

Sampling and examination of bituminous mixtures for roads and other paved areas

Part 105: Methods of test for the determination of texture depth

ICS 93.080.20

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/510, Road materials, to Subcommittee B/510/1, Coated macadam and hot asphalt, upon which the following bodies were represented:

- County Surveyors' Society
- Department of the Environment, Transport and the Regions — Represented by the Building Research Establishment
- Institution of Civil Engineers
- Quarry Products Association
- Road Surface Dressing Association
- Society of Chemical Industry

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Civil Engineering Test Equipment Manufacturers Association
- Department of the Environment, Transport and the Regions — Highways Agency
- Institute of Asphalt Technology
- Institute of Petroleum
- Institution of Highways and Transportation
- Mastic Asphalt Council Ltd.
- Refined Bitumen Association Ltd.
- Scottish Office — Roads Directorate
- Transport Research Laboratory
- United Kingdom Accreditation Service

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Foreword

This part of BS 598 has been prepared under the direction of the Building and Civil Engineering Sector Board. It supersedes BS 598-105:1990 which is withdrawn. It includes methods for measuring the texture depth of finished surfaces of bituminous materials. For the first time in a British Standard this standard includes the technique developed using laser beams for the rapid, non-contact, determination of surface texture.

It is recommended that the laser texture meter be used primarily as a monitoring device for rapid assessment but that in any case of dispute or doubt the sand-patch method be used.

It has been assumed in the drafting of this part of BS 598 that the execution of its provisions is entrusted to appropriately experienced people.

Annex A and annex B are normative.

A British standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

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1 Scope

This part of BS 598 describes methods of measuring the texture depth of surfaces of bituminous materials used for roads and other paved areas. Two methods are given, one using a non-contact laser beam sensor system, the other using a fixed volume of sand spread on the road surface (the sand-patch method). The laser texture meter method gives numerically different results to the sand-patch method and should not be confused with it or be numerically related to it. The sand-patch method may be used on any type of surface but, for the present, the use of the laser texture meter method is confined to newly laid chipped rolled asphalt wearing courses.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 4372, *Specification for engineers' steel measuring rules*.

BS ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*.

3 Terms and definitions

For the purposes of this part of BS 598 the following definitions apply.

3.1

sand-patch texture depth

measurement of the average depth of the road surface macro-texture below the general level of the peaks as determined by the sand-patch method (see clause 5)

3.2

sensor-measured texture depth (SMTD)

measurement of the road surface macro-texture as determined by the laser texture meter from the standard deviation of a series of height measurements from the road surface made by a non-contact sensor mounted in the meter (see clause 4)

3.3

drop-out percentage (DO %)

proportion of the series of height measurements which the receiver fails to detect, expressed as a percentage

3.4

test result

value of a characteristic determined by carrying out a specified test method

3.5

repeatability conditions

conditions where mutually independent results are obtained with the same method on a single test section by the same operator using the same equipment within short intervals of time

3.6

repeatability value (r)

value below which the absolute difference between two single test results obtained under repeatability conditions may be expected to lie with a probability of 95 %

NOTE For brevity, in this part of BS 598 "repeatability value" is shortened to "repeatability" or " r ".

3.7

reproducibility conditions (r)

conditions where test results are obtained with the same method on a single test section with different operators using different equipment

3.8

reproducibility value (R)

value below which the absolute difference between two single test results obtained under reproducibility conditions may be expected to lie with a probability of 95 %

NOTE For brevity in this part of BS 598 "reproducibility value" is shortened to "reproducibility" or " R ".

4 Determination of texture depth by laser texture meter

4.1 Principle

4.1.1 The meter and the method described in this clause are designed for the purpose of determining texture depth of chipped rolled asphalt surfacings.

NOTE The texture meter used in this method should not be confused with the high speed texture meter which has been specially designed for the monitoring of road networks.

4.1.2 The principle behind the meter is that infra-red light from a rapidly pulsed laser is projected on to the road surface and reflected light from the spot so formed is focused by a receiving lens on to an array of photosensitive diodes (see Figure A.1). The position of the diode receiving most light gives a measure of the distance to the road surface at that instant, and the depth of the texture is computed from a series of such measurements as the meter is propelled along the road surface. The meter used in this standard is controlled by a microcomputer system and is wheeled and operated by hand. It prints the average sensor-measured texture depth (SMTD) for each completed 10 m, together with an overall average for each 50 m length. The algorithm used to calculate SMTD is based on the root-mean-square (rms) principle.