EXPECTED IMPLEMENTATION JANUARY 2010

DRAFT

336 ASPHALT RUBBER BINDER.
(REV 7-29-09) (FA 8-11-09) (1-10)

SECTION 336 (Pages 291-294) is deleted and the following substituted:

SECTION 336
ASPHALT RUBBER BINDER

336-1 Description.

Produce asphalt rubber binder for use in Asphalt Concrete Friction Courses and Asphalt Rubber Membrane Interlayers.

336-2 Materials.

336-2.1 Superpave PG Asphalt Binder: For the particular grade of asphalt as specified in Table 336-1, meet the requirements of Section 916.

336-2.2 Ground Tire Rubber: For the type of ground tire rubber, meet the requirements of Section 919.

336-3 Asphalt Rubber Binder.

Thoroughly mix and react the asphalt binder and ground tire rubber in accordance with the requirements of Table 336-1. Accomplish blending of the asphalt binder and ground tire rubber at the project site/asphalt plant or at the supplier's terminal.

Table 336-1
Asphalt Rubber Binder

Binder Type	ARB 5	ARB 12	ARB 20
Rubber Type	TYPE A (or B)*	TYPE B (or A)**	TYPE C (or B or A)**
Minimum Ground Tire Rubber (by weight of asphalt binder)	5%	12%	20%
Binder Grade	PG 67-22	PG 67-22	PG 64-22
Minimum Temperature	300°F	300°F	335°F
Maximum Temperature	335°F	350°F	375°F
Minimum Reaction Time	10 minutes	15 minutes (Type B)	30 minutes (Type C)
Unit Weight @ 60ºF***	8.6 lbs/gal	8.7 lbs/gal	8.8 lbs/gal
Minimum Viscosity ****	4.0 Poise @ 300°F	10.0 Poise @ 300°F	15.0 Poise @ 350°F

* Use of Type B rubber may require an increase in the mix temperature in order to offset higher viscosity values.
** Use of finer rubber could result in the reduction of the minimum reaction time.
*** Conversions to standard 60ºF are as specified in 300-9.3.
**** FM 5-548, Viscosity of Asphalt Rubber Binder by use of the Rotational Viscometer.
NOTE: The Contractor may adjust the minimum reaction time if approved by the Engineer depending upon the temperature, size of the ground tire rubber and viscosity measurement determined from the asphalt rubber binder material prior to or during production. Apply the asphalt rubber binder for use in membrane interlayers within a period of six hours, unless some form of corrective action such as cooling and reheating is approved by the Engineer.

336-4 Equipment.

Use blending equipment that is designed for asphalt rubber binder and capable of producing a homogeneous mixture of ground tire rubber and asphalt binder meeting the requirements of Table 336-1. Use a batch type or continuous type blending unit that provides for sampling of the blended and reacted asphalt rubber binder material during normal production and provides for accurate proportioning of the asphalt binder and ground tire rubber either by weight or volume.

In order to meet specification requirements, keep the asphalt rubber uniformly blended while in storage. Equip storage tanks with a sampling device.

336-5 Testing of Asphalt Rubber Binder:

336-5.1 Quality Control Requirements: Test the asphalt rubber binder for the viscosity requirement of Table 336-1 at the following frequencies and situations:

1. One per batch (for batch blending) or two per day (for continuous blending) during blending at the project site/asphalt plant or supplier's terminal.
2. Each load delivered to the project site/asphalt plant when blended at the supplier's terminal.
3. Beginning of each day from the storage tank when storing the asphalt rubber binder at the project site/asphalt plant or supplier's terminal, obtain the sample for testing from the discharge piping exiting the storage tank.

Obtain the viscosity testing equipment specified in FM 5-548 and make it available to the Engineer for verification purposes at the project site/asphalt plant and supplier's terminal.

336-5.1.1 Action at Project Site/Asphalt Plant: If the asphalt rubber binder does not meet the minimum viscosity requirement at the project site/asphalt plant, stop use of the asphalt rubber binder in the Asphalt Concrete Friction Course and Asphalt Rubber Membrane Interlayer, notify the Engineer, and make the appropriate adjustments as necessary to meet the requirements of Table 336-1 in order to: (1) correct the viscosity of the blended material and (2) correct the blending operation. In the event that the corrective actions taken fail to correct the problem, or the material consistently fails to meet the minimum viscosity requirement, do not use the asphalt rubber binder in storage, and where applicable, stop all asphalt rubber blending operations at the project site/asphalt plant and solve the problem.

