



Standard Practice for Recovering Residue from Emulsified Asphalt Using Low Temperature Evaporative Technique¹

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1. Scope

1.1 This practice covers a method for recovering the residue from emulsified asphalts such as those specified in Specifications [D977](#) and [D2397](#) using a low temperature evaporative technique that is similar to pavement conditions. The recovered residue can be used for further testing as required.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

[D977 Specification for Emulsified Asphalt](#)

[D2397 Specification for Cationic Emulsified Asphalt](#)

[D6934 Test Method for Residue by Evaporation of Emulsified Asphalt](#)

[D6997 Test Method for Distillation of Emulsified Asphalt](#)

2.2 Other Standard:

[NF EN 13074 Recovery of Binder from Bitumen Emulsions by Evaporation](#)³

3. Significance and Use

3.1 The procedure described in this practice is used to obtain a residue from an emulsified asphalt that may be used for further testing in devices such as a dynamic shear rheom-

¹ This practice is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.42](#) on Emulsified Asphalt Test.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from AFNOR (French Standard Institute), 11, rue Francis de Pressensé 93571 La Plaine Saint-Denis Cedex, France, <http://www.afnor.org>.

eter. The lower evaporative temperatures of this procedure provide conditions that are very close to that of application techniques for these materials. This practice could be used in place of recovery techniques such as those of Test Methods [D6934](#) and [D6997](#), when the temperatures used in those standards would negatively affect the residue.

4. Reagents and Materials

4.1 *Silicone Mat*—The mat used can be similar to that specified in NF EN 13074 or any mat that will allow an emulsified asphalt spread rate of 1.5 to 2.0 kg/m². The mat may have a lip to contain the emulsified asphalt to the appropriate area.

NOTE 1—A silicone mat can be purchased at various restaurant supply stores and a good size for this application is a half-sheet pan size to fit in most laboratory ovens.

4.2 *Spatula*—Palette knife or other suitable material for spreading the emulsified asphalt.

4.3 *Forced Draft Oven*—Capable of maintaining a temperature of 25 ± 2°C and 60 ± 2°C. The racks should be able to be spaced a minimum of 10 cm from the top and bottom of the oven and with a spacing of a minimum of 4 cm between racks with samples. The oven racks must be checked for level, with a bubble level of 250 mm minimum length, from side to side and front to back of the oven.

5. Procedure

5.1 Pour the required amount of emulsified asphalt onto the silicone mat and spread evenly with a spatula to give a spread rate of 1.5 to 2.0 kg/m² of emulsified asphalt. The silicone mat should be supported by an oven tray or other flat tray or pan that will allow easy transfer to an oven. [Table 1](#) may be used as a guide for the quantities of emulsified asphalt necessary to give the appropriate spread rate for a given area.

5.2 Place the silicone mat with the emulsified asphalt into a 25 ± 2°C forced draft oven for 24 ± 1 h.

5.3 Transfer the silicone mat with the emulsified asphalt to a 60 ± 2°C forced draft oven for 24 ± 1 h.

5.4 Remove the silicone mat with the emulsified asphalt residue from the 60°C oven and allow to cool at ambient lab conditions for one hour prior to removal from the mat.

TABLE 1 Emulsified Asphalt Quantity by Mat Area for Appropriate Spread Rate

Emulsified Asphalt Spread Rate	Emulsified Asphalt quantity in grams for each area in m ²			
	0.01 m ²	0.0225 m ²	0.04 m ²	0.0625 m ²
1.5 kg/m ²	15.0 g	33.75 g	60.0 g	93.75 g
2.0 kg/m ²	20.0 g	45.0 g	80.0 g	125.0 g

Note: The area dimensions correspond to the following square and circle sizes in mm:

Area	Square	Circle
0.01 m ²	100 × 100 mm	56.4 mm radius
0.0225 m ²	150 × 150 mm	84.6 mm radius
0.04 m ²	200 × 200 mm	112.8 mm radius
0.0625 m ²	250 × 250 mm	141.0 mm radius

5.5 Carefully peel the emulsified asphalt residue from the mat using a wooden or plastic utensil to not damage the silicone mat. The residue can be kneaded into the appropriate sample size for testing (see 3.1) if appropriate gloves are worn to not allow skin contact with the residue.

NOTE 2—For softer binders it may be necessary to cool the mat and residue in a refrigerator prior to removal.

NOTE 3—Examples of a wooden or plastic utensil may be a tongue

depressor, silicone spatula, or plastic knife.

NOTE 4—The recovered binder may be stored in a sealed container at ambient laboratory conditions for up to one week prior to testing.

NOTE 5—The recovered binder properties may be changed if heated to a liquid state for further testing.

6. Keywords

6.1 bitumen; emulsified asphalt

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