Asphalt

Asphalt is a sticky, black and highly viscous liquid or semi-solid that is present in most crude petroleum. It is most commonly used in road construction.

The material consists essentially of two ingredients, aggregate and bitumen which is the binder. A number of technologies allow this simple mix to have an almost infinite number of mixtures which may either be specified or designed to suit a particular engineering requirement.

It is therefore important that equipment and test methods are used to determine the different physical and chemical properties of any given asphalt mix. Such parameters include binder content, binder percentage, aggregate grading, void content, resilient modulus, indirect tensile fatigue cracking, creep, softening point, flash and fire point, water content, loss in mass, elongation, elasticity, viscosity and adhesion.
**Reflux Extractor**

**DESCRIPTION:**
The Reflux Extractor is used for the quantitative determination of bitumen in hot-mixed paving mixtures and pavement samples.

The bitumen content is calculated by the difference from the weight of extracted aggregates, moisture content, and ash from an aliquot part of the extract.

Two models available: 1 and 4 liters capacity. The extractors have to be used with a suitable hot plate with an aluminum disk for better heat distribution.

The Reflux Extraction Test Set consist of:
- Cylindrical Glass
- Extractor Jar
- Two Wire Mesh Cones
- Interlocking Frames
- Water Condenser with Inlet/Outlet Tubes
- Filter Paper, 50pcs.
- Hot Plate
- Iron Wire Gauze

**TECHNICAL SPECIFICATIONS:**
- Dimensions: 465x150 mm
- Weight (approx.): 3 kg
- Capacity: 1000 g

**ORDERING:**
- AS 0101
  - Reflux Extractor 1000 gr complete
- AS 0102
  - Reflux Extractor 4000 gr complete

**ACCESSORIES:**
- AS 0101-1
  - Filter Paper for the 1000 gr (pack of 50)
- AS 0102-1
  - Filter Paper for the 4000 gr (pack of 50)
- AS 0101-2
  - Replacement glass for the 1000 gr
- AS 0102-2
  - Replacement glass for the 4000 gr

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**Centrifuge Extractor**

**DESCRIPTION:**
The Centrifuge extractor is used for the determination of bitumen percentage in bituminous mixtures.

All models comprise a removable precision-machined rotor bowl housed in a cylindrical aluminum box. They are driven by an electric motor fitted with an AC drive (inverter) with the double function of speed control up to 3600 r.p.m. The control panel includes the Start/Stop button, speed control knob, and digital display.

The centrifuge extractor is complete with filter paper and bowl.

**TECHNICAL SPECIFICATIONS:**
- AC drive motor (inverter): 550 W
- Overall dimensions: 539x406x509 mm
- Weight approx.: 54 kg

**MAIN FEATURES:**
- Speed control up to 3600 r.p.m.
- Supplied complete with filter discs

**ORDERING:**
- AS 0103
  - Centrifuge Extractor 1500 gr
- AS 0104
  - Centrifuge Extractor 3000 gr

**ACCESSORIES:**
- AS 0103-1
  - Filter Paper for the 1500 gr model (pack of 100)
- AS 0104-1
  - Filter Paper for the 3000 gr model (pack of 100)
- AS 0103-2
  - Replacement bowl for the 1500 gr
- AS 0104-2
  - Replacement bowl for the 3000 gr

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Asphalt Mixer

DESCRIPTION:
The Asphalt Mixer is designed for mixing Asphalt samples that can be used for mechanical tests as for example compaction, indirect tensile, Marshall, etc.

The bituminous mix must be prepared at a prescribed temperature for this reason the mixer can be equipped with a thermostatically controlled heater.

The mixing head rotates at different speed positions depending on the size of the mixer and the mixer. Mixer size available: 5L, 7L, 10L, 20L, 30L.