Do not use asphalt rubber binder with low viscosity in mix and interlayer construction, or resume blending operations at the project site/asphalt plant until the Engineer grants approval. The Engineer may require that any mix and interlayer placed with low viscosity asphalt rubber binder be evaluated in accordance with 334-5.1.9.5. In the event that the viscosity of the asphalt rubber binder increases to the extent that plant production or paving operations of the mix are adversely affected (i.e. density or texture problems occur), stop plant operations and resolve the problem to the Engineer's satisfaction.

336-5.1.2 Action at Supplier's Terminal: If the asphalt rubber binder does not meet the minimum viscosity requirement at the supplier's terminal, stop shipment and blending of asphalt rubber binder, and make the appropriate adjustments as necessary to meet the requirements of Table 336-1 in order to (1) correct the viscosity of the blended material in the tank, and (2) correct the blending operation. Resume shipment and blending of asphalt rubber binder when a retest indicates the viscosity meets Specifications. Document actions taken in the Quality Control records.

336-5.2 Verification Requirements: The Engineer will test the asphalt rubber in accordance with FM 5-548 randomly on an as needed basis at the project site/asphalt plant or supplier's terminal to ensure conformance with the minimum viscosity requirement as specified in Table 336-1.

336-5.2.1: Action at Project Site/Asphalt Plant: If the asphalt rubber binder does not meet the minimum viscosity requirement at the project site/asphalt plant, stop use of asphalt rubber binder with low viscosity in mix and interlayer construction. Do not use asphalt rubber binder with low viscosity in mix and interlayer construction until corrective actions, as necessary to meet the requirements of Table 336-1, have been made, corrective actions verified by passing test results, and the Engineer grants approval. The Engineer may require that any mix and interlayer placed with low viscosity asphalt rubber binder be evaluated in accordance with 334-5.1.9.5. In the event that the viscosity of the asphalt rubber binder increases to the extent that plant production or paving operations of the mix are adversely affected (i.e. density or texture problems occur), stop plant operations and resolve the problem to the Engineer's satisfaction.

336-5.2.2: Action at Supplier's Terminal: If the asphalt rubber binder does not meet the minimum viscosity requirement at the supplier's terminal, stop shipment and blending of asphalt rubber binder. Do not resume shipment and blending of asphalt rubber binder until corrective actions as necessary to meet the requirements of Table 336-1 have been made and the Engineer grants approval.

336-5.3 Asphalt Rubber Binder Blending Quality Control Records: Maintain adequate Quality Control records for the Engineer's review of all blending activities. The Quality Control records shall include at a minimum the following information (for each batch of asphalt rubber binder produced): asphalt rubber binder type, asphalt rubber binder batch quantity, asphalt binder supplier (including QPL number and LOT), asphalt binder quantity in gallons, ground tire rubber supplier (including QPL number and LOT), ground tire rubber quantity in pounds, individual quantities of asphalt rubber binder shipped, financial project number, shipping date, customer name, delivery location, and viscosity test results.

336-5.3.1 Additional Records for Blending at Project Site/Asphalt Plant: Monitor the ground tire rubber content in the asphalt rubber binder on a daily basis based on one of the following methods:

1. Record the weight of the ground tire rubber used and the number of gallons of asphalt rubber binder produced. Calculate the percentage of rubber used and confirm that the minimum rubber requirements are met. Use the unit weight per gallon for the various types of asphalt rubber binder shown in Table 336-1 for the calculations.
2. Record the weight of the ground tire rubber used and the number of gallons of asphalt binder used. Calculate the percentage of rubber used and confirm that the minimum rubber requirements are met.

336-6 Use of Excess Asphalt Rubber.

The Contractor may use excess asphalt rubber in other asphalt concrete mixes requiring the use of a PG 67-22 binder by blending with straight PG 67-22 binder so that the total amount of ground tire rubber in the binder is less than 2.0%. The Contractor may use excess asphalt rubber in asphalt concrete mixtures requiring the use of a recycling agent in a recycled mixture by blending with a recycling agent in such proportions that the total amount of ground tire rubber in the recycling agent is less than 1.0%.

336-7 Certification Requirements for Blending at Suppliers Terminal:

Where blending the asphalt rubber binder at the supplier's terminal, the supplier shall furnish certification on the bill of lading for each load delivered to the project site/asphalt plant that includes: the quantity of asphalt rubber binder, the asphalt rubber binder type, the customer name, the delivery location, and a statement that the asphalt rubber binder has been produced in accordance with and meets the requirements of 336. In addition, include, with the certification, copies of the certifications for the asphalt binder and ground tire rubber, as specified in 916-1.3.6 and 919-6, respectively.

336-8 Basis of Payment.

Payment for Asphalt Rubber Binder will be included in Sections 337 and 341, as appropriate.