



Transport
Roads & Maritime
Services

Test method T102

Pre-treatment of road construction
materials by compaction

OCTOBER 2012



Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D. Dash	May 1999
		Date on Test Method Revised to Agree with Date on Revision Summary	D. Dash	Feb 2001
Ed 2/Rev 0	All	New Issue.	G. Donald	September 2007
Ed 2/Rev 1	2(b)&(d), 3, 4, 5(d),(e) & (g)	Clarify moisture content. Apparatus revised. Preparation note about curing. Clause on labelling.	D. Hazell	May 2008
Ed 2/Rev 2	2(c), (d); 4; 5(b) to (f); 6(b)	Default requirements, documents; Oversize recorded; № of layers clarified, Procedure revised; oversize reported.	D. Hazell	Jan 2010
Ed 3/ Rev 0	All	Reformatted RMS template	J Friedrich	October 2012

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

The most recent revision to Test method T102 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T102

Pre-treatment of road construction materials by compaction

1. Scope

This test method sets out the procedure for pre-treating road construction materials by subjecting the material to repeated compaction.

2. General

- (a) The method is appropriate for soft or brittle materials used in earthworks and pavement construction, which are liable to break down during winning, compaction and trafficking (e.g. shales, siltstones, highly weathered or weakly cemented material).

NOTE: The method simulates the breakdown of material under construction equipment and long term degradation under traffic.

- (b) The method must follow T103 where both T102 and T103 are specified on the same sample.
(c) The following requirements must be used unless otherwise specified:

- (i) Sample to be at about optimum moisture content

NOTE: If material is too dry or too wet the degree of breakdown may be reduced.

- (ii) 3 cycles of compaction and crumbling

NOTE: The number of compaction cycles may be increased to 6 to simulate breakdown under heavier compaction or trafficking, or to provide a qualitative assessment of material performance.

- (d) The following documents are referred to in this Test Method:

- (i) T103 Pre-treatment of Road Construction Materials by Artificial Weathering
(ii) T105 Preparation of Samples for Testing (Soils)
(iii) T111 Dry Density/Moisture Relationship of Road Construction Materials

3. Apparatus

- (a) A cylindrical metal mould having an internal diameter approximately 150 mm and internal effective height of at least 175 mm. A detachable base plate which can be firmly attached to, or removed from, the mould

NOTE: The split type of mould is preferred.

- (b) A metal rammer with a 50 ± 0.4 mm face diameter, a drop mass of 2.7 ± 0.01 kg and equipped with a suitable device to control the height of drop to a free fall of 300 ± 2.0 mm (i.e. for standard compaction).

NOTE: A suitable form of hand apparatus is shown in Figure 2 of AS 1289.5.1.1. Provided the essential dimensions are adhered to, mechanical forms of the apparatus may be used.

- (c) A rigid foundation to compact the specimen on (e.g. a concrete floor or a concrete block of at least 100 kg) with suitable attachments for firmly holding the mould base plate assembly during compaction
(d) A jack, lever and frame or other device suitable for extruding compacted specimens from the mould
(e) A bowl and trowel or mixing machine suitable for thoroughly mixing increments of water with the test sample
(f) A suitable measuring cylinder
(g) Mixing apparatus suitable for mixing water with the sample
(h) Sealable airtight containers suitable for storing moist samples at temperatures up to 50°C

4. Preparation

Prepare samples in accordance with T105. Record the percentage by mass of material retained on the 53 mm AS sieve (to the nearest 1%).

NOTE: Ensure that the accelerated curing specified in T105 is complete before progressing.

5. Procedure

(a) Assemble the mould and base-plate and place the assembly on the rigid foundation.

NOTE: A collar is not required provided that the minimum height is provided.

(b) Remove the material from the container. Remix the material and if necessary add water to achieve the required moisture content.

NOTE: More water may need to be added if the material dries back.

(c) Compact the material in the mould in 3 layers of approximately 60 mm when loose. Compact each layer by 75 uniformly distributed blows of the 2.7 kg rammer falling freely from a height of 300 mm.

(d) Eject the material from the mould, crumble the material to break up aggregations and place in a separate container.

(e) Repeat Steps (a) to (d) until all the sample has undergone a complete compaction cycle. Where there is insufficient quantity of sample remaining to fill the mould, compact the remaining material in 1 or 2 approximately equal layers with a thickness from 50 to 80 mm per layer.

NOTE: Maintain the required moisture content between subsequent compaction cycles.

(f) Repeat Steps 5(a) to (b) until the complete sample has undergone the required number compaction cycles (refer to Step 2(c)(ii)).

(g) Place the material in a container and label according to Clause A.7 of T105 ready for subsequent testing.

6. Reporting

Include the following in the report for the subsequent Test Method:

(a) Designate the pre-treatment as **CAn** (where n is the number of compaction cycles).

(b) The percentage by mass of material before pre-treatment retained on the 53 mm AS sieve from T105 (to the nearest 1%)

(c) Reference to this test method