Test Method

Surface Texture by Sand Patch

RC 317.01

1. Scope

This test method is used to assess the surface texture depth (the average depth of voids below the high points of the surface) of a road surface.

Earlier versions of this test method have used either graded sands or glass beads used in linemarking, and have traditionally been known as the 'sand patch' method. This general description has been retained for this revised test method, however only glass beads are now to be used.

The test method can be used for conformance with specification requirements where it shall be carried out on a lot basis; or for measuring surface texture at individual sites when required, such as for input into the design method for sprayed seals.

2. Apparatus

(a) A brass cylinder of known volume, usually either 28.7 ml or 50 ml ± 0.25 ml.

(b) Standard 'Drop on' Type B glass beads used over line marking paint manufactured in accordance with AS 2009.

(c) Air tight container of suitable capacity for storing glass beads.

(d) Brush – banister or other suitable brush.

(e) "Sand" spreader - A hard rubber disk or rubber stopper (between 55-66 mm diameter) for spreading beads

(f) Steel ruler, at least 300 mm long readable to 1 mm.

3. Selection of lots and test sites

(a) Select lots of traffic lane which have similar visual appearance.

(b) Select and record the length and location of each lot within the relevant specified limits.

(c) Mark three test sites at the quarter points and mid point of the lot, in whichever wheel path has the lowest surface texture. If no wheel paths are evident or visually discernable, the centre of the wheel path shall be at an offset of 900mm from the centre of the traffic lane

4. Test Procedure

(a) Ensure that the test site is clean, dry and free from grease or oil. Sweep off all dust and other loose particles.

(b) Fill the brass cylinder with beads by dipping into the container and striking off any excess.

(c) Tap the base of the filled cylinder on a hard surface three times and top up the cylinder striking off any excess.

(d) Pour the contents of the cylinder onto the road surface into a small pile on the swept test site. In windy conditions the pile should be shielded from the wind to prevent the glass beads from being blown away.

(e) Use the sand spreader to gently work the beads down into the surface voids.

Keeping the face of the sand spreader flat and applying only horizontal pressure, gently work the beads down into the surface voids in a circular spiral motion from the centre outwards.

Continue this spreading motion until the diameter of the circle stabilises and the beads have completely filled the voids and the sand patch is levelled to the highest points on the surface.

(f) Measure the diameter of the circle at 4 evenly spaced diameters to the nearest 5 mm and record these measurements. Average the 4 readings to determine the average diameter (*D* mm) of the circle.

(g) Sweep the beads off the road surface and discard.

(h) Repeat steps 4(a) to 4(g) for each test site.

5. Calculations

Calculate the following:

(a) Texture depth of each site (T mm) from the following equation:

$$T = \left(\frac{4000}{\pi} x \frac{V}{D^2} \right) = \frac{1273\ V}{D^2}$$

where:

V = volume of glass beads in millilitre

D = average diameter of the sand patch, in mm

Alternatively, texture depth can be read from Table 1

(b) Mean surface texture ($\overline{T}$ mm) of the lot using the following equation:

$$\overline{T} = \frac{\sum T}{n}$$

Where: n = the number of test sites.

6. Report

Report the following:

(a) Road name, location and length of each lot, and the location of each test site within the lot.

(b) Time, date and operator undertaking the test.

(c) Texture depth for each site, to the nearest 0.1 mm.

(d) Mean average texture depth for the lot, to the nearest 0.1 mm.

Table 1 – Texture depth for circle diameters

Mean circle diameter (mm)	Texture depth (mm)	
	50 ml cylinder	28.7 ml cylinder
350.0	0.5	0.3
345.0	0.5	0.3
340.0	0.6	0.3
335.0	0.6	0.3
330.0	0.6	0.3
325.0	0.6	0.3
320.0	0.6	0.4
315.0	0.6	0.4
310.0	0.7	0.4
305.0	0.7	0.4
300.0	0.7	0.4
295.0	0.7	0.4
290.0	0.8	0.4
285.0	0.8	0.4
280.0	0.8	0.5
275.0	0.8	0.5
270.0	0.9	0.5
265.0	0.9	0.5
260.0	0.9	0.5
255.0	1.0	0.6
250.0	1.0	0.6
245.0	1.1	0.6
240.0	1.1	0.6
235.0	1.2	0.7
230.0	1.2	0.7
225.0	1.3	0.7
220.0	1.3	0.8
215.0	1.4	0.8
210.0	1.4	0.8
205.0	1.5	0.9
200.0	1.6	0.9
195.0	1.7	1.0
190.0	1.8	1.0
185.0	1.9	1.1
180.0	2.0	1.1
175.0	2.1	1.2
170.0	2.2	1.3
165.0	2.3	1.3
160.0	2.5	1.4
155.0	2.6	1.5
150.0	2.8	1.6
145.0	3.0	1.7
140.0	3.2	1.9
135.0	3.5	2.0
130.0	3.8	2.2
125.0	4.1	2.3
120.0	4.4	2.5
115.0	4.8	2.8
110.0	5.3	3.0
105.0	5.8	3.3
100.0	6.4	3.7

Test Method - Revision Summary

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Date	Clause Number	Description of Revision	Authorised by
October 2012	Full document	Method re-written, look-up table for texture depth included, reports mean values only	PA – P&M