

EXPECTED IMPLEMENTATION JULY 2011

916 BITUMINOUS MATERIALS. (REV 1-13-11) (FA 1-27-11) (7-11)

SUBARTICLE 916-3.2 (Pages 835 - 836) is deleted and the following substituted:

916-3.2 Sampling, Certification, and Verification: Sampling of cut-back asphalts shall be done in accordance with AASHTO T 40. For each tank of cut-back asphalt delivered to or prepared at the asphalt terminal, the asphalt supplier shall submit a sample to the State Materials Office for testing before use. A pretest number will then be assigned by the State Materials Office which shall be furnished with all cut-back asphalt delivered to the project. The pretest number shall be valid for three months from the date of issue.

The Department may sample and test pre-tested cut-back asphalt from the suppliers storage tank, the Contractor's transport tank and/or distributor to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that pretested cut-back asphalt product. Further shipment of that pretested cut-back asphalt product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

ARTICLE 916-4 (Pages 826 - 841) is deleted and the following substituted:

916-4 Emulsified Asphalts.

916-4.1 Requirements: Anionic Emulsified Asphalt shall meet the requirements of AASHTO M 140 with the exception that the cement mix test will be waived when the asphalt is used in non-mix application, such as tack coats and primes. Cationic Emulsified Asphalt shall meet the requirements of AASHTO M 208. Additional emulsions permitted by specifications shall meet the following requirements:

HIGH FLOAT EMULSIONS		
Test	Conditions	Asphalt Emulsion Grade AE-60
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL CaCl ₂ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500°F. Dist.	maximum 1% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 40
Absolute Viscosity	140°F	minimum 3,200 poise

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Ductility	77°F, 50 mm/minute	minimum 400 mm
Float Test	140°F	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-90
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL CaCl ₂ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500°F. Dist.	maximum 2% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 70
Absolute Viscosity	140°F	minimum 1,600 poise
Ductility	77°F, 50 mm/minute	minimum 400 mm
Float Test	140°F	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-150
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour(b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL CaCl ₂ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500°F. Dist.	maximum 3% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 125
Absolute Viscosity	140°F	minimum 800 poise
Ductility	77°F, 50 mm/minute	minimum 400 mm
Float Test	140°F	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-200
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		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	minimum 45 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL CaCl ₂ 0.10 N	minimum 75%
Residue by Distillation		minimum 62%
Oil Portion	500°F. Dist.	maximum 8% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 150
Absolute Viscosity	140°F	minimum 400 poise
Ductility	77°F, 50 mm/minute	
Float Test	140°F	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days.		
(b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test.		

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SPECIAL MS-EMULSION		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	minimum 45 seconds
Storage Stability	24 hour	maximum 1%
Sieve Test	50 mL CaCl ₂ 0.10 N	maximum 0.10%
Demulsibility		minimum 65%
Residue by Distillation		minimum 62%
Naphtha Content	500°F. Dist.	maximum 8% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 50
Ductility	77°F, 50 mm/minute	minimum 400 mm
Absolute Viscosity	140°F	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%
Maximum application temperature shall be 170°F.		

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EMULSIFIED ASPHALT GRADE CRS-2H		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122°F	100/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Demulsibility	35 mL 0.8% Sodium Dioctyl Sulfosuccinate (c)	minimum 40%
Particle Charge		positive
Sieve Test		maximum 0.1%

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EMULSIFIED ASPHALT GRADE CRS-2H		
Test	Conditions	Minimum/Maximum
Residue		minimum 65%
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	80/140
Ductility	77°F, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days. (b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test. (c) The demulsibility test shall be made within 30 days from date of shipment.		

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ASPHALT EMULSION PRIME (AEP)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20/150 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.1%
Residue		minimum 55%
Naphtha Content	500°F. Dist	maximum 12% by volume
Tests on Residue:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	40/200
Ductility	77°F, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days. (b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test.		