The asphalt mixer includes a hook, a mixing blade, a whisk and a stainless steel bowl.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Speed Setting</th>
<th>Dimensions (mm)</th>
<th>Weight (Kg)</th>
<th>Capacity in ltr.</th>
<th>Capacity in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 0105</td>
<td>20 x 240 x 420</td>
<td>16</td>
<td>5 ltr.</td>
<td>2 Kg</td>
</tr>
<tr>
<td>AS 0106</td>
<td>20 x 240 x 420</td>
<td>16</td>
<td>7 ltr.</td>
<td>3 Kg</td>
</tr>
<tr>
<td>AS 0107</td>
<td>485 x 410 x 635</td>
<td>75</td>
<td>10 ltr.</td>
<td>4 Kg</td>
</tr>
<tr>
<td>AS 0108</td>
<td>500 x 600 x 780</td>
<td>107</td>
<td>20 ltr.</td>
<td>8 Kg</td>
</tr>
<tr>
<td>AS 0109</td>
<td>550 x 600 x 1115</td>
<td>204</td>
<td>30 ltr.</td>
<td>12 Kg</td>
</tr>
</tbody>
</table>

ORDERING:

AS 0105
Asphalt Mixer 5ltr complete with all accessories

AS 0106
Asphalt Mixer 7ltr complete with all accessories

AS 0107
Asphalt Mixer 10ltr complete with all accessories

AS 0108
Asphalt Mixer 20ltr complete with all accessories

AS 0109
Asphalt Mixer 30ltr complete with all accessories

ACCESSORIES:

AS 0105-1
Stainless steel bowl 5 ltr.

AS 0106-1
Stainless steel bowl 7 ltr.

AS 0107-1
Stainless steel bowl 10 ltr.

AS 0108-1
Stainless steel bowl 20 ltr.

AS 0109-1
Stainless steel bowl 30 ltr.

AS 0105-2
Hook for 5 ltr.

AS 0106-2
Hook for 7 ltr.

AS 0107-2
Hook for 10 ltr.

AS 0108-2
Hook for 20 ltr.

AS 0109-2
Hook for 30 ltr.

AS 0105-3
Mixing paddle 5 ltr.

AS 0106-3
Mixing paddle 7 ltr.

AS 0107-3
Mixing paddle 10 ltr.

AS 0108-3
Mixing paddle 20 ltr.

AS 0109-3
Mixing paddle 30 ltr.

AS 0105-4
Whisk for 5 ltr.

AS 0106-4
Whisk for 7 ltr.

AS 0107-4
Whisk for 10 ltr.

AS 0108-4
Whisk for 20 ltr.

AS 0109-4
Whisk for 30 ltr.

MAIN FEATURES:

• Multiple speed settings.
• Heavy duty all gear transmission.
• Microswitch for bowl position and safety guard.
• Fitted with reset switch to prevent accidentally overloads.
Isomantle Heater

**DESCRIPTION:**
The Isomantle heater is used to heat the bowl of the asphalt mixer. It is equipped with an electronic temperature controller and can be easily installed on the mixer.

**MAIN FEATURES:**
- "Cool-to-touch" outer casing
- Element temperatures up to 450°C
- Indicator lamps for power and heater operation
- Replaceable insulated heater cartridge
- Rugged, easy to clean powder-coated aluminum casing

**ORDERING:**
- AS 0110 Isomantle Heater 5ltrs cap
- AS 0111 Isomantle Heater 7ltrs cap
- AS 0112 Isomantle Heater 10ltrs cap
- AS 0113 Isomantle Heater 20ltrs cap
- AS 0114 Isomantle Heater 30ltrs cap

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Bowl. Max. temperature</th>
<th>180 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>230V</td>
</tr>
<tr>
<td>Capacity in ltr.</td>
<td>Capacity 5, 7, 10, 20, 30</td>
</tr>
<tr>
<td>Dimensions</td>
<td>220 x 220 x 170 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.5 kg</td>
</tr>
</tbody>
</table>

Manual Marshall Compaction

**DESCRIPTION:**
Marshall manual assemblies are used to compact Marshall samples manually.

Compaction assemblies include a Marshall compacting hammer and a wood compaction pedestal. The pedestal is supplied with a plate, a mold holder and a hammer guide.

