

State: Iowa	Materials: Section 4140-Emulsified Asphalt
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Iowa		Table 1: Requirements for Anionic Emulsified Asphalts							
Property	Test Method AASHTO (T), ASTM (D), or Other	Rapid-Setting		Medium-Setting			Slow-Setting		
		RS-1	RS-2	MS-1	MS-2	MS-2h	SS-1	SS-1h	
EMULSIONS:									
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	20-100	-	20-100	-	-	20-100	20-100
	50 °C (122 °F)		-	75-400	-	100 min.	100 min.	-	-
Storage Stability Test, 24 hours, % (1)	1 max.		1 max.	1 max.	1 max.	1 max.	1 max.	1 max.	
Sieve Test, % (1)	0.30 max.		0.30 max.	0.30 max.	0.30 max..	0.30 max.	0.30 max.	0.30 max.	
Demulsibility, % (2)	60 min.		60 min.	-	-	-	-	-	
Cement Mixing Test, %	-		-	-	-	-	2.0 max.	2.0 max.	
Residue, %	55 min.		63 min.	55 min.	65 min.	65 min.	57 min.	57 min.	
DISTILLATION RESIDUE:									
Penetration, 25 °C (77 °F), tenths of mm	T49	90-150	90-150	90-250	90-250	40-90	90-250	40-90	
Ductility, 25 °C (77 °F), cm	T51	40 min.	40 min.	40 min.	40 min.	40 min.	40 min.	40 min.	
Solubility in trichloroethylene or n-propyl bromide, %	T44	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	
NOTES:	<ol style="list-style-type: none"> This test requirement on representative samples is waived if successful application of the material has been achieved in the field. The demulsibility test shall be performed within 30 days from the date of shipment. Use 35MI, 0.02 N CaCl₂ solution. 								

Table 2: Requirements for Cationic Emulsified Asphalts (1)

Property	Test Method AASHTO (T), ASTM (D), or Other	Rapid-Setting		Medium-Setting		Slow-Setting		Quick-Setting		
		CRS-1	CRS-2	CMS-2	CMS-2h	CSS-1	CSS-1h	CQS-1h	CQS-1hp	
EMULSIONS:										
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	-	-	-	-	20-100	20-100	20-100	20-100	
	50 °C (122 °F)	20-100	100-400	50-450	50-450	-	-	-	-	
Storage Stability Test, 24 hours, % (2)	T59	1 max.	1 max.	1 max.	1 max.	1 max.	1 max.	1 max.	1 max.	
Sieve Test, % (2)		0.30 max.	0.30 max.	0.30 max.	0.30 max.	0.30 max.	0.30 max.	0.30 max.	0.30 max.	
Particle Charge		Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	
Demulsibility, % (3)		40 min.	40 min.	-	-	-	-	-	-	
Cement Mixing Test, %		-	-	-	-	2.0 max.	2.0 max.	-	-	
Residue, %		60 min.	65 min.	65 min.	65 min.	57 min.	57 min.	57 min.	57 min.	
Oil Distillate, volume of emulsion, %		3 max.	1 max.	12 max.	12 max.	-	-	-	-	
Elastic Recovery, %		-								50
Softening Point, (min, °C)		-								57 min.
DISTILLATION RESIDUE:										
Penetration, 25 °C (77 °F), tenths of mm	T49	90-150 (4)(5)	90-150 (4)(5)	100-250	40-90	90-250 (4)(5)	40-90	40-90	40-90	
Ductility, 25 °C (77 °F), cm	T51	40 min.	40 min.	40 min.	40 min.	40 min.	40 min.	40 min.	40 min.	
Solubility in trichloroethylene, %	T44	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	
NOTES:	<ol style="list-style-type: none"> 1. Refer to R5 for typical applications. 2. This test requirement on representative samples is waived if successful application of the material has been achieved in the field. 3. Use 35 ml of 0.8% sodium dioctyl sulfosuccinate solution. 4. If the sample is for crack sealing or seal coat applications penetration will be between 100-150. 5. Seal coat and crack filling require absolute viscosity testing. Requirement is between 600 and 1200 poises when tested according to Iowa DOT materials Laboratory Test Method No. 622 in lieu of a penetration test. 									



Iowa		Table 3: Requirements for High Float Emulsified Asphalt (1)					
Property	Test Method AASHTO (T), ASTM (D), or Other	Rapid-Setting	Medium-Setting				
		HFRS-2	HFMS-1	HFMS-2	HFMS-2h	HFMS-2s	
EMULSIONS:							
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	-	20-100	100 min.	100 min.	50 min.	
	50 °C (122 °F)	75-400	-	-	-	-	
Storage Stability Test, 24 hours, % (2)	T59	1 max.	1 max.	1 max.	1 max.	1 max.	
Sieve Test, % (2,3)		0.30 max.	0.30 max.	0.30 max.	0.30 max.	0.30 max.	
Demulsibility, % (4)		60 min.	-	-	-	-	
Residue, %		65 min.	55 min.	65 min.	65 min.	65 min.	
Oil Distillate, volume of emulsion, %		-	-	-	-	1-7	
DISTILLATION RESIDUE:							
Penetration, 25 °C (77 °F), tenths of mm		T49	100-250	90-250	90-250	40-90	250 min.
Ductility, 25 °C (77 °F), cm	T51	40 min.	40 min.	40 min.	40 min.	40 min.	
Solubility in Trichloroethylene, % (5)	T44	97.5 min.	97.5 min.	97.5 min.	97.5 min.	97.5 min.	
Float Test at 60 °C (140 °F), seconds	T50	1200 min.	1200 min.	1200 min.	1200 min.	1200 min.	
NOTES:	<ol style="list-style-type: none"> 1. Refer to R5 for typical applications. 2. This test requirement on representative samples is waived if successful application of the material has been achieved in the field. 3. A maximum percentage of 0.30 is acceptable for samples taken at the point of use. 4. The demulsibility test shall be performed within 30 days from the date of shipment. Use 35 ml, 0.02 N CaCl₂ solution. 5. N-propyl bromide may also be used for HFRS-2. 						

Iowa		Table 4: Requirements for Polymer Modified Asphalt Emulsions	
Property		Test Method AASHTO (T), ASTM (D), or Other	CRS-2P
EMULSIONS:			
Viscosity, Saybolt Furol seconds	25 °C (77 °F)	T59	-
	50 °C (122 °F)		100-400
Storage Stability Test, 24 hours, %			1 max.
Sieve Test, %			0.10 max.
Particle Charge Test			Positive
Demulsibility, %			40 min.
Residue by Evaporation, %			T59
EVAPORATION RESIDUE:			
Penetration, 25 °C (77 °F), tenths of mm		T49	100-150
Ductility, 5 cm/minute, cm	4 °C (39.2 °F)	T51	30 min.
	25 °C (77 °F)		125 min.
Force Ratio (f2/f1)		T300	0.3 min.
Elastic Recovery, 25 °C (77 °F), %		T301	55 min.
Polymer Solids content, %		-	2.5 min.
NOTES:			