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ASPHALT EMULSION GRADE RS-1h		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20/100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility	35 mL 0.02N CaCl ₂ (a)	minimum 60%
Sieve Test		maximum 0.10%
Residue by Distillation		minimum 55%
Naphtha Portion	500°F. Dist (b)	maximum 3% by volume
Tests on Residue From Distillation Test:		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 60
Viscosity	140°F	minimum 1,600 poise
Ductility	77°F, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The demulsibility test shall be made within 30 days from the date of shipment. (b) When RS-1H has been modified to include naphtha, the 24-hour storage stability test will be waived.		

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EMULSION PRIME (RS TYPE)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	minimum 75 seconds
Storage Stability	24 hour	maximum 1.0%
Sieve Test		maximum 0.1%
Naphtha Content		5/15% by volume
Residue		minimum 55%
Tests on Residue:*		
Penetration (0.1 mm)	77°F, 100 g, 5 seconds	minimum 50
Viscosity	140°F	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%

* Residue by distillation shall be in accordance with AASHTO T 59 except that the maximum temperature shall be 329 ± 10°F [165 ± 5°C] and the sample shall be maintained at this temperature for 20 minutes.

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EPR-1 PRIME (e)		
Tests	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	6/24 seconds
Sieve Test (a)		maximum 0.1%
Residue by Distillation (b)		minimum 20%
Particle Charge Test (c)		positive
Test on Residue: (d)		
Flash Point	COC	minimum 410°F
Viscosity	140°F	600/1000 cSt

(a) Distilled water shall be used in place of 2% sodium oleate solution.
 (b) Residue by distillation shall be in accordance with AASHTO T 59 with the exception that a 50 g sample is heated to 300°F [149°C] until foaming ceases, then cooling immediately and calculating results.
 (c) Caution: this material has a positive particle charge, and therefore should not be mixed with materials having a negative particle charge.
 (d) Residue by distillation shall be in accordance with AASHTO T 59 except that the maximum temperature shall be 329 plus or minus 10°F [165 plus or minus 5°C] and the sample shall be maintained at this temperature for 20 minutes.
 (e) EPR-1 Prime shall not be diluted. In the event that EPR-1 Prime is not used in a 12 hour period, the material shall be thoroughly mixed by circulation or other suitable means prior to use.

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EMULSIFIED ASPHALT GRADE CRS-1h		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility	35 ml 0.8% Sodium Dioctyl Sulfosuccinate (a)	minimum 60%
Sieve Test		maximum 0.10%
Residue by Distillation	500°F. Distillation	minimum 55%
Naphtha Portion	500°F. Distillation. (b)	maximum 3% by volume
Particle charge		positive

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Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	minimum 45
Viscosity	140°F	minimum 1600 poise
Ductility	77°F	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%

(a) The demulsibility test shall be made within 30 days from the date of shipment.
 (b) When CRS-1 has been modified to include naphtha, the 24 hour storage stability will be waived.

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EMULSIFIED ASPHALT GRADE NTSS-1hm		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 500 seconds
Storage Stability	24 hour	maximum 1%
Settlement	5 days	maximum 5%
Residue by Distillation		minimum 50%
Naphtha Content	500°F. Distillation	maximum 1% by volume
Sieve Test		maximum 0.30% (a)
Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	maximum 20
Softening Point ASTM D 36		minimum 149°F
Dynamic Shear Rheometer AASHTO T 315	$G^* \sin \delta$, 186.8°F @ 10 rad/sec	minimum 1.00 kPa
Solubility	in Trichloroethylene	minimum 97.5%

(a) Sieve test may be waived if no application problems are present in the field.

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916-4.2 Sampling, Certification, and Verification: For each tank of emulsified asphalt delivered to or prepared at the asphalt terminal, the asphalt supplier shall submit a sample to the State Materials Office for testing before use. A pretest number will then be assigned by the State Materials Office which shall be furnished with all emulsified asphalt delivered to the project. The pretest number shall be valid for three months from the date of issue.

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The Department may sample and test pretested emulsified asphalt from the suppliers storage tank, the Contractors transport tank and/or distributor to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that pretested emulsified asphalt product. Further shipment of that pretested emulsified asphalt product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

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