



Transport
Roads & Maritime
Services

Test method T648

Static binder drainage test

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Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		New Issue David Bligh	D.Dash	Aug 1999
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 T648 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T648

Static binder drainage test

1. Scope

This test method sets out the procedure for measuring the binder drainage characteristics in asphalt mixes. The method is based on the Schellenburg Drainage test and is suitable for both laboratory and plant prepared mixes.

2. Referenced Document

Australian Standards Test Method AS 1141.3.1, Sampling Aggregates.
Australian Standards Test Method AS 2891.2.1, Sample Preparation - Mixing, Quartering and Conditioning of Asphalt in the Laboratory.

3. Apparatus

- (a) Suitable asphalt sampling and quartering equipment.
- (b) 800 mL glass beaker with a watch glass cover.
- (c) Dish, with the capacity to hold at least 1.5 kg of mix.
- (d) Rubber gloves.
- (e) Heat insulation gloves.
- (f) A thermostatically controlled oven with a good air circulation, capable of maintaining a temperature within the range of 200 ± 2 °C.
- (g) A balance of at least 1kg capacity readable and accurate to 0.1g.

Determination of the Binder Drainage of a Plant prepared asphalt mix.

4. Sample Preparation

Take a representative bulk sample of approximately 10 - 12 kg of the mix and reduce by quartering to obtain a test sample of 0.75 to 1kg in mass.

5. Testing Procedure

- (a) Determine the mass of the glass beaker with the watch glass cover and record the mass as (m_1) to the nearest 0.1g. Ensure the beaker and the watch glass cover is clean and free of contaminants.
- (b) Place the test sample into the beaker and cover with the watch glass cover. Weigh and record the mass as (m_2) to the nearest the 0.1g.
- (c) Place the beaker and the test sample, covered with the watch glass cover, into an oven preset at 170 ± 2 °C and leave for 1 hour \pm 1 minute.
- (d) After the elapsed time remove the beaker from the oven and, without delay, empty the test sample in one smooth motion without shaking or vibrating the beaker into a clean pre-weighed dish. The dish contents may be used as a check measurement if required.

Caution: When handling hot materials and apparatus use heat insulation gloves.

- (e) Weigh the emptied beaker with the watch glass cover and record the mass as (m_3) to the nearest 0.1g.

Determination of the Binder Drainage of a laboratory prepared asphalt mix.

This procedure is the same as for part 1 “*Determination of the Binder Drainage of a Plant mix*” except that the mix is prepared in the laboratory.

6. Testing Procedure

- (a) Obtain representative quantities of the raw mix materials - aggregate, filler, binder, additive and fixative to make a mix of between 10 - 12 kg.
- (b) Sample and prepare the aggregate in accordance with AS 1141.3 test procedure. The individual components shall be in a ratio of the designated mix design.
- (c) Blend the prepared components to form the mix sample in accordance with AS 2891.2.1 test procedure. The following exceptions will prevail:
 - (i) Bitumen additives shall be combined with the bitumen prior to adding the binder to the aggregate.
 - (ii) Fixative shall be added to the mix according to the manufacturer’s recommendations.
 - (iii) The test sample shall be from 0.75 to 1 kg in mass.

Note: If the mixing bowl is clean, it should be coated with a smear of bitumen from a small “dummy” mix before blending the mix components.

- (d) Follow the procedure (a) to (c) from part 1 “*Determination of the Binder Drainage of a Plant mix*”.

7. Calculations

$$\text{Binder Drainage} = \left[\frac{M_3 - M_1}{M_2 - M_1} \right] \times 100 (\%)$$

Where:

M₁ = Mass of beaker and watch glass cover.

M₂ = Mass of beaker, watch glass cover and sample

M₃ = Mass of beaker and watch glass cover after test.

8. Reporting

Report the binder drainage value of the asphalt mix to the nearest 0.1%.