**EN 12697-30, 12697-10, 12687-12; ASTM D 1559 D 6926, D 5581; AASHTO T245**

**ORDERING:**
- AS 0115 Manual Marshal Compactor complete with all accessories.
- AS 0123 Marshall Compaction Mold 4"
- AS 0124 Marshall Compaction Mold 6"

**ACCESSORIES:**
- AS 0115-1 Compacting Hammer, BS 598
- AS 0115-2 Compaction Pedestal, BS 598 comprising a 300 mm sq x 25 mm thick steel plate.
- AS 0115-3 Compaction Pedestal comprising a 12 inch square x 1 inch thick steel plate, ASTM
- AS 0115-4 Paper Discs. 99 mm diameter pack of 100.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>350x400x1600 mm</td>
<td>70 kg</td>
</tr>
</tbody>
</table>
Automatic Marshall Compactor

**DESCRIPTION:**
The Automatic Compactor is made of rugged construction to stand work.

It provides a consistent and even degree of compaction. The Compactor comprises of a compaction pedestal, automatic control system, the secure base of 300 mm square x 25 mm thick steel plate.

After setting the required number of blows the Automatic Compactor lifts the 4535g ±20g hammer and releases it at the desired height of 457mm ±3mm.

The control system comprises of operating light, start/stop switch and a reading counter used to set the desired number of blows.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>EN 12697-30, 12697-10, 12687-12; ASTM D 1559 D 6926, D 5581; AASHTO T245</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falling Height</td>
<td>457 ± 5mm</td>
</tr>
<tr>
<td>Hammer Weight</td>
<td>4535 ± 15 g</td>
</tr>
<tr>
<td>Tamping Face Dia.</td>
<td>98.5 mm</td>
</tr>
<tr>
<td>Concrete Base Dimension</td>
<td>450x450x200 mm</td>
</tr>
<tr>
<td>Laminated Hard work Block Dimensions</td>
<td>200x200x450 mm</td>
</tr>
<tr>
<td>Blows Frequency</td>
<td>50 blows in 55 s to 60 s</td>
</tr>
<tr>
<td>Dimensions (EN)</td>
<td>550x500x1950 mm</td>
</tr>
<tr>
<td>Weight (approx.) (EN)</td>
<td>275 kg</td>
</tr>
<tr>
<td>Power</td>
<td>370 W</td>
</tr>
<tr>
<td>Dimensions (ASTM)</td>
<td>550x550x1950 mm</td>
</tr>
<tr>
<td>Weight (approx.) (ASTM)</td>
<td>135 kg</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Accurate counter
- Heavy-duty robust built
- Jam-free design
- The easy mold clamp system

**ACCESSORIES:**
- **AS 0116-1** Marshall Steel Block, Ø102 and 50 mm height
- **AS 0123** Marshall Compaction Mold 4”
- **AS 0124** Marshall Compaction Mold 6”
**Marshall Stability Machine**

**DESCRIPTION:**
The Marshall Stability Machine is used to determine the load and flow values of bituminous mixtures.

The Marshall is composed by a robust and compact two-column frame with adjustable upper cross beam driven by an electro-mechanical ram with a maximum capacity of 50 KN and a data acquisition and processing system.

The Marshall Stability Machine can be hand operated by a lateral hand wheel for calibration purposes. The mechanical jack raises the lower cross beam at a constant speed of 50.8 mm/min.

The limit switches are provided for both, bottom and top limit of travel.

The Automatic measuring system consists of a 50KN capacity strain gauge load cell that is fitted to the upper cross beam to read stability values and 25 mm x 0.001 mm displacement transducer fitted to Break Head.

The Manual measuring system consists of a 50 KN capacity load ring and dial gauge graduated 0.01 mm with 25 mm travel.

The Marshall Stability Machine comes complete with a lateral hand wheel for calibration purposes and a 100 mm breaking head.

