

Innovative Laboratory Equipment

PRELIMINARY TESTING TO DETERMINE THE MIX QUALITY



INNOVATIVE LABORATORY EQUIPMENT.

The laboratory foamed bitumen plant performs a series of precise measurements to determine the optimum foamed bitumen properties.

The different parameters can be varied quite easily during the process.

The most suitable composition of the recycling mix is determined quickly in combination with the laboratory mixer.

The mix can then be used to manufacture test specimens using the laboratory compactor.

The high-quality machines are perfectly tailored for use in cold recycling and comply with the high quality standards set by testing laboratories.



WIRTGEN RECYCLERS AND SOIL STABILIZERS

TRACTOR-TOWED STABILIZERS

- > Working width up to 2,500 mm
- > Working depth up to 500 mm

COLD RECYCLERS AND SOIL STABILIZERS (WHEELED CHASSIS)

- > Working width up to 2,400 mm
- > Working depth up to 560 mm

COLD RECYCLERS (CRAWLER UNIT CHASSIS)

- > Working width up to 3,800 mm
- > Working depth up to 350 mm

MOBILE COLD RECYCLING MIXING PLANT

- > Mixing capacity up to 240 t/h

LABORATORY EQUIPMENT

OVERVIEW OF HIGHLIGHTS

Perfectly Equipped

MOBILE DESIGN

01 Mobile Concept

The foamed bitumen plant and laboratory mixer are mounted on wheels to allow easy repositioning.

Compact Machine Dimensions

Compact machines to allow flexible handling in the laboratory.

Integrated Air Compressor

Optional air compressor to allow operation without an external compressed air supply.

SIMPLE, INTUITIVE OPERATING CONCEPT

02 Ergonomic Design

Ergonomically designed controls for intuitive operation.

Clarity

Clearly and logically structured control panels for straightforward, intuitive operation.

Simple Variation of Parameters WLB 10 S

Quick and highly precise variation of parameters to produce the best foamed bitumen quality within a short period of time.

A WIRTGEN WLV 1 LABORATORY COMPACTOR

B WIRTGEN WLM 30 LABORATORY MIXER

C WIRTGEN WLB 10 S LABORATORY FOAMED BITUMEN PLANT



PRODUCING FOAMED BITUMEN OF HIGH QUALITY

03 High-Quality Bitumen Injection Nozzle

Special, high-precision bitumen injection nozzle with expansion chamber to ensure optimum bitumen foaming behaviour.

Fully Heated Bitumen System

All components transporting bitumen are heated to ensure reliable sample production.

Highest Metering Accuracy

Calibrated bitumen flow and precise process water settings to determine the optimum foamed bitumen quality.

PERFECT MIXES

04 High Mixing Intensity

Powerful twin-shaft compulsory mixer with mixing blades manufactured from highly wear-resistant material for optimum, real-life mixing results.

Variable Speed Settings

Continuously adjustable mixing speed and separately adjustable mixing time.

Broader Range of Applications

The laboratory mixer can be used independently to produce a wide range of different mix compositions.

Perfectly Matched Machinery

Laboratory mixer and foamed bitumen plant can be connected quite easily to allow direct discharge of the bitumen foam into the mixer.

EFFICIENT MANUFACTURE OF TEST SPECIMENS

05 Extremely Simple, Tried-And-Tested Process

Compactor including vibrating hammer for the manufacture of test specimens.

Defined Impact Energy

Powerful vibrating hammer with heavy-duty tamping foot.

Optimum Compaction

Effortless monitoring of the path-controlled and time-controlled compaction process.

Standardized Process

Tried-and-tested method in the industry.



WHAT IS FOAMED BITUMEN?

