



Designation: D 2397 – 02

Standard Specification for Cationic Emulsified Asphalt¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers seven grades of cationic emulsified asphalt for use in pavement construction in the manner designated.

2. Referenced Documents

2.1 ASTM Standards:

D 140 Practice for Sampling Bituminous Materials²

D 244 Test Methods for Emulsified Asphalts²

D 3910 Practices for Design, Testing, and Construction of Slurry Seal²

3. Requirements

3.1 The emulsified asphalt shall be tested within 14 days of delivery. The emulsified asphalt shall be homogeneous after

thorough mixing provided separation has not been caused by freezing. Emulsions separated by freezing shall not be tested.

3.2 Emulsified asphalt shall conform to the requirements prescribed in **Table 1**.

4. Sampling

4.1 Samples of emulsified asphalt shall be taken in accordance with Practice **D 140**.

4.2 Samples shall be stored in clean, airtight sealed containers at a temperature of not less than 4°C (39.2°F) until tested.

5. Test Methods

5.1 The properties of the emulsified asphalts given in **Table 1** shall be determined in accordance with Test Methods **D 244**, with the following exception:

5.1.1 *Sieve Test*—Use distilled water in all wetting and washing operations in place of sodium oleate solution (2 %).

6. Keywords

6.1 cationic; emulsified asphalt; emulsion; medium setting; rapid setting; slow setting

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² *Annual Book of ASTM Standards*, Vol 04.03.



TABLE 1 Requirements for Cationic Emulsified Asphalt

NOTE 1—CQS-1H emulsions shall meet the requirements outlined in Practices D 3910.

NOTE 2—CQS-1h is used for Quick Set Slurry Seal systems.

Type	Rapid-Setting			Medium-Setting						Slow-Setting			Quick Setting	
	CRS-1		CRS-2		CMS-2		CMS-2h		CSS-1		CSS-1h		CQS-1H	
Grade	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Test on emulsions:														
Viscosity, Saybolt Furol at 25°C (77°F) SFS	20	100	100	400	50	450	50	450	20	100	20	100	20	100
Viscosity, Saybolt Furol at 50°C (122°F) SFS	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Storage stability test, 24-h, % ^A	40	...	40	...	...	...	...	...	...	...	...	...	...	...
Demulsibility, 35 mL, 0.8 % dioctyl sodium sulfosuccinate, %														
Coating ability and water resistance:														
Coating, dry aggregate					good		good							
Coating, after spraying					fair		fair							
Coating, wet aggregate					fair		fair							
Coating, after spraying					fair		fair							
Particle charge test	positive		positive		positive		positive		positive		positive		positive	
Sieve test, % ^A	0.10		0.10		0.10		0.10		0.10		0.10		0.10	
Cement mixing test, %									2.0		2.0		N/A	
Distillation:														
Oil distillate, by volume of emulsion, %														
Residue, %	60	3	65	3	65	12	65	12	57	57	57	57	57	57
Tests on residue from distillation test:														
Penetration, 25°C (77°F), 100 g, 5 s	100	250	100	250	100	250	40	250	100	250	40	250	40	90
Ductility, 25°C (77°F), 5 cm/min, cm	40		40		40		40		40		40		40	
Solubility in trichloroethylene, %	97.5		97.5		97.5		97.5		97.5		97.5		97.5	

^AThis test requirement on representative samples is waived if successful application of the material has been achieved in the field.