**MAIN FEATURES:**
- 3 models are available, charging ring, digital and computerized
- High resolution graphic display

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>550 x 700 x 1200 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>1100 W</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>103 kg</td>
</tr>
</tbody>
</table>

**ORDERING:**

**AS 0120**
Marshall Stability Machine complete with load ring

**AS 0121**
Digital Marshall Stability Machine complete with digital gauge

**AS 0122**
Digital computerized Marshall Stability Machine complete with touch screen and software

**ACCESSORIES:**

**AS 0120-1**
Breaking Head 100 mm

**AS 0120-2**
Breaking Head 150 mm

**AS 0120-3**
Load Ring assembly complete with dia gauge, 50KN

**AS 0120-4**
S-type load cell 50KN

**AS 0120-5**
Flow Transducer

**AS 0120-6**
Data Acquisition and Control System

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Marshall Compaction Mold

**DESCRIPTION:**
The Marshall Compaction Molds are used to produce the Marshall specimens with automatic or manual compactors.

The molds are manufactured using galvanized steel. The Compaction Molds consist of a base plate, mold body, and a collar.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th></th>
<th>Dimensions</th>
<th>Weight (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 0123</td>
<td>120x170 mm</td>
<td>3.5 kg</td>
</tr>
<tr>
<td>AS 0124</td>
<td>75x210 mm</td>
<td>6 kg</td>
</tr>
</tbody>
</table>

**ORDERING:**

- AS 0123 Marshall Compaction Mold 4”
- AS 0124 Marshall Compaction Mold 6”

**ACCESSORIES:**

- AS 0123-1 Filter paper Mold 4” pack of 100
- AS 0124-1 Filter paper Mold 6” pack of 100

Marshall Sample Extruder

**DESCRIPTION:**
The Specimen Extruder is designed to easily extrude specimens from Marshall and CBR molds. The capacity of the extruder is 30 kN.

Supplied complete with a manual hydraulic jack and 2 pcs. adaptor to extrude samples from 100mm (4”), 150 mm (6”) inner diameter Marshall and CBR molds

**TECHNICAL SPECIFICATIONS:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ram Travel</td>
<td>230 mm</td>
</tr>
<tr>
<td>Screw Travel</td>
<td>90 mm</td>
</tr>
<tr>
<td>Dimensions</td>
<td>280x280x520 mm</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>28 kg</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**

- Robust design
- Heavy duty
- Multiple adapters

**ORDERING:**

- AS 0125 Marshall-CBR-Proctor Specimen Extruder, 30 kN Capacity

**ACCESSORIES:**

- AS 0125-1 Adaptor to extrude samples from 100mm (4”)Mold
- AS 0125-2 Adaptor to extrude samples from 150mm (6”)Mold
Binder Recovery Apparatus

DESCRIPTION:
The Binder Recovery Apparatus is used to remove the solvent from the binder/solvent solution in order to determine directly the total content binder in the aggregate/binder mixtures.

The apparatus consists of a power operated vacuum pump, fit with vacuum regulator, producing a vacuum down to 200 mbar, a thermostatically controlled water bath, and two flat-bottomed flasks 250 ml capacity with rubber bungs and connections. All necessary fittings and connections complete the set.

The water bath can be used for other application as well

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Power rating</th>
<th>1380 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight approx.</td>
<td>23 kg</td>
</tr>
</tbody>
</table>

Hubbard-Carmick Specific Gravity Bottles

DESCRIPTION:
The Hubbard-Carmick Specific Gravity Bottles used with viscous fluids, semi-solid bitumen, and emulsions. Made of Borosilicate Glass they come in two shapes.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Capacity</th>
<th>25 mL / 24 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle style</td>
<td>Hubbard-Carmick Specific Gravity</td>
</tr>
<tr>
<td>Neck style</td>
<td>Wide-mouth</td>
</tr>
<tr>
<td>Top style</td>
<td>Standard Taper Joint</td>
</tr>
<tr>
<td>Stopper style</td>
<td>Standard Taper Stopper</td>
</tr>
<tr>
<td>Stopper material</td>
<td>Solid Glass</td>
</tr>
<tr>
<td>Bottle shape</td>
<td>Cylindrical</td>
</tr>
<tr>
<td>Standard Taper size</td>
<td>24/12</td>
</tr>
<tr>
<td>Bottle feature</td>
<td>Heavy wall</td>
</tr>
</tbody>
</table>
**Bacon Sampler**

