

June 2017  
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## **WARM MIX PLANT APPROVAL**

### Reference Documents:

- M 320, Performance-Graded Asphalt Binder
- M 332, Multiple Stress Creep Recovery (MSCR) Test
- R 15, Asphalt Additives and Modifiers
- R 26, Certifying Suppliers of Performance-Graded Asphalt Binders
- R 29, Grading or Verifying the Performance Grade of an Asphalt Binder

Warm-Mix Asphalt (WMA) is the generic term for a variety of technologies/processes that allow the producers of asphalt pavement material to lower their plant mix temperature, while retaining mix workability and performance at both the plant and paving project. Asphalt mixtures in Maryland that incorporate Warm Mix Asphalt technology are required to meet all applicable mixture specifications for design, verification, quality control and quality assurance in accordance with the Maryland Dept. of Transportation, Standard Specifications for Construction and Materials:

<https://www.roads.maryland.gov/pages/sscm.aspx?PageId=853&lid=SSP>

The Asphalt Plant Quality Control Plan shall identify one or more of the following approved WMA technologies:

- Liquid Asphalt Foaming Technology by Mechanical Equipment Method (Water Injection)
- Liquid Asphalt Foaming Technology by Chemical Additive Method
- Chemical Binder (Emulsion based) Additive Technology
- Organic Additive Technology

The asphalt producer shall identify the WMA technology in use at the plant or to be used in the asphalt mixtures in their annual Plant Quality Control Plan. If the asphalt producer elects to introduce the WMA modifier or additive into the PG binder at the asphalt plant, they assume the material certification responsibilities as the asphalt binder supplier, as per R-26. The binder shall conform to the requirements of M320/M332 and meet the PG requirements in the contract documents. Any change in the binder source shall require new material certification testing.

**Mix Design Verification & Approval:**

All modification methods require mix design verification in accordance with MD Specifications, Section 904.04.03 during shipment and placement on non-Administration projects. The Asphalt Technology Division will be notified two working days prior to shipment for mix design verification.

The initial WMA mixture will be evaluated by the Asphalt Technology Division for placement characteristics, density and stripping potential.

Four plant samples will be split with SHA and the asphalt producer for verification testing. The mix will be given tentative approval until after verification sample results are compared. TSR testing will also be completed. This is a one-time verification test for the WMA plant process.

**Additional Requirements for WMA Technology Applications**

**Liquid Asphalt Foaming by Mechanical Equipment (Water Injection):**

The Asphalt Technology Division shall conduct an interview with the plant operator to determine knowledge of equipment use and knowledge of equipment maintenance. Once approved, the plant will be identified as a WMA producer on the MD SHA Bituminous Plants QPL.

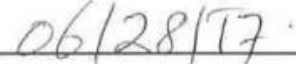
**Chemical or Organic Additives:**

If the additive is not terminal blended with the binder, there shall be a technical representative from the Product supplier present for a minimum of 2 days during initial manufacture, shipment placement of WMA modified mixture(s):

- Liquid Asphalt Foaming by Chemical Additive
- Chemical Binder (Emulsion Based) Additive
- Organic Additive

**All Chemical or Organic Additive suppliers must certify their end-result product meets the contract document requirements.**

  
Chandra Akisetty, Division Chief  
Asphalt Technology Division  
Office of Materials Technology

  
Date