Foamed Bitumen for High-Quality Base Layers

Foamed bitumen is produced from standard grade bitumen used in asphalt road construction. When heated and foamed, bitumen permits the economical production of high-quality base layers. Foamed bitumen is produced by injecting small quantities of water and compressed air into hot bitumen. The water evaporates, causing the bitumen to foam abruptly and expand to around 15 to 20 times its original volume. The quality of foamed bitumen is primarily described in terms of its expan-

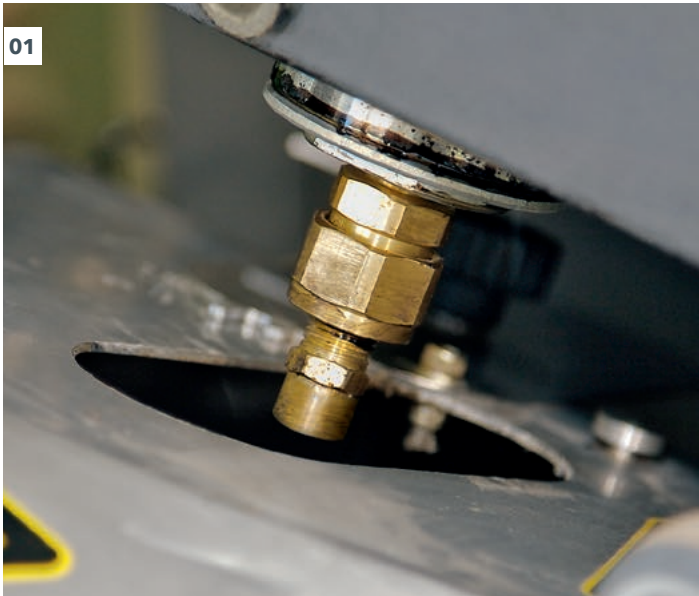
sion ratio and half-life. The larger its expansion and the higher its half-life, the better suited to processing the foamed bitumen will be.

Compared to other binders, foamed bitumen offers the advantage of reduced transport and material costs. Bitumen used for the production of foamed bitumen is readily available in all parts of the world.

- 01 Hot bitumen
- 02 Injected water
- 03 Injected compressed air
- 04 Foamed bitumen

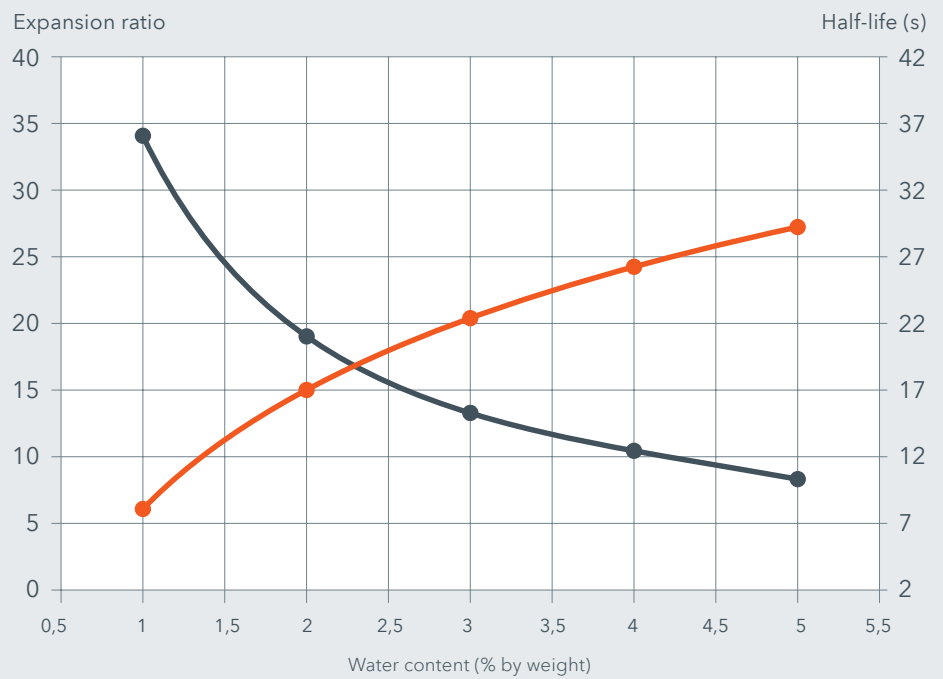


The foamed bitumen injected via the nozzle at the expansion chamber is suitable for direct mixing with the mineral aggregate mixture.



