

TEST METHODS FOR HOT MIX ASPHALT COMPACTABILITY

STANDARD
EN 12697-10

Introduction

This European Standard describes three test methods for characterising the compactability of a bituminous mix, by the relation between its density or voids content and the compaction energy applied to it, using an **impact (Marshall) compactor**, **gyratory compactor**, or a **vibratory compactor**.

This European Standard applies to hot mix asphalt with D not larger than 31.5 mm for the impact and gyratory compactors, and 40 mm for the vibratory compactor.



76-B4312

IMPACT (MARSHALL) COMPACTOR

STANDARD
EN 12697-10, 12697-30

76-B4312

EN Impact (Marshall) automatic compactor. 230 V, 50 Hz, 1 ph.

The apparatus automatically compacts the sample and stops after the preset number of blows. The mould is held in position by a quick clamping device. The trip mechanism is arranged so that the sliding hammer falls at the same distance for every blow. The compactor includes the laminate hardwood block and vibrated concrete base 450x450x200 mm. The soundproof and security cabinet is not included and should be ordered separately and factory installed. See code 76-B4200/XUP.

General specifications

- Sliding mass weight: 4550 ± 20 g
- Foot and guide rod weight: 3960 ± 20 g
- Free fall height: 460 ± 3 mm
- Blows frequency:
50 blows in 55/60 s
- Laminated hardwood block
 - Dimensions: 200x200x450 mm
 - Density: 670 to 770 kg/m³
- Concrete base:
 - 450x450x200 mm included
- Power rating: 600 W
- Current specs.: 230 V, 50 Hz, 1 ph.
- Overall dimensions (including hardwood block and concrete base):
540x556x2066 mm
- Total weight (including concrete block): 270 kg approx.



Detail of the mould clamping device. The new system, combined with the new mould, allows a really fast mould change operation in full operator safety condition



Detail of the rammer handling operation. The fast locking system allows easy maintenance operation, and the removable handle makes the rammer changing operation very fast and made by one person only

note

Main changes and differences compared with the ASTM D1559, AASHTO T245, and BS 598 standards

The new EN standard concerning the Impact Compactor with wooden pedestal (clause 4.2) substantially differs from the ASTM D1559 and AASHTO T245 in the following construction major details:

- Total weight of the rammer (sliding mass: 4550 ± 20 g plus cylindrical guide rod and foot: 3960 ± 20 g) of 8510 ± 40 g instead of 7850 ± 9 g
- Wooden pedestal and fixation system
- Blows frequency: 50 blows within 55 s to 60 s (not specified by ASTM/AASHTO and lower than BS 598: 60 ± 5 per minute)
- Device for the measurement of the specimen thickness during compaction (code 76-B4300/UP1)
- Concrete block 450x450x200 mm
- Mould assembly dimensions and shape.

Furthermore, safety and inspection requirements shall be applied as for example a soundproof cubicle to be locked automatically when the apparatus is running. Our model 76-B4312 upgraded with the 76-B4200/XUP soundproof and security cabinet fully satisfy the EN standards.

IMPACT (MARSHALL) COMPACTOR (CONTINUED)

76-B0057/A

Standard compaction mould

Comprising:

- ▶ 76-B0057/A1 Baseplate
- ▶ 76-B0057/A2 Mould body
- ▶ 76-B0057/A3 Filling collar.

Each item can be ordered separately.

 Total net weight: 3.3 kg approx.

76-B0057/A4

Mould base with handles

Weight approx.: 1.6 kg (as alternative to 76-B0057/A1 model)

76-B0043/4

Storage plate

Weight approx.: 10 kg

76-B0042/1

Steel block 100 mm dia. x 50 mm high

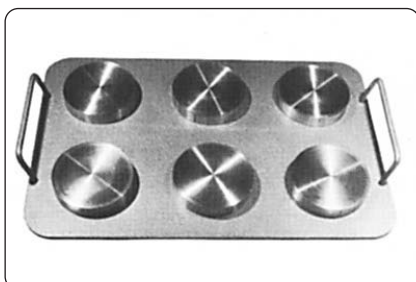
Weight approx.: 3.5 kg



76-B0057/A



76-B0057/A3 76-B0057/A2 76-B0057/A4



76-B0043/4

UPGRADING OPTIONS

Soundproof and security cubicle

The automatic compactor can be factory installed in a soundproof and security cubicle, which provides either the sound isolation (less than 78 dB) or operator security as the machine stops automatically opening the door. The electric controls are placed externally. For this version add to the code number the following code:

76-B4200/XUP

Soundproof and security cubicle

Dimensions: 800x800x2200 mm

 Shipping cubage: 2280x880x500 mm

 Weight approx.: 200 kg

The equipment is delivered disassembled with instruction for the easy laboratory fitting.

