

**TNZ T/3: 1981**

**STANDARD TEST PROCEDURE FOR MEASUREMENT  
OF TEXTURE BY THE SAND CIRCLE METHOD**

**1. SCOPE**

This test procedure covers the determination of the average texture depth of a paved surface using sand to give the volume of voids. The method is suitable for the measurement of surfaces with average texture depths greater than 0.45 mm (less than 350mm sand circle diameter).

**2. APPARATUS AND MATERIALS**

- 2.1** A ruler or tape graduated in millimetres at least 400mm in length.
- 2.2** A soft brush or handbroom.
- 2.3** A straight-edge between 150 and 160mm in length.
- 2.4** A sand-measuring cylinder 30 to 45mm in diameter having an internal volume of  $45 \pm 0.5$ ml. The top of the cylinder shall be machined flat to assist striking off.
- 2.5** A quantity of clean dry sand with well rounded grains, 100% passing the 600  $\mu$ m and 100% retained on the 300 $\mu$ m BS 410 test sieves.

**3. PROCEDURE**

- 3.1** Ensure that the area to be tested is dry and free from detritus. Brush any fine material from the surface.
- 3.2** Fill the cylinder with sand and tap lightly until the sand ceases to compact. Top up the cylinder and carefully strike off the surface with the straight edge.
- 3.3** Pour out the sand in a conical heap in the centre of the area to be tested. (In windy conditions the use of a tyre or screen to surround the sand is recommended).
- 3.4** Using the straight-edge, spread the sand into a circular patch so that the surface depressions are filled to the level of the tops of the stones (see figure 1). The tops of the larger stones (see figure 1). The tops of the larger stones should only just be visible through the sand layer.

- 3.5 Measure the diameter of the patch twice, the direction of the second measure approximately at right angles to the first. Average the measurements to give D, the sand circle diameter.

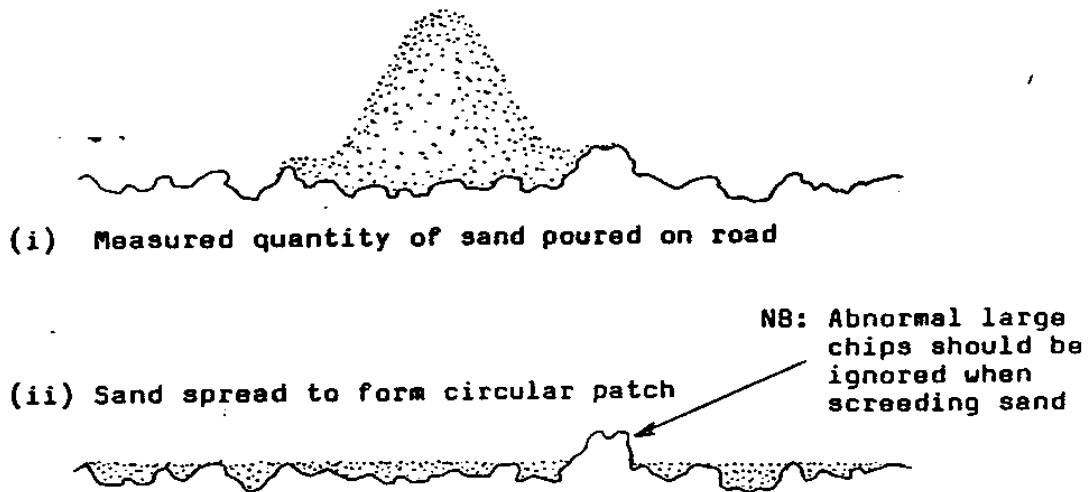


Figure 1. Sand Surface Depression Examples

#### 4. CALCULATION

The average texture depth may be calculated by dividing the volume of sand by the area of the sand patch.

$$\text{Average texture depth} = \frac{57300}{D^2} \text{ mm} \quad (D \text{ in mm})$$

#### 5. REPORTING

- 5.1 Report the sand circle diameter in millimetres to the nearest 5mm. Textures producing diameters in excess of 350mm (which cannot be measured accurately by this procedure) are to be reported as "greater than 350mm".
- 5.2 Report the average texture depth to the nearest 0.1mm (Not required for seal design investigations).
- 5.3 Report the average texture depth to the name of the officer performing the test.
- 5.4 Report the location of the test in accordance with TNZ T/4 "Standard Procedure for Description of Test Locations on "Highways".