

PAVEMENT BITUMINOUS MATERIALS

3151 BITUMINOUS MATERIAL

3151.1 SCOPE

Provide bituminous materials consisting of asphalt binder, cut-back asphalt, and emulsified asphalt.

3151.2 REQUIREMENTS

Provide bituminous material from a certified source listed on the Approved/Qualified Products List meeting the following requirements for the type and grade required by the contract.

A Asphalt Binder

Only use Performance Grade (PG) Asphalt Binder meeting the requirements of AASHTO M 320 and the Combined State Binder Group Method of Acceptance for Asphalt Binder, available on the Asphalt Products page of the Approved/Qualified Products List.

Use asphalt binder supplier recommendations for mixing and compaction temperatures.

B Medium Curing Liquid Asphalt

Provide medium curing liquid asphalt meeting the requirements of AASHTO M 82. Only use cutback asphalt as approved by the Engineer.

C Emulsified Asphalt

Provide emulsified asphalt meeting the requirements of AASHTO M 140 for the type and grade required by the contract.

D Cationic Emulsified Asphalt

Provide cationic emulsified asphalt meeting the requirements of AASHTO M 208.

D.1 Diluted CSS-1h

Provide diluted CSS-1h meeting the requirements of AASHTO M 208 with the following modifications:

- (1) Dilute the CSS-1h at a rate of one part emulsion to one part water at the place of manufacture.
- (2) Meets a distillation residue of at least 29 percent.
- (3) Saybolt viscosity, storage stability and particle charge only required on undiluted CSS-1h.

E Polymer Modified Cationic Emulsified Asphalt

E.1 CRS-2P

Provide polymer-modified cationic emulsified asphalt meeting the requirements of AASHTO M 316 CRS-2P with the following modifications:

- (1) Distilled at 400 °F [204 °C] for 15 min,
- (2) Meets a residue penetration from 100 to 150 dmm,
- (3) Produced using only polymer modified base asphalt. Do not use Latex modification.

E.2 CRS-2Pd- diluted CRS-2P

Provide diluted polymer-modified cationic emulsified asphalt meeting the requirements of AASHTO M-316 CRS-2P with the following modifications:

- (1) Distilled at 400 °F [204 °C] for 15 min,
- (2) Diluted at a rate of three parts emulsion to one part water, by volume, at the place of manufacture,
- (3) Meets a distillation residue of at least 50 percent,
- (4) Meets a residue penetration from 100 to 150 dmm,
- (5) Produced using polymer modified base asphalt. Do not use Latex modification.
- (6) Saybolt viscosity, storage stability and particle charge only required on undiluted CRS-2P.

F Polymer Modified High Float Medium Set Emulsified Asphalt HFMS-2P

Ensure that emulsified asphalt is homogenous after thorough mixing provided separation has not been caused by freezing.

Perform the polymer modification step before the emulsification process.

Provide emulsified asphalt meeting the requirements of Table 3151-1.

Table 3151-1			
HFMS-2P Emulsified Asphalt Requirements			
Test	Method	Minimum	Maximum
Tests on emulsion:			
Viscosity, Saybolt Furol at 122 °F [50 °C],	AASHTO T 59	50 s	450 s
Storage stability test*, 24 h	AASHTO T 59	—	1.0%
Sieve test	AASHTO T 59	—	0.1%
Residue by distillation	AASHTO T 59	65%	—
Oil distillate by distillation	AASHTO T 59	—	3.0%
Tests on residue from distillation:			
Penetration at 77 °F [25 °C]	AASHTO T 49	100 dmm	200 dmm
Float test, 140 °F [60 °C]	AASHTO T 50	1,200s	—
Elastic recovery, at 77 °F [25 °C]	AASHTO T 301	58%	—
* After standing undisturbed for 24 hours, ensure the surface has a smooth, homogenous color.			
AASHTO T 59 with modifications to include a 400°F ±9 °F [204°C ±5 °C] maximum temperature to be held for a period of 15 min.			

G Ultrathin Bonded Wearing Course (UTBWC) Polymer Modified Emulsion Membrane

Provide a polymer modified emulsion membrane meeting the requirements of Table 3151-2:

Table 3151-2			
UTBWC Polymer Modified Emulsion Membrane Requirements			
Test	Method	Minimum	Maximum
Tests on emulsion:			
Viscosity, Saybolt Furol at 77 °F [25 °C]	AASHTO T 59	20 s	100 s
Storage stability test*, 24h	AASHTO T 59	—	1.0%
Sieve test	AASHTO T 59	—	0.05%
Residue by distillation	AASHTO T 59	63%	—
Oil distillate by distillation	AASHTO T 59	—	2.0%
Demulsibility, 12 oz [35 mL], 0.8% dioctyl sodium sulfosuccinate	AASHTO T 59	60%	—
Tests on residue from distillation:			
Penetration, at 77 °F [25 °C]	AASHTO T 49	60 dmm	150 dmm
Solubility in trichloroethylene	AASHTO T 44	97.5%	—
Elastic recovery, at 77 °F [25 °C]	AASHTO T 301	60%	—
* After standing undisturbed for 24 h, ensure the surface has a smooth, homogenous color.			
AASHTO T 59, except at no greater than 392 °F ± 9 °F [200 °C ± 5 °C] for 15 min.			

H Micro Surfacing Emulsified Asphalt

Provide a polymer modified, CSS-1h bituminous material meeting the requirements of Table 3151-3:

Table 3151-3 Micro Surfacing Emulsified Asphalt Requirements		
Test	Method	Requirement
Quality on emulsion:		
Residue after distillation*	AASHTO T 59	≥ 62%
Quality on residue:		
Softening point	AASHTO T 53	≥ 135 °F [57 °C]
Penetration, at 77 °F [25 °C]	AASHTO T 49	40 – 90 dmm
Absolute Viscosity, at 140 °F [60 °C]	ASTM D 2171	≥ 8,000 P [800 Pa•s]
Solubility on base asphalt	AASHTO T 44	99%
* AASHTO T 59, except the temperature for the distillation procedure shall be held at 350 °F ±9 °F [177 °C ±5 °C] for 20 min. Complete the entire distillation procedure within 60 min from the first application of heat. The Department will waive cement mixing testing.		

Use minimum of 3 percent natural latex polymers or Department-approved manmade latex polymer.

3151.3 SAMPLING AND TESTING

Provide Bill of Ladings with a certification statement that the bituminous material meets the requirements in 3151.2, “Requirements.” Sample at rates and sizes meeting the requirements of the Schedule of Materials Control or as required by the contract.

The Materials Engineer will test samples submitted and certified by the manufacturer as representative of the bituminous material to be provided.