



BSI Standards Publication

Bituminous mixtures — Test method

Part 33: Specimen prepared by roller compactor

National foreword

This British Standard is the UK implementation of EN 12697-33:2019+A1:2022. It supersedes BS EN 12697-33:2019, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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Préparation de corps d'épreuve au compacteur de
plaque

Asphalt - Prüfverfahren - Teil 33:
Probestückvorbereitung mittels
Walzverdichtungsgerät

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European foreword

This document (EN 12697-33:2019+A1:2022) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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1 Scope

This document specifies the methods for compacting parallelepipedal specimens (slabs) of bituminous mixtures, to be used directly for subsequent testing, or from which test specimens are cut.

For a given mass of bituminous mixture, the specimens are prepared either under controlled compaction energy, or until a specified volume and therefore air voids content is obtained.

This document describes the following methods of compaction:

- method using a wheel or two wheels fitted with pneumatic tyres;
- methods using a steel roller, which includes 3 different procedures:
 - steel roller;
 - steel roller used on wheel fitted with pneumatic tyres;
 - steel roller running on vertical sliding steel plates;
- method using a steel roller sector.

This document is applicable to bituminous mixtures manufactured in the laboratory or in a mixing plant.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12697-27, *Bituminous mixtures — Test methods — Part 27: Sampling*

EN 12697-35, *Bituminous mixtures — Test methods — Part 35: Laboratory mixing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

pass

one forward or one backward motion of the rolling load

3.2

slab axis

axis of symmetry of slab parallel to the largest dimension of the mould

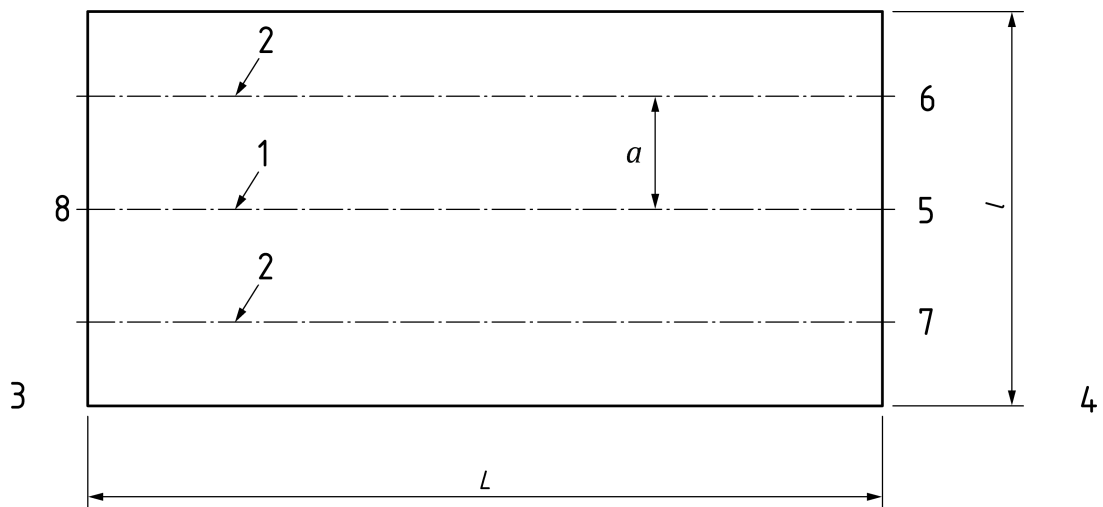
3.3

lateral axis

axis of a pass parallel to largest dimension of a mould; situated at distance a from the slab axis (see Figure 1)

3.4**lateral translation**

distance a between the slab axis and the lateral axis

**Key**

1	axis	5	central position
2	lateral axis	6	rear position
3	left side	7	front position
4	right side	8	longitudinal translation of wheels
L	length	l	width

Figure 1 — Sketch plan of a slab, front face of equipment

3.5**rear position**

lateral axis furthest from the front face of the equipment

3.6**central position**

slab axis

3.7**front position**

lateral axis nearest to the front face of the equipment

3.8**blocked axis mode**

equipment operating mode in which the height of the wheel shaft stays constant in relation to the upper edge of mould during a pass

3.9**freed axis mode**

equipment operation mode in which the load applied onto the slab remains constant during a pass

3.10

sweep plan

set of modes by which the wheel(s) pass(es) over the slab; including order of execution, and extent of lateral translation

4 Principle

A given mass of bituminous mixture is compacted in a rectangular mould under a load applied by a smooth steel roller or its sector or equivalent, or by one or more wheel(s) fitted with pneumatic tyres. The smooth steel roller may run directly on the bituminous mixture, or on a number of vertical sliding plates, which apply a kneading action to the mixture. The wheel(s) or roller performs passes at constant velocity, according to a specified sweep plan if applicable.

5 Apparatus

5.1 Method using a wheel or two wheels fitted with pneumatic tyres

5.1.1 One or more moulds with specified interior dimensions ± 2 mm. Usual dimensions are:

— $L = 500$ mm, $l = 180$ mm, $h = 100$ mm or $h = 50$ mm,

or

— $L = 600$ mm, $l = 400$ mm, $h = 150$ mm or $h = 200$ mm.

For moulds 600 mm $\times$ 400 mm $\times$ 150 mm or 600 mm $\times$ 400 mm $\times$ 200 mm, dimensions are those of the upper part.

In order to facilitate demoulding, moulds may have the shape of a truncated pyramid within the interior dimension ranges specified in order to release the specimen.

Other dimensions may be used, according to the requirements of specific test methods.

5.1.2 A device to compact the bituminous mixture which shall:

- enable application of an adjustable load, F , in range 1 kN ± 10 % to 10 kN ± 5 %, onto the wheel(s);
- comprise of one or more wheels equipped with threadless tyres of 400×8 size;
- enable translation of the rolling load at constant velocity, $V_t \pm 10$ %;
- comprise a system for positioning wheel(s) along the different axes of compaction according to predetermined set values for ($a \pm 20$ mm);
- enable operation in blocked axis and freed axis modes;
- comprise a system capable of periodically bringing the surface flush with the upper edge of the mould during compaction;
- one or more blocks of a suitable size (only required if the required thickness of the slab, e , is less than the height of the mould, h).