Transport Roads & Maritime Services

NSW GOVERNMENT

Test method T561

Non-volatile emulsifying agent in bitumen emulsion

NOVEMBER 2012

Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D.Dash	Jan 2000
Ed 2/ Rev 0	All	Reformatted RMS template	J Friedrich	November 2012

Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T561 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T561

Non-volatile emulsifying agent in bitumen emulsion

1. Scope

This test method sets out the procedure to be used in determining the amount of non-volatile emulsifying agent in bitumen emulsion. The test method was obtained from the Queensland Main Roads Department.

2. Apparatus

(a) 500 mL open top can.

(b) Water bath.

(c) 1 litre separating funnel.

(d) Hot plate.

(e) Laboratory glassware including beakers and stirring rods etc.

(f) Evaporating basin.

(g) Balance of 250 g capacity accurate and readable to 0.2 mg.

(h) Thermometer 0-110°C.

3. Preparation of Sample

Thoroughly stir the sample until homogeneous and pour off sufficient for the test.

4. Procedure

(a) Weigh 100 g (accurately to 0.01 g) of bitumen emulsion into a 500 mL open top can and heat to 77°C on a water bath.

(b) Slowly add 150 mL of 95% ethanol with constant stirring and continue stirring for a further 5 minutes.

(c) Remove the can from the water bath and allow contents to settle for 2 minutes. Decant the alcoholic solution into a 1 litre separating funnel.

(d) Add a further 75 mL of ethanol to the coagulated bitumen in the can and repeat the extraction as described above.

(e) Combine the alcoholic solutions obtained from the extractions in the separating funnel and to the combined extractions add 100 mL toluene and shake vigorously for 2-3 minutes.

(f) Add 65 mL of hot distilled water to the coagulated bitumen, heating the can contents on a hot plate to 77°C with constant stirring and continue stirring for 5 minutes.

(g) Remove the can from the hot plate and allow the contents to settle for about 2 minutes. Decant the water solution into a beaker.

(h) Add a further 65 mL of hot water and repeat the water extraction as above. Combine the second water extract with the first and pour the contents of the beaker into the separating funnel containing the alcoholic extractions and the toluene.

(i) Allow the solution to stand for 30 minutes and then run the alcohol/aqueous layer into a 600 mL beaker.

(j) Add 30 mL of distilled water to the toluene in the separating funnel and shake vigorously for 1 minute and allow to stand for 30 minutes. Run the water layer off into the 600 mL beaker containing the previous extract.

(k) Evaporate the water/alcohol extract in the 600 mL beaker concentrating it to about 100 mL. Transfer quantitatively to a tared evaporating basin.

(l) Evaporate the solution to dryness and weigh to constant mass to an accuracy of 0.005 g.

5. Calculations and Reporting

Calculate the percentage emulsifier of the original sample.

$$\text{Percentage emulsifier} = \frac{\textit{Mass of Residue}}{\textit{Mass of Sample}} \times 100$$

Report as non-volatile emulsifying agent in bitumen emulsion.

RMS 12.648