01 - 02 Foaming takes place in expansion chambers where water and air are injected into hot bitumen (160°C to 180°C) at a pressure of approx. 5 bar.

03



03 Development of half-life and expansion ratio to determine the water content.

—●— = Expansion ratio —●— = Half-life

WLB 10 S DETERMINES THE OPTIMUM BITUMEN FOAM



1:1-Simulating the Cold Recycling Process in the Laboratory

Foamed bitumen is used to an ever-increasing extent as an economical binder in cold recycling. Preliminary testing with the mobile WLB 10 S laboratory plant enables the foamed bitumen quality to be precisely defined in the laboratory prior to the start of construction. Exceptional ease of operation enables parameters such as water amount, pressure and temperature to be varied quickly and different types of foamed bitumen to be produced within a short time.

Based on the results achieved, the WLM 30 laboratory mixer can then be used to determine the composition of the recycling mix.

The plant offers ease of operation and maintenance, as well as a compact, mobile design. It can also be used to test the suitability of mixes with added cement or lime in combination with foamed bitumen.



01 The compact plant ensures ergonomically optimized handling and ease of operation.

02 The clearly and logically structured control panel permits easy setting and monitoring of important parameters.

03 Electric control: the plant offers maximum accuracy as it enables calibration of the bitumen flow.

04 Precise process water settings enable determination of the ideal foamed bitumen quality.



Reliable Simulation

Simple and precise parameter variation

Flexible Handling in the Lab

Compact mobile concept

POWERFUL TWIN-SHAFT COMPULSORY MIXER ON A LABORATORY SCALE

High Mixing Intensity

Heavy-duty twin-shaft pugmill

A Wide Range of Applications

Suitable for any type of mix



Mixes Every Bit as Homogeneous as on the Construction Site

Direct injection of the foamed bitumen into the mixing chamber of the WLM 30 laboratory mixer enables mixes to be processed under real-life conditions and test specimens to be manufactured. In addition, the twin-shaft compulsory mixer is perfectly matched to the laboratory plant in terms of design and performance.

The high mixing intensity corresponds to that of continuous mixers used on the construction site. The WLM 30 has a filling capacity of approx. 30 kg and offers variable settings for speed and mixing time. The mixing chamber is simply pivoted downwards about 180° and the cover opened to allow discharge of the mix. And what's more: when used separately, the WLM 30 is suitable for the production of a wide variety of mix compositions.

01 The powerful mixer with heavy-duty mixing blades produces a wide variety of cold mixes.



WLV 1 LABORATORY COMPACTOR FOR SPECIMEN MANUFACTURE



The Ideal Choice for Bitumen-Stabilized Material

The WLV 1 is used for the manufacture of test specimens from bitumen-stabilized material. It is equipped with a powerful vibrating hammer and heavy-duty tamping foot. The efficient path-controlled and time-controlled compaction process is documented via a colour screen. Intuitive operation enables easy adjustment of the specimen height, number of layers and maximum time of compaction.

Compacting multiple layers of equal thickness in a series of specimens achieves consistent compaction results. A standard procedure for the manufacture of test specimens using the WLV 1 has already proven its worth in the industry.



01 - 02 Clearly structured operating concept and Simple variation of parameters.

