

<b>State:</b> Tennessee	<b>Materials:</b> Re: Subsection 904.03; see also, 900SS.
<b>Date:</b> 4/24/2024	<b>Web Address:</b> <a href="https://www.tn.gov/tdot/tdot-construction-division/transportation-construction-division-resources/transportation-construction-2015-standard-specifications.html">https://www.tn.gov/tdot/tdot-construction-division/transportation-construction-division-resources/transportation-construction-2015-standard-specifications.html</a>
<b>Contact:</b> Derek Gaw	<b>Contact Info:</b> derek.gaw@tn.gov

Tennessee		Table 1: Requirements for Anionic Emulsified Asphalts (1)				
Property	Test Method AASHTO (T), ASTM (D), or Other.	Rapid-Setting		Slow-Setting		
		RS-1	RS-2	SS-1	SS-1h	
<b>EMULSIONS:</b>						
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	20-100	-	20-100	
	50 °C (122 °F)		-	75-400	-	-
Storage Stability Test, 24 hours, %			1 max.			
Sieve Test, % (2)			0.10 max.			
Demulsibility, % (3)			60 min.	60 min.	-	-
Cement Mixing Test, %			-	-	-	-
Residue, %			55 min.	63 min.	57 min.	57 min.
<b>DISTILLATION RESIDUE:</b>						
Penetration, 25 °C (77 °F), tenths of mm		T49	100-200		40-90	
Ductility, 25 °C (77 °F), cm		T51	40 min.			
<b>NOTES:</b>		<ol style="list-style-type: none"> <li>1. Refer to R5 for typical applications.</li> <li>2. A maximum percentage of 0.30 is acceptable for samples taken at the point of use.</li> <li>3. The demulsibility test shall be performed within 30 days from the date of shipment. Use 35 ml, 0.02 N CaCl<sub>2</sub> solution.</li> </ol>				

Tennessee		Table 2: Requirements for Cationic Emulsified Asphalts (1)					
Property		Test Method AASHTO (T), ASTM (D), or Other	Rapid-Setting		Slow-Setting		Quick-Setting
			CRS-2	CRS – 1 <sup>(4)</sup>	CSS-1	CSS-1h	CQS-1h
			<b>EMULSIONS:</b>				
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	-	-	20-100		
	50 °C (122 °F)		100-400	20 - 100	-	-	-
Storage Stability Test, 24 hours, %			1 max.				-
Sieve Test, % (2)			0.10 max.				
Particle Charge			Positive				
Demulsibility , % (3)			40 min.	40 min.	-	-	-
Cement Mixing Test, %			-	-	-	-	-
Coating Ability and Water Resistance	Dry Aggregate		-	-	-	-	-
	After Spraying		-	-	-	-	-
	Wet Aggregate		-	-	-	-	-
	After Spraying	-	-	-	-	-	
Residue, %		65 min.	60 min.	57 min.	57 min.	62 min.	
Oil Distillate, volume of emulsion, %		3 max.	3.0 max	-	-	-	
<b>DISTILLATION RESIDUE:</b>							
Penetration, 25 °C (77 °F), tenths of mm		T49	100-250	100 - 250	100-250	40-90	40-90
Ductility, 25 °C (77 °F), cm		T51	40 min.	40 min.	40 min.	40 min.	40 min.
<b>NOTES:</b>		<ol style="list-style-type: none"> <li>1. Refer to R5 for typical applications. When approved by the engineer, cationic emulsions may be substituted for anionic emulsions.</li> <li>2. A maximum percentage of 0.30 is acceptable for samples taken at the point of use.</li> <li>3. Use 35 ml of 0.8% sodium dioctyl sulfosuccinate solution.</li> <li>4. CRS – 1 added in Supplemental Specification – 900SS dated January 1, 2021</li> </ol>					

Property		Test Method AASHTO (T), ASTM (D), or Other	CRS-2P
<b>EMULSIONS:</b>			
Viscosity, Saybolt Furol Seconds, range	50 °C (122 °F)	T59	100-400
Storage Stability Test, 24 hours, %			1 max.
Sieve Test, %	(1)		0.1 max
Particle Charge Test			Positive
Demulsibility, %			40 min.
Residue by Evaporation, %			65 min.
<b>EVAPORATION RESIDUE:</b>			
Penetration, 25 °C (77 °F), tenths of mm		T49	75-175
Ductility, 25 °C (77 °F), cm		T51	40 min.
Elastic Recovery, 25 °C (77 °F), %		T301	50 min.
Softening Point, °F		T53	125 min.
<b>NOTES:</b>		1. A maximum percentage of 0.30 is acceptable for samples taken at the point of use.	

Tennessee		Table 4: Requirements for Special Emulsified Asphalts			
Property		Test Method AASHTO (T), ASTM (D), or Other	Anionic		Cationic
			AE-3	AE-P	CAE-P
<b>EMULSIONS:</b>					
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	-	10-50	10-50
	50 °C (122 °F)		50 min.	-	-
Settlement, 5 days, %			5 max.	5 max.	-
Storage Stability Test, 24 hours, %			-	-	1 max.
Sieve Test, % (1)			-	0.10 max.	0.10 max.
Particle Charge			-	-	Positive
Stone Coating, % coated			90 min.	-	-
Residue, %			-	55 max.	55 max.
Oil Distillate, volume of emulsion, %			6 max.	12 max.	12 max.
<b>DISTILLATION RESIDUE:</b>					
Penetration, 25 °C (77 °F), tenths of mm		T49	-	-	300 min.
Ductility, cm	4 °C (39 °F)	T51	-	-	-
	25 °C (77 °F)		-	-	40 min.
Elastic Recovery, 10 °C (50 °F), %		T301	-	-	-
Float Test at 60 °C (140 °F), seconds		T50	200 min.	20 min.	-
<b>NOTES:</b>		1. A maximum percentage of 0.30 is acceptable for samples taken at the point of use.			

Property	Test Method AASHTO (T), ASTM (D), or Other	Quick-Setting	
		CQS-1h-p	
<b>EMULSIONS:</b>			
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	20-100
	50 °C (122 °F)		-
Sieve Test, % (1)	0.10 max.		
Particle Charge	Positive		
Residue, %	62 min.		
<b>DISTILLATION RESIDUE:</b>			
Penetration, 25 °C (77 °F), tenths of mm	T49	40-90	
Ductility, cm	25 °C (77 °F) T51	70 min.	
Softening Point (Ring and Ball), °C (°F)	T53	57 (135) min.	
<b>NOTES:</b>		1. A maximum percentage of 0.30 is acceptable for samples taken at the point of use.	