



BSI Standards Publication

PUBLISHED DOCUMENT

**Asphalt — Guidance on the use of
BS EN 12697 “Bituminous mixtures —
Test methods”**

This publication is not to be regarded as a British Standard.

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2018

Published by BSI Standards Limited 2018

ISBN 978 0 580 96882 2

ICS 93.080.20

The following BSI references relate to the work on this document:

Committee reference B/510/1

Draft for comment 17/30360424 DC

Amendments/corrigenda issued since publication

Date	Text affected
<hr/>	

Contents

	Page
Foreword	iii
0 Introduction	1
1 Scope	1
<i>Table 1 — Asphalt tests in BS EN 12697 called up in asphalt specifications BS EN 13108</i>	<i>2</i>
2 Overview of European Standards defining test methods for asphalts	3
2.1 “Back of the lorry”	3
2.2 CE marking	3
2.3 Status of tests	4
2.4 Empirical and fundamental tests	4
3 Guidance on test methods required for testing the constituent materials	5
3.1 BS EN 12697-1 — Soluble binder content	5
3.2 BS EN 12697-2 — Determination of particle size distribution	7
3.3 BS EN 12697-3 — Bitumen recovery: rotary evaporator	8
3.4 BS EN 12697-4 — Bitumen recovery: fractionating column	8
3.5 BS EN 12697-5 — Determination of the maximum density	9
3.6 BS EN 12697-6 — Determination of bulk density of bituminous specimens	9
3.7 BS EN 12697-7 — Determination of the bulk density of bituminous specimens by gamma rays	10
3.8 BS EN 12697-8 — Determination of void characteristics of bituminous specimens	11
3.9 BS EN 12697-9 — Determination of the reference density	11
3.10 BS EN 12697-10 — Compactibility	11
3.11 BS EN 12697-11 — Determination of the affinity between aggregate and bitumen	12
3.12 BS EN 12697-12 — Determination of the water sensitivity of bituminous specimens	13
3.13 BS EN 12697-13 — Temperature measurement	14
3.14 BS EN 12697-14 — Water content	14
3.15 BS EN 12697-15 — Determination of the segregation sensitivity	14
3.16 BS EN 12697-16 — Abrasion by studded tyres	15
3.17 BS EN 12697-17 — Particle loss of porous asphalt specimens	15
3.18 BS EN 12697-18 — Binder drainage	16
3.19 BS EN 12697-19 — Permeability of specimen	17
3.20 BS EN 12697-20 — Indentation using cube or cylindrical specimens	17
3.21 BS EN 12697-21 — Indentation using plate specimens	17
3.22 BS EN 12697-22 — Wheel tracking	18
3.23 BS EN 12697-23 — Determination of the indirect tensile strength of bituminous specimens	19
3.24 BS EN 12697-24 — Resistance to fatigue	19
3.25 BS EN 12697-25 — Cyclic compression test	21
3.26 BS EN 12697-26 — Stiffness	22
3.27 BS EN 12697-27 — Sampling	23
<i>Table 2 — Recommended mass of bulk sample</i>	<i>23</i>
3.28 BS EN 12697-28 — Preparation of samples for determining binder content, water content and grading	24
3.29 BS EN 12697-29 — Determination of the dimensions of a bituminous specimen	24
3.30 BS EN 12697-30 — Specimen preparation by impact compactor	24
3.31 BS EN 12697-31 — Specimen preparation by gyratory compactor	25
3.32 BS EN 12697-32 — Laboratory compaction of bituminous mixtures by vibratory compactor	25
3.33 BS EN 12697-33 — Specimen prepared by roller compactor	26
3.34 BS EN 12697-34 — Marshall test	26
3.35 BS EN 12697-35 — Laboratory mixing	27
3.36 BS EN 12697-36 — Determination of the thickness of a bituminous pavement	27