Measurement of the specimen thickness during compaction (rolled asphalt compressibility)

The automatic compactor can be factory fitted, as prescribed by the EN 12697-10 and EN 12697-30, annex A, by a special electronic device to measure the specimen thickness during compaction with a resolution of 0.1 mm. The system includes a 50 mm travel displacement transducer, interface for PC connection and software for Windows with database.

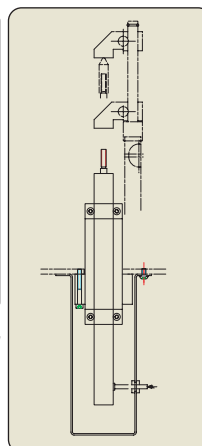
For this upgrading option add to the compactor code number the following code:

76-B4300/UP1

Electronic compressibility apparatus for 76-B4312 compactor



Detail of 76-B4300/UP1



76-B4312 installed in the 76-B4200/XUP cubicle



76-B4312 with open doors. When door is opened, the machine's automatically set in safety mode and cannot operate. In this conditions, all moving part are accessible for maintenance operations

**MARSHALL STABILITY.
SPECIMEN COMPACTION****STANDARD**

ASTM D1559, AASHTO T245, NF P98-251-2, CNR No. 30, ASTM D5581 (6" dia. specimens)

Automatic compactors.**General description and specifications**

This apparatus automatically compacts the sample and stops after the preset number of blows has been completed. All operations are easily driven and monitored by the digital display. All moving parts are protected with safety guards, which stop automatically the compactor when opened.

The compactor is supplied complete with a wooden pedestal. Three safety devices stop the lifting mechanism when the rammer is not in the start position. The moulds are not part of the apparatus and have to be ordered separately. See accessories

Technical specifications


Total installed power rating (W): 600

Drop frequency (blows/min): 60 ± 5

Tamping face dia. (mm): 98.5

Rammer weight (g): 4536 ± 9

Drop height (mm): 457 ± 3

 Dimensions (mm):
385x470x1867

 Weight approx. (kg): 150

Standard models**76-B4212**

ASTM/AASHTO Marshall automatic compactor. 230 V, 50 Hz, 1 ph.

76-B4214

Same as above but 110 V, 60 Hz, 1 ph.

76-B4213

Same as above but 220 V, 60 Hz, 1 ph.

Main features

- Automatic control
- Complete protection for operator safety (CE)
- Digital touch button console
- Improved rammer lifting device, constant height fall
- User-friendly rammer replacement system
- New mould locking system
- Modern and reliable design to ensure long working life
- Noise-reduction cabinet available



76-B4212



Detail of the rammer handling operation. The fast locking system allows easy maintenance operation, and the removable handle makes the rammer changing operation very fast and made by one person only



76-B4212 installed in the 76-B4200/XUP cubicle. Concrete base not included

UPGRADING OPTIONS**Soundproof and security cubicle**

The automatic compactors can be factory installed in a soundproof and security cubicle, which provides either the sound isolation (less than 78 dB) or operator security as the machine stops automatically opening the door. The electric controls are placed externally. For this version add to the code number the following code:

76-B4200/XUP**Soundproof and security cubicle**

 Dimensions: 800x800x2200 mm

 Weight approx.: 200 kg

The equipment is delivered disassembled with instruction for the easy laboratory fitting.



Detail of the mould clamping device. The new system, combined with the new mould, allows a really fast mould change operation in full operator safety condition. When door is opened, the machine's automatically set in safety mode and cannot operate. In this conditions, all moving part are accessible for maintenance operations