Simple production of test specimens

Innovative laboratory compactor

Industry Proven

Standardized procedure

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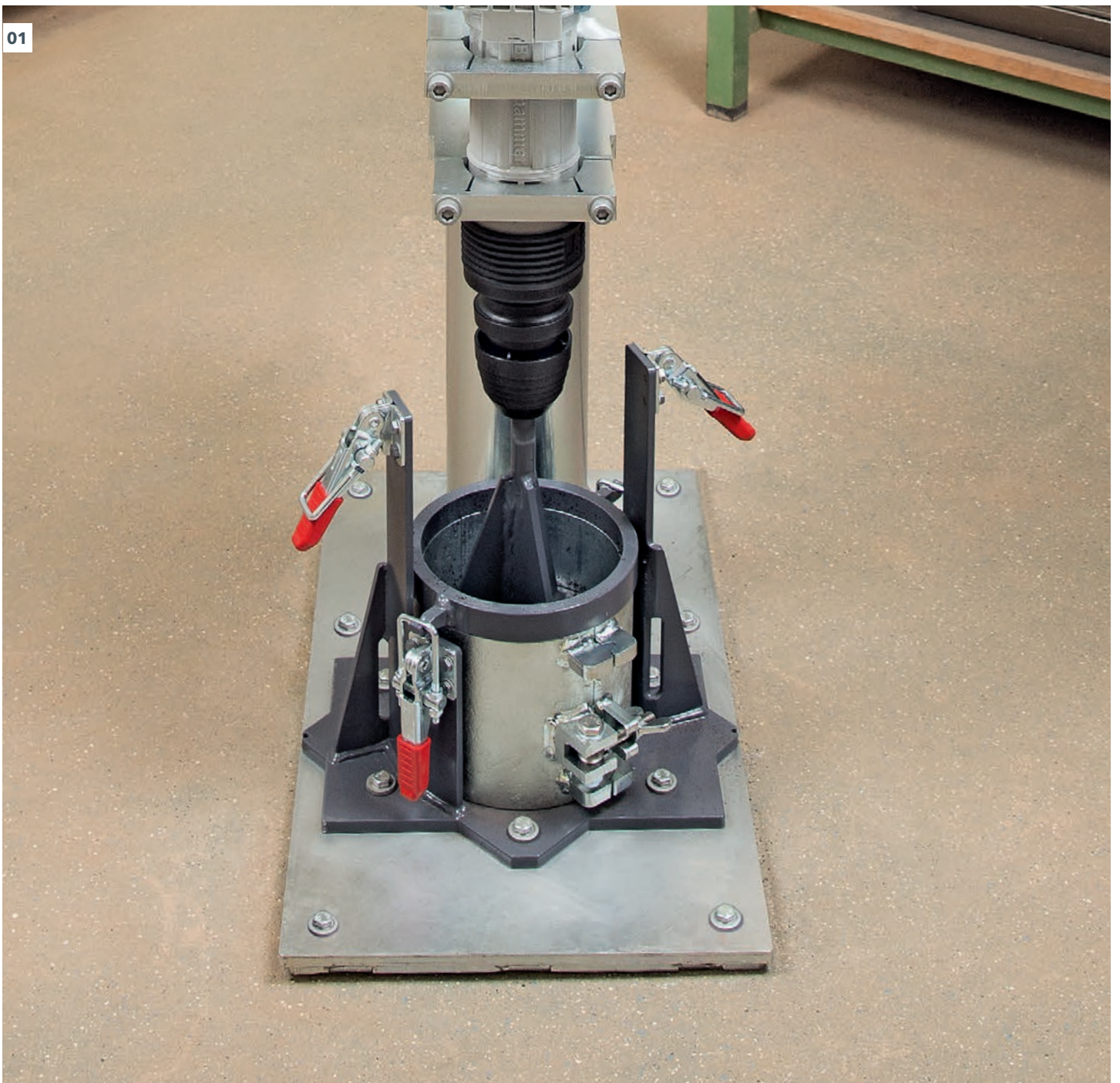


EFFICIENT MANUFACTURE OF TEST SPECIMENS

High Defined Impact Energy

Powerful Vibration-Hammer

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01 - 02 Specimens of different height are manufactured depending on the testing method.