3.37	BS EN 12697-37 — Hot sand test for the adhesivity of binder on coated chippings for HRA	28
3.38	BS EN 12697-38 — Common equipment and calibration	28
3.39	BS EN 12697-39 — Binder content by ignition	28
3.40	BS EN 12697-40 — In situ drainability	29
3.41	BS EN 12697-41 — Resistance to de-icing fluids	29
3.42	BS EN 12697-42 — Amount of foreign matter in reclaimed asphalt	30
3.43	BS EN 12697-43 — Resistance to fuel	30
3.44	BS EN 12697-44 — Crack propagation by semi-circular bending test	31
3.45	BS EN 12697-45 — Saturation ageing tensile stiffness (SATS) conditioning test	31
3.46	BS EN 12697-46 — Low temperature cracking and properties by uniaxial tension tests	32
3.47	BS EN 12697-47 — Determination of the ash content of natural asphalts	32
3.48	prEN 12697-48 — Interlayer bonding	33
3.49	BS EN 12697-49 — Determination of friction after polishing	34
3.50	PD CEN/TS 12697-50 — Resistance to scuffing	34
3.51	PD CEN/TS 12697-51 — Surface shear strength test	35
3.52	PD CEN/TS 12697-52 — Conditioning to address oxidative ageing	35
Bibliography		37

Summary of pages

This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 40, an inside back cover and a back cover.

Foreword

Publishing information

This Published Document is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 April 2018. It was prepared by Subcommittee B/510/1, *Asphalt products*, under the authority of Technical Committee B/510, *Road materials*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This Published Document supersedes PD 6692:2006, which is withdrawn.

Relationship with other publications

This Published Document gives guidance on the use and application of a series of European Standards for asphalt. These European Standards were prepared by CEN/TC 227/WG1, *Bituminous Materials*, and have been adopted as British Standards.

PD 6692 also gives guidance on the use of the various parts of BS EN 12697, *Bituminous mixtures – Test methods for hot mix asphalt*, prepared by CEN/TC 227/WG1/TG2, that specify test methods for asphalt.

Guidance on the various parts of BS EN 13108, *Bituminous mixtures – Material specifications*, is given in PD 6691.

Use of this document

As a guide, this Published Document takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

Presentational conventions

The guidance in this Published Document is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a Published Document cannot confer immunity from legal obligations.

0 Introduction

This Published Document provides guidance on the use of the European Standards and Technical Specifications specifying test methods for asphalt. The guidance is aimed primarily at potential UK users of the test methods, but will also be of interest to all in the UK associated with the manufacture and use of asphalt throughout Europe.

Most of the European test methods for asphalt are based on national test methods from European countries, including UK test methods specified in British Standards. This Published Document gives a description of each of these test methods, together with guidance on their relevance and familiarity to UK users.

Some general features of the European Standards for asphalt are outlined in [Clause 2](#), including the requirements for CE marking and differences between empirical and fundamental tests. [Clause 3](#) is divided into subclauses, each of which gives guidance on one of the European test methods for asphalt. These subclauses follow a similar pattern, in that the testing scope and the method are summarized, followed by UK experience.

All the new test methods are included, as well as those unfamiliar to UK users and which are therefore unlikely to be widely used in the UK. Methods for testing asphalt coated with bitumen emulsion are not included, but will be incorporated into a future edition of this document.

1 Scope

This Published Document gives guidance on the use of each of the European test methods for asphalt given in BS EN 12697. The tests are divided into five groups:

- a) test methods required for testing the constituent materials, as identified in BS EN 13108-20:2016, Annex A;
- b) test methods called up in at least four of the standard specifications for the different types of asphalt, BS EN 13108-1 to BS EN 13108-7, as identified in BS EN 13108-20:2016, Annex B (see [Table 1](#));
- c) test methods called up in only specific standard specifications, as identified in BS EN 13108-20:2016, Annex B;
- d) test procedures used to support the test methods in BS EN 12697-30 to BS EN 12697-33, as identified in BS EN 13108-20:2016, Annex C, plus BS EN 12697-35; and
- e) test methods and procedures not called up in the asphalt standards.

Where standards fit into more than one category, they are described in the first and subsequently cross-referenced. The subclauses describing each of the tests are listed in [Table 1](#).