

# Australian/New Zealand Standard™

## Methods of testing bitumen and related roadmaking products

### Method 8: Determination of matter insoluble in toluene

AS/NZS 2341.8:2016

#### PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH-025, Bitumen and Related Products for Roadmaking, to supersede AS 2341.8—1992.

It is issued as a Joint Standard under the terms of the Active Cooperation Agreement between Standards Australia and Standards New Zealand. The most significant modification is the removal of references to tar.

#### METHOD

##### 1 SCOPE

This Standard sets out a procedure for the determination of the proportion of a bituminous material which is insoluble in toluene.

This Standard is applicable to the following products:

- (a) Bitumen for pavements in accordance with AS 2008.
- (b) The residue from the evaporation of bituminous emulsions in accordance with AS 1160.

**WARNING: THE USE OF THIS STANDARD MAY INVOLVE HAZARDOUS MATERIALS, OPERATIONS AND EQUIPMENT. THIS STANDARD DOES NOT PURPORT TO ADDRESS ALL OF THE SAFETY PROBLEMS 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

The following documents are referred to in this Standard:

AS	
1160	Bituminous emulsions for the construction and maintenance of pavements
2008	Bitumen for pavements
AS/NZS	
2341	Methods of testing bitumen and related roadmaking products
2341.1	Part 1: Precision data—Definitions
2341.21	Method 21: Sample preparation

### 3 PRINCIPLE

The bituminous material is dissolved in toluene and the insoluble material separated from the solution by filtration.

### 4 SOLVENT

The following solvent is required:

Any grade of toluene which has a purity of  $\geq 99.5\%$  and a residue on evaporation of  $\leq 0.005\%$ .

**WARNING: SINCE TOLUENE IS TOXIC AND HIGHLY FLAMMABLE, ALL WORKING AREAS SHOULD BE ADEQUATELY HOODED AND FREE FROM SPARKS AND FLAME.**

### 5 APPARATUS

The following items of apparatus are required:

- (a) No. 4 porosity sintered glass crucible about 30 mL capacity.
- (b) Vacuum filtration apparatus suitable for the crucible.
- (c) Suction pump (a water aspirator is suitable).
- (d) Low form beaker of capacity about 150 mL.
- (e) Drying oven thermostatically controllable in the range 100°C to 110°C.
- (f) Desiccator containing desiccant (e.g. indicating anhydrous silica gel).
- (g) Analytical balance readable to at least 0.0001 g with a limit of performance not exceeding  $\pm 0.0003$  g.
- (h) Glass stirring rod with flame-polished ends.
- (i) Suitable cover for the beaker (e.g. watch glass or aluminium foil).

### 6 PROCEDURE

The procedure shall be as follows:

- (a) Bitumen samples shall be prepared in accordance with AS/NZS 2341.21. Emulsion residues shall be prepared according to the relevant test method listed in AS 1160.
- (b) Dry and weigh the beaker and stirring rod together to the nearest 0.0001 g ( $m_1$ ).
- (c) Dry and weigh the sintered glass crucible to the nearest 0.0001 g ( $m_2$ ).
- (d) Weigh  $2.0 \pm 0.5$  g of the sample into the beaker and record the sample mass to the nearest 0.01 g ( $m_3$ ).
- (e) Add, in small portions, 100 mL of toluene to the beaker, stirring with the stirring rod until all lumps disappear and no material adheres to the bottom of the beaker.
- (f) Place the cover on the beaker and stirring rod and set aside for at least 12 h.
- (g) Filter the solution through the crucible under vacuum.
- (h) Wash down the stirrer and the sides of the beaker with a small amount of toluene and pour the washings through the crucible.
- (i) Repeat the washing with toluene until the washings are clear and colourless.
- (j) Rinse the crucible once and maintain vacuum until visually dry.
- (k) Dry the crucible, beaker and stirrer in the oven for 20 min at 100°C to 110°C, then cool in the desiccator.