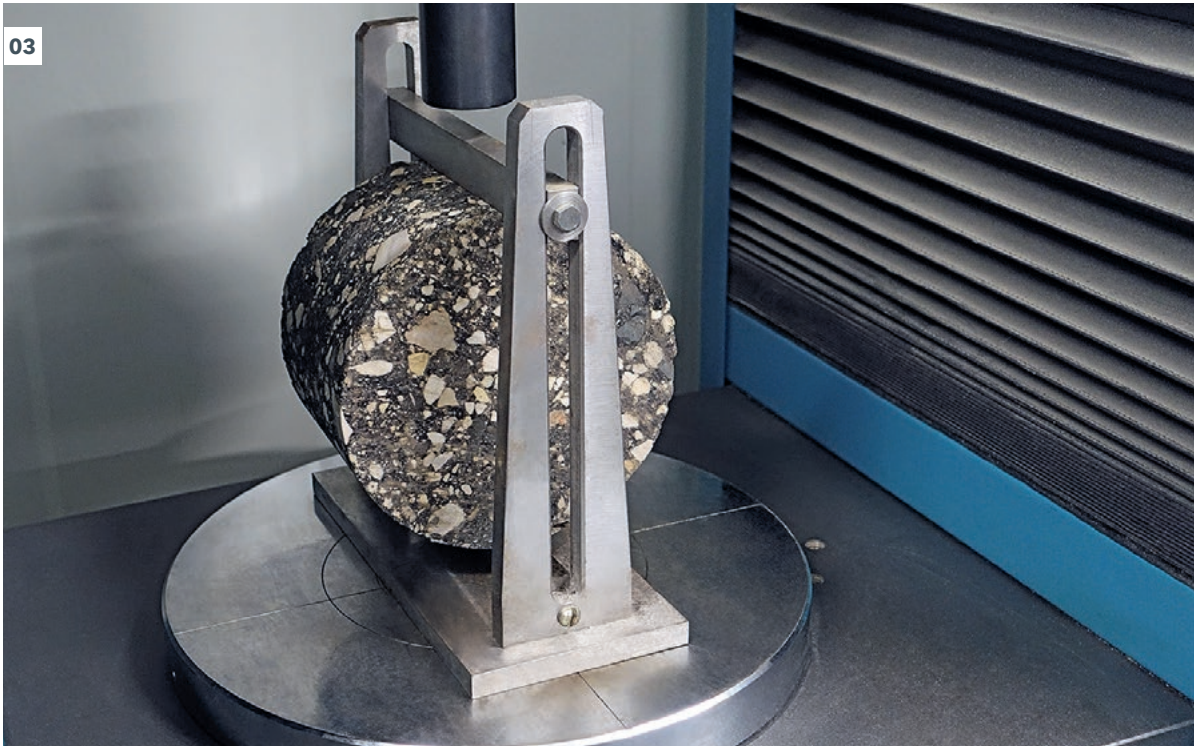
Reliable Compaction Process

The WLV 1 laboratory compactor offers an ideal solution for the manufacture of specimens from bitumen-stabilized material (BSM).

The core element of the WLV 1 laboratory compactor, a height-adjustable vibrating hammer, is mounted at a verti-

cal column. The vibrating hammer uses a heavy-duty tamping foot to transfer a precisely defined amount of impact energy on the material filled into a cylindrical mould in multiple layers. In the process, a surface roughener is used to ensure a firm bond with the next, upper layer.

Following completion of each compaction process, the vibrating hammer returns to its initial position automatically. This feature substantially increases productivity in the manufacture of test specimens.



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03 Quality check by performing the indirect tensile strength test.



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EFFICIENT MANUFACTURE OF TEST SPECIMENS

