



Designation: **D 2397 – 9802**

## Standard Specification for Cationic Emulsified Asphalt<sup>1</sup>

This standard is issued under the fixed designation D 2397; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*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:*

---

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee ~~D-4~~ D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.41 on Emulsified Asphalt Specifications.

Current edition approved Dec. 10, ~~1998~~, 2002. Published ~~March 1999~~, January 2003. Originally published as ~~D 2397 – 65 T~~, approved in 1965. Last previous edition approved in 1998 as D 2397 – 978.

D 140 Practice for Sampling Bituminous Materials<sup>2</sup>

D 244 Test Methods for Emulsified Asphalts<sup>2</sup>

■ D 3910 Practices for Design, Testing, and Construction of Slurry Seal<sup>2</sup>

### 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

---

<sup>2</sup> 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 D 3910 Standard Practices for Design, Testing and Construction of Slurry Seal.

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 SFs									20	100	20	100	20	100
Viscosity, Saybolt Furol at 50°C SFs	20	100	100	400	50	450	50	450						
Storage stability test, 24-h, % <sup>A</sup>		1		1		1		1		1		1		
Demulsibility, 35 mL, 0.8 % dioctyl sodium sulfosuccinate, %	40	...	40	...										
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, % <sup>A</sup>		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, %		3		3		12		12						
Residue, %	60		65		65		65		57		57		57	
Tests on residue from distillation test:														
Penetration, 25°C, 100 g, 5 s	100	250	100	250	100	250	40	90	100	250	40	90	40	90
Ductility, 25°C, 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	

<sup>A</sup>This test requirement on representative samples is waived if successful application of the material has been achieved in the field.

*ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or [service@astm.org](mailto:service@astm.org) (e-mail); or through the ASTM website ([www.astm.org](http://www.astm.org)).*