State: Vermont	**Materials:** Re: Section 702.04-Emulsified Asphalt	**Description:** Emulsified asphalt shall be homogenous, shall show no separation at time of use, and shall be used within 30 calendar days after delivery from the manufacturer/supplier.
Date: 10/29/24	**Web Address:** www.dot.state.vt.us	
Materials Engineer: Nicholas Van Den Berg	**Contact Info:** Nick.VanDenBerg@vermont.gov	**Exclusions:** Emulsified asphalt shall not be allowed to freeze.

Vermont		**Table 1: Requirements for Anionic Emulsified Asphalts (1)**					
Property		**Test Method AASHTO (T), ASTM (D), or Other**	**Rapid-Setting**		**Medium-Setting**	**Slow-Setting**	
			RS-1	**RS-1h**	**MS-2h**	**SS-1**	**SS-1h**
EMULSIONS:							
Viscosity, Saybolt Furol seconds	25° C (77° F)	T 59	20-100	20-100	100 min.	20-100	20-100
	50° C (122° F)		-	-	-	-	-
Settlement, 5 days, %							
Storage Stability Test, 24 hours, % (2)			1 max.	1 max.	1 max.	1 max.	1 max.
Sieve Test, % (2,3)			0.10 max.	0.10 max.	0.10 max.	0.10 max.	0.10 max.
Demulsibility, % (4)			60 min.	60 min.	-	-	-
Cement Mixing Test, %			-	-	-	2.0 max.	2.0 max.
Coating Ability and Water Resistance	Dry Aggregate		-	-	Good	-	-
	After Spraying		-	-	Fair	-	-
	Wet Aggregate		-	-	Fair	-	-
	After Spraying		-	-	Fair	-	-
Residue, %			55 min.	55 min.	65 min.	57 min.	57 min.
DISTILLATION RESIDUE:							
Penetration, 25º C (77° F), tenths of mm		T 49	90-150	60-90	40-90	90-250	40-90
Ductility, 25º C (77° F), cm		T 51	40 min.	40 min.	40 min.	40 min.	40 min.
Ash Content, %		T 111	1 max.	1 max.	1 max.	1 max.	1 max.

NOTES:

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* $CaCl_2$ solution.

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Vermont		Table 2: Requirements for Cationic Emulsified Asphalts (1)						
Property		**Test Method AASHTO (T), ASTM (D), or Other**	**Rapid-Setting**			**Medium-Setting**	**Slow-Setting**	
			CRS-1	**CRS-1h**	**CRS-1P**	**CMS-2h**	**CSS-1**	**CSS-1h**
EMULSIONS:								
Viscosity, Saybolt Furol seconds	25° C (77° F)	T 59	-	-		-	20-100	20-100
	50° C (122° F)		20-100	20-100	20-100	50-450	-	-
Storage Stability Test, 24 hours, % (2)			1 max.	1 max.	1 max.	1 max.	1 max.	1 max.
Sieve Test, % (2)			0.10 max.	0.10 max.	0.10 max.	0.10 max.	0.10 max.	0.10 max.
Particle Charge			Positive	Positive	Positive	Positive	Positive	Positive
Demulsibility , % (3)			40 min.	40 min.	40 min.	-	-	-
Cement Mixing Test, %			-	-		-	2.0 max.	2.0 max.
Coating Ability and Water Resistance	Dry Aggregate		-	-		Good	-	-
	After Spraying		-	-		Fair	-	-
	Wet Aggregate		-	-		Fair	-	-
	After Spraying		-	-		Fair	-	-
Residue, %			60 min.	60 min.	63 min.	65 min.	57 min.	57 min.
Oil Distillate, volume of emulsion, %			3 max.	3 max.		12 max.	-	-
DISTILLATION RESIDUE:								
Penetration, 25º C (77° F), tenths of mm		T 49	90-150	40-90	90-150	40-90	90-250	40-90
Ductility, 25º C (77° F), cm		T 51	40 min.	40 min.		40 min.	40 min.	40 min.
Elastic Recovery, %		T 301	-	-	60 min.	-	-	-
Ash Content, %		T 111	1 max.	1 max.	1 max.	1 max.	97.5 min.	97.5 min.

NOTES:

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.

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Vermont		Table 3: Requirements for High Float Emulsified Asphalt (1)			
Property		**Test Method AASHTO (T), ASTM (D), or Other**	**Medium-Setting**		
			HFMS-2	**HFMS-2h**	**HFMS-2s**
EMULSIONS:					
Viscosity, Saybolt Furol seconds	25° C (77° F)	T 59			
	50° C (122° F)		100 min.	100 min.	100 min.
Storage Stability Test, 24 hours, % (2)			1 max.	1 max.	1 max.
Sieve Test, % (2,3)			0.10 max.	0.10 max.	0.10 max.
Demulsibility , % (4)			-	-	-
Coating Ability and Water Resistance	Dry Aggregate		Good	Good	Good
	After Spraying		Fair	Fair	Fair
	Wet Aggregate		Fair	Fair	Fair
	After Spraying		Fair	Fair	Fair
Residue, %			65 min.	65 min.	65 min.
Oil Distillate, volume of emulsion, %			-	-	1-7
DISTILLATION RESIDUE:					
Penetration, 25º C (77° F), tenths of mm		T 49	90-250	40-90	250 min.
Ductility, 25º C (77° F), cm		T 51	40 min.	40 min.	40 min.
Ash Content, % (5)		T 111	1 max.	1 max.	1 max.
Float Test at 60° C (140° F), seconds		T 50	1200 min.	1200 min.	1200 min.

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NOTES:	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* $CaCl_2$ solution. 5. N-propyl bromide may also be used for HFRS-2.

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