Triaxial Testing

Suitable for numerous testing methods



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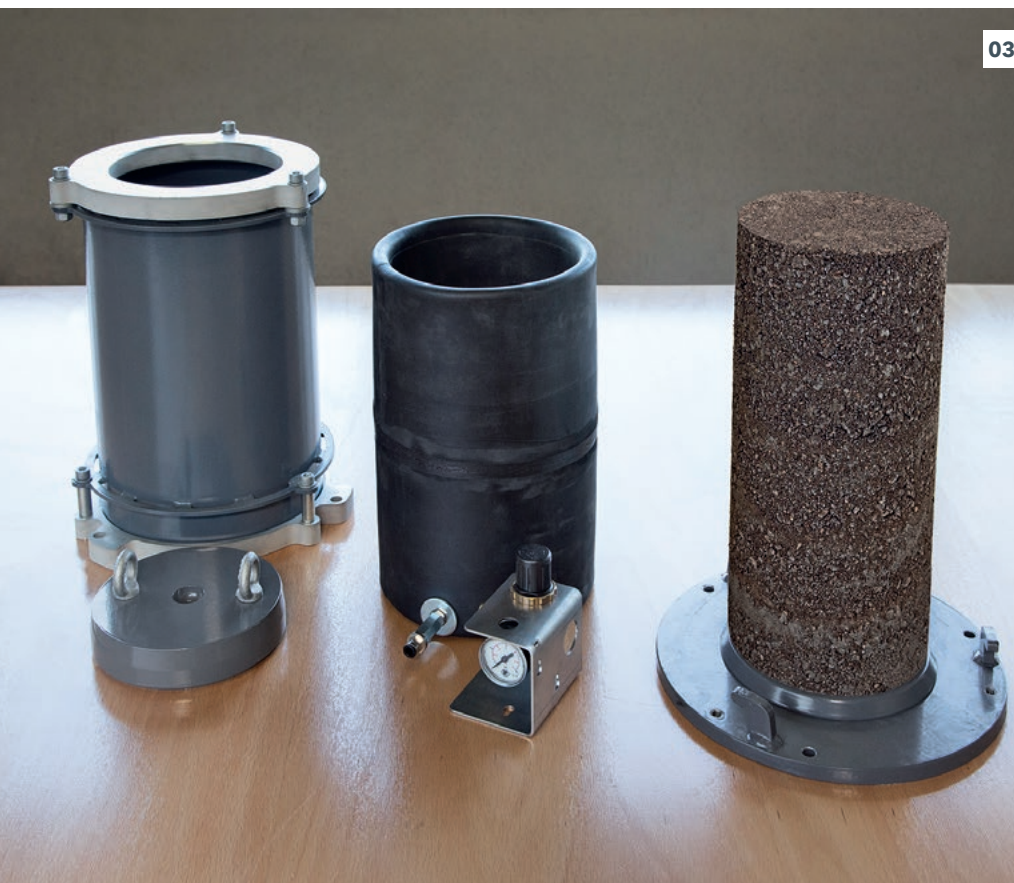


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Perfect Specimens for Different Testing Methods

Once the specified final height of the specimen has been achieved, the specimen can simply be removed from the mould by means of a quick-release fastener and then prepared for the testing method to be applied. Specimens of 152 mm in diameter and 95 mm in height can be produced to determine the indirect tensile strength (ITS).

Large specimens of 152 mm in diameter and 300 mm in height are produced for use in triaxial testing.



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04

TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION



WLB 10 S LABORATORY FOAMED BITUMEN PLANT

> Dimensions (L x W x H):	1,450 x 685 x 1,345 mm
> Bitumen pump:	electrically heated gear pump
> Bitumen temperature:	140 - 200 °C
> Water content:	0 - 5 % of bitumen
> Air pressure:	0 - 10 bar
> Electrical system:	suitable for different mains power systems
> Own weight:	270 kg

TECHNICAL SPECIFICATION



WLM 30 LABORATORY MIXER

> Dimensions (L x W x H):	1,085 x 770 x 960 mm
> Mixing capacity:	30 kg
> Mixer type:	twin-shaft compulsory mixer
> Mixer speed:	0 - 144 rpm
> Drive:	electric motor
> Electrical system:	suitable for different mains power systems
> Own weight:	220 kg

TECHNICAL SPECIFICATION



WLV 1 LABORATORY COMPACTOR

> Dimensions (L x W x H):	720 x 600 x 1,950 mm
> Impact energy, max.:	23 J
> Cylindrical mould, small (Ø x H):	152 x 150 mm
> Cylindrical mould, large (Ø x H):	152 x 320 mm
> Electrical system:	1.8 kW suitable for different mains power systems
> Own weight:	170 kg



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