- Asphalt content.
- Maximum theoretical specific gravity.
- Retained Tensile Strength Ratio (TSR) Data.

8.2 Evaluation Mix Reporting

- Aggregate gradation and gravities.
- Gyrotory compaction data at design gyrations.
- Mix properties.
- Asphalt content.
- Maximum theoretical specific gravity.
- Retained Tensile Strength compaction data at design gyrations.
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- Asphalt content.
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- Retained Tensile Strength Ratio (TSR) Data.
- Roadway core density as required by ALDOT- 403.

8.3 Additional coring and testing may be performed during the six (6) month evaluation period.

8.4 At the conclusion of the six month field evaluation phase, all data will be reviewed by the Bureau of Materials and Tests personnel and a recommendation will be made to the Product Evaluation Board.