

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

**Part 110: Methods of test for the
determination of wheel-tracking rate and
depth**

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- County Surveyors' Society
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- Institute of Asphalt Technology
- Institute of Petroleum
- Institution of Civil Engineers
- Institution of Highways and Transportation
- Mastic Asphalt Council Ltd.
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Foreword

This part of BS 598 has been prepared by Subcommittee B/510/1. It supersedes BS 598-110:1996, which is withdrawn.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and competent people.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 9, and a back cover.

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1 Scope

1.1 This part of BS 598 specifies a method for determining the susceptibility of bituminous materials to plastic deformation at high road temperatures under pressures similar to those experienced on the road. The method applies to any bituminous wearing course material laid at a nominal thickness of up to 50 mm and is carried out on samples cored from laid and compacted material.

1.2 The test is usually carried out at a temperature of either 45 °C or 60 °C, but other test temperatures can be used.

NOTE 1 For research purposes, it may be necessary to determine the wheel-tracking rate of laboratory-prepared and compacted mixtures. However, this requires a carefully controlled and detailed procedure for specimen preparation and compaction, which is not included in this standard, but which, it is hoped, will be described in a future Draft for Development. Nevertheless, with the necessary changes, this method can be used for laboratory-prepared specimens.

NOTE 2 Precision data determined from experiments are given in annex A.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part 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 598-100:1987, *Sampling and examination of bituminous mixtures for roads and other paved areas — Part 100: Methods for sampling for analysis*.

BS 598-104:1989, *Sampling and examination of bituminous mixtures for roads and other paved areas — Part 104: Methods of test for the determination of density and compaction*.

BS 903-A26, *Physical testing of rubber — Part A26: Method for determination of hardness (hardness between 10 IRHD and 100 IRHD)*.

BS 903-A57, *Physical testing of rubber — Part A57: Determination of indentation hardness by means of pocket hardness meters*.

BS 958, *Specification for spirit levels for use in precision engineering*.

BS 1044-1, *Specification for gauge blanks — Part 1: Plug, ring and calliper gauges*.

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

BS 5204-2, *Specification for straight-edges — Part 2: Steel or granite straight-edges of rectangular section*.

3 Terms and definitions

For the purposes of this part of BS 598, the definitions given in BS 598-100:1987 apply, together with the following.

3.1

wheel-track deformation

localized reduction in the thickness of a core caused by repeated passes of a loaded wheel

3.2

wheel-tracking rate

rate, in millimetres per hour, at which the wheel-track deformation increases with time under repeated passes of a loaded wheel over the last third of the test period

3.3

wheel-tracking depth

total wheel-track deformation, in millimetres, developed over the 45 min of the test

3.4

test surface

surface of the core on which the loaded wheel runs

3.5

test specimen

a single 200 mm diameter core

3.6

test result

mean wheel-tracking rate and wheel-tracking depth determined, for a particular material and location, from the testing of six test specimens

3.7

load cycle

two passes (outward and return) of the loaded wheel

4 Apparatus

NOTE Any tolerances stated are working tolerances rather than manufacturing tolerances, which would be expected to be tighter.

4.1 Wheel-tracking apparatus, consisting of a loaded wheel (see 4.2 and 4.3) which bears on a test specimen held on a reciprocating table (see 4.4). The table moves to and fro beneath the wheel (see 4.5) and a device (see 4.7) monitors the rate at which wheel-track deformation develops in the surface of the core. Vertical play in the loaded wheel bearings and in the lever arm pivot point shall each be less than 0.25 mm. The centreline of the loaded wheel shall lie at an angle no greater than 1° to the direction of motion of the moving table. A typical layout is shown in Figure 1.