



Transport
Roads & Maritime
Services

Test method T126

Assessment of primer or binder
absorption by road gravel

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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	D.Dash	Feb 2001
Ed 2/ 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 T126 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T126

Assessment of primer or binder absorption by road gravel

1. Scope

This test method sets out the procedure for assessing the degree of absorption of a primer or binder by a given road gravel in bituminous surfacing work.

The standard procedure is designed to simulate the following three conditions:-

- (a) Gravel drying out from optimum moisture content.
- (b) Gravel maintained at a constant nominated moisture content.
- (c) Gravel in the air-dried condition.

The binder can be applied to a dry surface or a surface to which a light water spray has been applied; whichever simulates the condition expected immediately prior to the application of the binder.

2. Apparatus

- (a) A constant temperature cabinet with about 0.12 m³ storage capacity for specimens, thermostatically controlled to within $\pm 2^{\circ}\text{C}$ of the desired test temperature and supplied with a fan to circulate the air within the cabinet
- (b) A cylindrical metal mould having an internal diameter of 105 mm or 150 mm and effective internal height of at least 75 mm, split vertically into two sections and fitted with a base plate. Provision shall be made for the split sections to be clamped together and to the base plate
- (c) Metal annular insert rings, 33 mm high, approximately 0.5 mm thick and having an outside diameter which ensures a neat fit inside the assembled mould (i.e. approximately 105 mm or 150 mm diameter). At least six rings are required for each test series
- (d) Metal spacer discs, 3 mm thick, having an outside diameter which ensures a neat fit inside the annular insert rings (i.e. approximately 104 mm or 149 mm diameter)
- (e) A metal rammer with a 50 ± 0.5 mm face diameter and a drop mass of 2.7 kg + 5 g - 10 g equipped with a suitable device to control the height of drop to a free fall of 300 ± 2 mm
- (f) Miscellaneous equipment as for Test Method T111, "Dry Density/Moisture Relations of Road Materials (Standard Compaction)"
- (g) Water sprayer, suitable for applying light spray of water to specimens

3. Materials

Road Gravel: Sufficient material to determine the Dry Density/Moisture Relation by Test Method T111 on material passing a 4.75 mm AS sieve, and to provide for at least six specimens 30 mm high for each primer or binder or surface condition to be tested.

4. Procedure

- (a) Determine the Maximum Dry Density/Moisture relationship of the gravel by Test Method T111.
- (b) Assemble the split moulds and base plates, insert the annular rings and then place the spacer discs on the base plates, inside the annular rings.
- (c) Calculate the amount of dry gravel required to produce a cylindrical specimen (in the annular ring), 30 mm high, at both 95 and 100% of the Maximum Dry Density. Weigh out six portions of gravel to provide three specimens at each compaction level.
- (d) Wet each portion of gravel to optimum moisture content and compact in the moulds down to the level of the upper rim of the annular ring, thus producing three specimens at 95% and three at 100% of Maximum Dry Density, i.e. three sets of specimens.

- (e) Remove the moulds and spacer discs and invert the specimens (retained in the annular rings) so that the recess for binder retention is on top.
- (f) Seal the outer circumference of the specimens with PVC or latex adhesive between the annular ring and the area to be occupied by primer or binder to prevent leakage.
- (g) Fill the upper surface of the gravel with fines by rubbing in gently with the fingers.
- (h) Heat the primer or binder to the field spraying temperature (MR Form No. 93) apply a light spray of water, if required, to simulate the expected field condition to the surface and immediately seal the first set of specimens, at optimum moisture content, by applying the primer or binder to the surface at the proposed rate of application. If necessary uniform distribution of the binder or primer may be assisted by lightly heating the surface with an infra-red lamp
- (i) Place the specimens so prepared on dishes of dry sand and into the constant temperature cabinet at $60 \pm 0.5^{\circ}\text{C}$ making sure the specimens are level. This temperature is intended to approximate local maximum black bulb temperature at the time of spraying and may be varied to suit local conditions.
- (j) Precondition the second set of specimens by controlled air drying until they reach the nominated moisture content. This may be the expected field optimum moisture content or the moisture content at which it is expected that the primer or binder will be applied. The alternative to this preconditioning is to compact the specimen initially at the nominated moisture content.
- (k) Place the specimens on a metal tray and seal the area between the tray and the annular ring with paraffin wax. Apply a light spray of water, if required to simulate the expected field condition, to the surface and apply the primer or binder to the surface as in *Procedure (h)* and place the specimens in the constant temperature cabinet.
- (l) Precondition the third set of specimens by air drying until the moisture content is stable. Normally this will take about two days. Place the specimens on a tray, apply a light spray of water if required to simulate the expected field condition, to the surface and apply the primer or binder to the surface as in *Procedure (h)* and place the specimens in the constant temperature cabinet.
- (m) Remove the specimens from the cabinet when the required period of exposure has elapsed, and allow to cool. Remove the annular rings and cut the specimens vertically into halves.
- (n) Determine the thickness of the primer or binder remaining on the surface by measurement if possible or in general terms.
- (o) Measure the penetration of the primer or binder at about the middle of the specimen and examine for segregation of oil, etc.
- (p) Test the binder coating for adhesion, by seeing if it can be peeled from the gravel and assess the bond of the gravel by checking whether the binder has picked up gravel.

5. Reporting

Reporting the following for each specimen:-

- (a) The test conditions, i.e. degree of compaction, moisture content, surface condition, temperature and rate of application of primer or binder, duration and temperature of curing.
- (b) The average depth of penetration to the nearest 1 mm.
- (c) Whether the absorption is even.
- (d) Whether segregation into components such as oil and pitch-like residue is evident.
- (e) Whether the gravel surface is firmly bound.
- (f) Whether adhesion of the binder to the gravel is adequate.
- (g) Whether a sufficient layer of primer is left on the surface.
- (h) Whether sufficient binder remains on the surface to retain the proposed cover aggregate.
- (i) Any other relevant observations.