Measurement of Texture Depth - Laser Texture Meter

Lab Test Reference 607
Test Method Reference
BS598: Part 105:1990 and WDM Operators Manual

Principal Apparatus:

Laser Mini Texture Meter – Lab Inventory No. xxx
Sensitivity Check Mat

1. Preliminaries

1.1 Check the calibration label is current. The equipment shall not be used if this is more than 12 months old.

1.2 This test is carried out on site but before leaving the laboratory the equipment shall be checked to ensure the battery is fully charged, the tyres have the correct inflation pressure (65 ± 5 KN/m^2 i.e. 9.5 ± 0.7 lbs/in^2) and that they are free from binder, debris or other materials that might prevent their smooth action.

1.3 The sensitivity check procedure is now carried out after first inspecting the check mat as described in the Advice Note in Section 3. Records of this procedure are printed on the paper streamer and these are entered into the calibration certificates file. Ensure the calibration factor printed on the paper streamer matches that on the calibration label.

Sensitivity Check

Proceed as follows:

1.4 Switch the meter on with the key switch. A header, serial number and list of program options should be printed concluding with the message 'READY'. (If the message 'FAILED' is repeatedly given, reference should be made to 6.2, Electrical Maintenance in the Operators Manual.

The meter should then be allowed to "warm up" for a minimum period of 10 minutes.

1.5 Ensure that the check mat is clean and dry and is set out on a firm flat surface.

1.6 Position the meter at a starting position on the mat so that it is ready to be propelled forward over the sensitivity strip.

1.7 Adjust the program selector switch to program 4 (CHECK MAT) and press and release the trigger switch. Wait for the complete printing of the message 'CHECK MAT' followed by the serial number and the heading for the results.

1.8. Propel the meter steadily along the length of the sensitivity strip until a result is printed followed by the message 'READY'. Return the meter to the starting position, press and release the trigger switch and repeat the measurement until a total of five results are printed

1.9 The DO%'s for the five results are then averaged and rounded to the nearest whole number. If this average is 40% + 3%, the sensitivity is correctly adjusted. If the result is not correct, the procedure is as follows:-

1.10 Open the stowage compartment. This will reveal a dial mechanism and a red LED indicator. Unlock the dial mechanism using the small lever on its side.

1.11 If the average DO% was higher than 43%, the dial mechanism should be turned anti-clockwise and if the DO% average was less than 37%, the dial should be turned clockwise. Further sets of five measurements are then taken until the average result is 40% + 3%. When adjustment is complete, re-lock the dial mechanism.

1.12 The LED indicator shows whether there has been any detectable signals from the diode array and is continually illuminated during a texture program. However, it is also used to detect the presence of electrical noise which can give erroneous results. During the TEST NOW period of the 'Sensor Check', program, the LED will be illuminated but should go out during the printing of results. If the LED flashes on and of during printing, it is an indication of the presence of electrical noise and the meter should not be used further but returned to W.D.M. Limited for service.

NOTE:

The Check Mat which is supplied with each MTM should be used to check the sensitivity on a daily basis prior to texture measurement.

2. Test Procedure

2.1 Check the battery is fully charged.

2.2 Unless the meter has remained switched on from an earlier sensitivity check or texture measurement, switch the meter on with the key switch. A header serial number, list of programme options should be printed concluding with the message “READY”. If the message “FAILED” is repeatedly given, reference should be made to the manufacturer’s instructions. Allow the meter to “WARM UP” for a period of at least 10 minutes.

2.3 Wheel the meter to the start of the 50 metre lane length to be tested and adjust the programme switch to 1 (TEXTURE HRA) and press and release the trigger switch. Wait for the complete printing of the message (TEXTURE HRA) followed by the serial number, calibration factor and the heading for the results.

2.4 Ensure that the printed serial number and calibration factor for HRA agree with those on the calibration certificate. If the calibration factor is not correct for the meter in use the correct factor must be entered according to the manufacturers instructions, and the meter switched off and on by the key switch and recommence the procedure from 2.1.

2.5 Propel the meter at 3-6 Km/hr along a 50 metre sub length defined as a diagonal line from left to right across the mat. Measure in the direction that the road is to be trafficked and do not make measurements within 300mm of the longitudinal edge of the mat. On completion of the 50 metres depress and release the trigger switch and wait for the message “READY” before commencing the testing of the next 50 metre length.

2.6 Repeat these measurements without switching the meter off until the full length of the mat has been tested.

Note:

The messages “DO% HIGH” or “DO% LOW” may be printed in the place of one or more of the 10 metre results.

These messages refer to drop-out levels and usually occur if the texture is respectively, very deep or very shallow. But it can also indicate that the sensitivity is incorrectly adjusted or that the meter needs an overhaul. Higher drop-out levels are more likely when the road is damp.

2.7 It is possible to test hot, newly laid surfaces but care should be taken that steam has stopped coming off the hot mat as this condenses in the lenses of the meter.

2.8 After completion of the tests the paper streamer is removed and taken to the lab for computer processing.

TRRL Mini Texture Meter (MTM)

Advisory Notice Machine Serial No. xxxxxxxxx

Calibration Factor xxxx

Sensitivity Check No. xxxxx

3. Advice Note

3.1 Following implementation of the Series II MTM and introduction of the Sensitivity Check Mat (SCM), it has come to our notice that several users are finding difficulty in making proper use of the sensitivity checking facility.

3.2 In almost every case the difficulty has been caused by contamination of the Check Mat's target surface by dust and dirt, in one or two isolated cases, by quite severe visible deposits which should have been removed by the advised cleaning processes attached to the inside cover of the Operator's Handbook.

3.3 However, it is appreciated that the conditions in which the SCM is used can lead to a very slow contamination of the target surface in a way that makes detection difficult. It is for this reason this advisory notice has been issued.

3.4 Residing inside the top cover of the MTM is the sensitivity adjustment control, consisting of a lockable potentiometer and a 3-digit read out indicating its position. Under normal conditions adjustment of this control to achieve 40% + 3% DO. should be a spasmodic affair requiring the 3-digit read out to be adjusted from time to time in either direction.

If it is found that adjustment is continually required in one direction only, contamination of the Check Mat should be suspected and action should be taken to clean the target surface.

3.5 The method of cleaning is clearly described inside the Operator's Handbook but is has been brought to our notice that a problem can also exist with this process when soapy deposits are left to dry on the target surface.

The cleaning process, therefore, is revised as below:-

1. Open SCM and prop against a wall resting on its longest side.

2. Using a good quality paint brush wash the target surface copiously with clean water, brushing across the target surface and along the grooves.

3. Dry the surface of each groove carefully and gently, using lint free cloth and allow to dry for at least one hour before testing.

4. If oil or grease or other difficult contaminent is present use a soapy solution first before cleaning again copiously with clean water to remove all traces of soap. Do not scrub the surface and do not use a solvent of any sort. If the Sensitivity Check No. on the potentiometer display cannot be recovered to a value within + 50 units of that quoted at the top of this Advice Note, both the MTM and SCM should be returned for service.

5. Do not store or open the Check Mat in a dusty environment and do not use in the rain.

6. Once the Check Mat has been used, remove dusty wheel tracks from the timber base with a damp cloth, fold and store away immediately.