

Australian/New Zealand Standard™

Methods of testing bitumen and related roadmaking products

Method 27: Determination of sedimentation

1 SCOPE

This Standard sets out a method for determining the degree of sedimentation of a bituminous emulsion on standing undisturbed. It provides a means of evaluating the tendency for the two phases of an emulsion to separate with time.

2 REFERENCED DOCUMENT

The following document is referred to in this Standard:

AS

2341 Methods of testing bitumen and related roadmaking products

2341.9 Method 9: Determination of water content (Dean and Stark)

3 PRINCIPLE

The emulsion is allowed to stand for three days, after which the water content is determined on the top and bottom layers and the difference is calculated and taken as a measure of sedimentation.

4 DEFINITION

For the purpose of this Standard, the definition below applies.

4.1 Sedimentation

Settling of the particles of an emulsion due to the action of gravity.

NOTE: This phenomenon should not be confused with the separation of the disperse phase due to instability of the emulsion (coagulation).

5 APPARATUS

5.1 Glass-stoppered measuring cylinders

Two 500 mL glass-stoppered measuring cylinders, 50 ± 5 mm outside diameter graduated at each 5 mL.

NOTE: The measuring cylinders may be fitted with two glass stopcocks at graduations 50 mL and 450 mL. The stopcocks, where fitted, should have a minimum bore of 4 mm.

6 PROCEDURE

The procedure shall be as follows:

- (a) Stir the sample of emulsion until thoroughly mixed and pour 500 mL into each of the two glass-measuring cylinders.
- (b) Stopper the cylinders and allow them to stand undisturbed at $23 \pm 3^\circ\text{C}$ and out of direct sunshine for three days.

- (c) Remove approximately the top 50 mL of the emulsion from each cylinder, without disturbing the remainder of the emulsion, by opening the top stopcock or by withdrawing the emulsion carefully by pipette.
- (d) Place each portion in a separate beaker, stir thoroughly with a stirring rod and determine the water content in accordance with AS 2341.9.
- (e) From the remainder of the test portion, remove and discard the next 400 mL of emulsion from each cylinder by opening the bottom stopcock or, carefully, by means of a pipette.
- (f) Thoroughly stir the emulsion remaining in each of the two cylinders and determine the respective water contents in accordance with AS 2341.9.

7 CALCULATION AND EXPRESSION OF RESULTS

Calculate sedimentation of the sample as follows:

$$\text{Sedimentation, percent by mass (\%)} = B - A$$

where

B = average of the percentage of water from the two top layer portions

A = average of the percentage of water from the two bottom layer portions

8 REPORT

The test report shall contain the following:

- (a) Sedimentation as a percentage to the nearest 0.1%.
- (b) Reference to this Australian/New Zealand Standard, i.e., AS/NZS 2341.27.

NOTE: If $B - A$ is negative, this still is a valid result. Report the result as creaming.

9 PRECISION

NOTE: Repeatability and reproducibility limits have not yet been established.