



Transport
Roads & Maritime
Services

Test method T736

Flow test for rubber bitumen mixes

NOVEMBER 2012



Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
Ed 1/Rev 1	All	Reformatted and Revision Summary Added. Safety Notes Added. Scope ASTM No. Altered	D Dash	Jan 2000
Ed 2/Rev 0	All	New Issue. Extensively revised and rewritten to improve reporting clarity and facilitate estimation of measurement of uncertainty.	J Friedrich	Jan 2010
Ed 3/ 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 T736 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T736

Flow test for rubber bitumen mixes

1. Scope

This test method sets out the procedure to measure the flow under gravity of a rubber bitumen mixture.

NOTE: The method is based on ASTM D1191-64 Part 5.

2. General

- (a) This test is applicable to the following materials:
 - (i) Scrap rubber bitumen and synthetic rubber modified bitumen mixtures
 - (ii) Type 2 thermoplastic bituminous raised pavement marker adhesive
- (b) The test includes the following steps:
 - (i) Pouring a sub-sample to form a specimen on a test panel
 - (ii) Allowing a lamina of the material to flow down an inclined plane at a temperature representative of the maximum service temperature
 - (iii) Measuring any slip or flow
- (c) Tests on more than one mixture can be carried out concurrently using test panels prepared and attached to a multiple rack such (e.g. Figure 1)
- (d) The following document is referred to in this Test Method:
 - (i) AG:PT/T102 Protocol for Handling Polymer Modified Binders in the Laboratory.
http://www.austroads.com.au/pdf/TestMethod/T102_Handling.pdf

3. Apparatus

- (a) A thermostatically controlled oven with good air circulation, which can be maintained at $60^{\circ} \pm 2^{\circ}\text{C}$ for 5 h and with a shelf level in at least one plane to $\pm 1^{\circ}$
- (b) A metal mould with internal dimensions of 40 ± 1 mm wide, 60 ± 1 mm long and 3.2 ± 0.1 mm deep
- (c) Bright tinplate panel at least 300 mm long and at least 50 mm wide
- (d) A metal rack that supports the panel at $75^{\circ} \pm 1^{\circ}$ to the horizontal (refer to Figure 1)
- (e) Metal knife or spatula
- (f) A rule marked in 0.5 mm or calibrated Vernier callipers readable to 0.1 mm
- (g) Where flow is expected to be more than 10 mm, a metal drip tray, deep enough to hold drained bitumen from test panels
- (h) A fine tipped marking pen or scribing tool
- (i) A water soluble lubricant for mould (e.g. soft potassium soap)

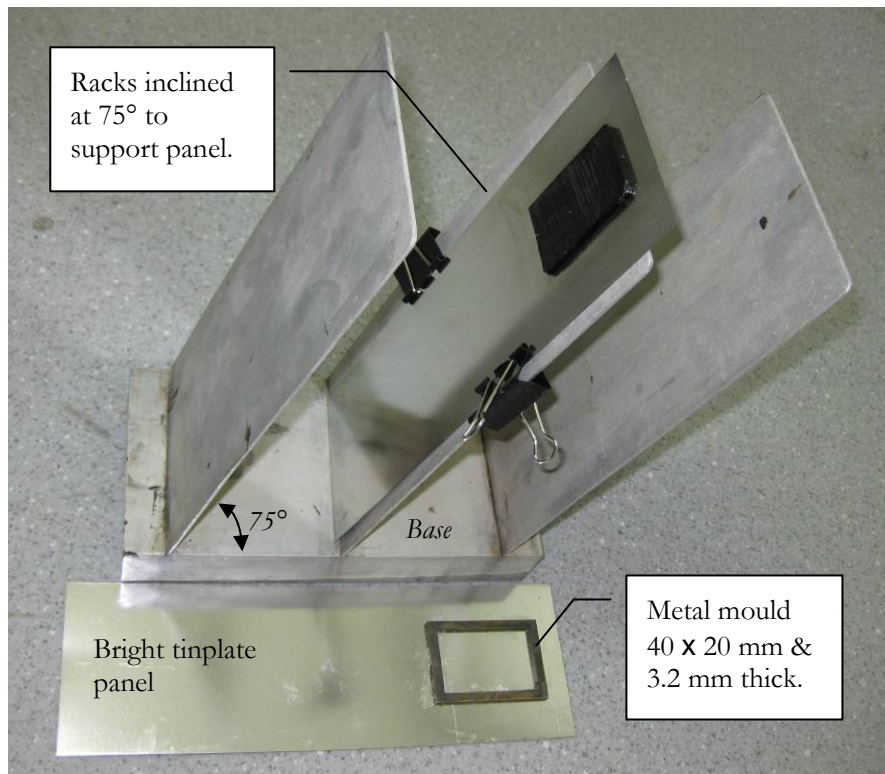


Figure 1 - Rack to Support the Test Panel (up to 3 test panels can be tested concurrently)

4. Preparation

Prepare the polymer modified binders according to AG:PT/T102 and heat the sample to pouring temperature (approximately 200°C).

5. Procedure

- (a) Treat the moulds with lubricant and remove excess
- (b) Mount the mould on the tinfoil panel so that its long axis is aligned in the same direction as the long axis of the tinfoil panel and the short edge of the mould is 5 to 10 mm from one end of the test panel
- (c) Pour the sample to slightly overfill the mould to form one specimen on the test panel
- (d) Allow the specimen to lay flat and to cool at room temperature for at least 0.5 h
- (e) Trim the specimen flush with the face of the mould. Lift and remove the mould

NOTE: A heated knife or spatula is suitable for trimming.

- (f) Mark with a scribe or fine pen 2 pairs of marks on either side of the test panel level with the leading and trailing edge of the specimen
- (g) Measure the distance between the two scribe marks (L_A) to the nearest 0.5 mm
- (h) Secure the test panel in the rack such that the longitudinal axis of the panel makes an angle of $75^\circ \pm 1^\circ$ to the horizontal and the test specimen is at the elevated end of the panel (refer to Figure 1)
- (i) Place the rack with test panel into the oven maintained at $60^\circ \pm 2^\circ\text{C}$ for $5\text{ h} \pm 10\text{ min}$. If the oven is level in one dimension only, align the holding device in that dimension. Position the rack over a drip tray so that any bituminous material flowing from the panel will be collected in the tray
- (j) Remove the rack with test panel from the oven, examine the test panel and record the measurements:

NOTE: Material may both slip and flow so both are to be recorded as appropriate.

- (i) If the leading edge travelled further than the trailing edge, record the observation as 'Flow'. Measure the specimen length after oven treatment (L_B) to the nearest 0.5 mm:

- Where there is just a smear at the initial trailing edge, ignore the smear and measure (L_B) from the bulk of the trailing edge
 - Where the leading edge is not a straight front (e.g. wavy or curved), mark the furthest and least extent of the Flow with pen marks or scribe line. Locate the mid point of these for both the leading and trailing edges and measure the distance between (L_B)
- (ii) If the leading edge and the trailing edge have both moved approximately the same amount ± 2 mm, record 'Slip' as the average movement of the leading and trailing edges to the nearest 1 mm

6. Calculations

- (a) Where flow is identified, calculate the Flow (F) as follows:

$$F = L_B - L_A$$

Where F = Flow (mm).

L_A = Initial specimen length between 2 scribe marks (mm).

L_B = Specimen length after oven treatment (mm).

7. Reporting

Include the following results in the report:

- (a) The product identification, batch number and date of production
- (b) The Flow (F) to the nearest 1 mm
- (c) Where recorded, the Slip to the nearest 1 mm
- (d) Reference to this test method