**DESCRIPTION:**
The Bacon Sampler is used to obtain bitumen or oil samples at various levels from several containers.

**TECHNICAL SPECIFICATIONS:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>1 L</td>
</tr>
<tr>
<td>Weight</td>
<td>1.5 kg</td>
</tr>
<tr>
<td>Diameter</td>
<td>80 mm</td>
</tr>
<tr>
<td>Length (English)</td>
<td>300 mm</td>
</tr>
</tbody>
</table>

**ORDERING:**

AS 0129  
Bacon Sampler

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**Semi Automatic Bitumen Penetrometer**

**DESCRIPTION:**
The Semi-Automatic Bitumen Penetrometer is used to determine the penetration of bituminous samples under constant load, time and heat. The Penetrometers are intended for measuring the consistency of bituminous materials. Penetration readings are quickly taken from a measuring precision gauge.

The Penetrometer consists of a cast iron base with leveling screws, digital penetration measurement gauge 0.01 mm precision Release button - Automatic zeroing. Needle, transfer dish and penetration molds.

**TECHNICAL SPECIFICATIONS:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>200x300x500 mm</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>16 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>110/240 V, 50/60 Hz</td>
</tr>
<tr>
<td>Measure range</td>
<td>0-300 penetration units</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>Test Load</td>
<td>100 g (plunger 97.5 g + 2.5 g penetration needle)</td>
</tr>
<tr>
<td>Test time</td>
<td>5 sec (adjustable from 0.1 to 3000 seconds)</td>
</tr>
</tbody>
</table>

**ORDERING:**

AS 0130  
Semi Automatic Bitumen Penetrometer

**ACCESSORIES**

- AS 0130-1  
  Penetration Needle, hardened steel verification certificate. For testing to BS 2000-49 and ASTM D5

- AS 0130-2  
  Penetration Needle (unverified)

- AS 0130-3  
  Penetration Tin for penetrations between 200 and 350

- AS 0130-4  
  Penetration Tin for penetrations below 200
Automatic Digital Bitumen Penetrometer

DESCRIPTION:
The Automatic Digital Bitumen Penetrometer is used for determination of the needle penetration according to EN 1426, ASTM D5 and AASHTO T49 standards.

The penetration depth of the needle is determined with a pulse type electronic measuring system, which is separated from the plunger during the test, this allows the free guidance of the plunger which virtually eliminates friction during the test.

Before each start of the test, the measuring system automatically resets, and then the penetration needle moves down to the sample by using the electric drive, the needle position can be finely adjusted by using the joystick located on the front panel.

A magnifying glass and an ultra-bright LED lamp are supplied to assist the operator, the plunger is then automatically released onto the sample and raised automatically after the testing period.

The test result is displayed on the digital display. The plunger can easily be removed to calibrate its weight.

The Automatic Electronic Penetrometer is supplied complete with;

- Penetration Needle, 2 pcs
- Transfer Dish
- Sample Cup, Ø 55x35 mm, 2 pieces, stainless steel

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0-300 penetration units</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>Test load</td>
<td>100 g (plunger 97.5 g + 2.5 g penetration needle)</td>
</tr>
<tr>
<td>Test time</td>
<td>5 sec (adjustable from 0.1 to 3000 seconds)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>27x48x75 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>24 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>110/240 V, 50/60 Hz</td>
</tr>
</tbody>
</table>
Ring and Ball Test Apparatus

**DESCRIPTION:**
The Ring and Ball method of determining the softening point bituminous materials.

The softening point is considered to the temperature of the fluid when the ball penetrates the specimens and touches the lower plate.

This test method covers the determination of the softening point of bitumen in the range from 30 to 1570°C immersed in the distilled water, USP glycerin, or ethylene glycol.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>600 W, 220 /110 V, 50/60 Hz</td>
</tr>
<tr>
<td>Dimensions</td>
<td>125x205x545 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.5 kg</td>
</tr>
</tbody>
</table>

Cleveland, Flash and Fire Point, Open Cup

**DESCRIPTION:**
The Cleveland test method describes the determination of the flash and fire point of petroleum products such as bituminous material with flashpoints above 790°C and below 4000°C.

Electrically heated by an electronic regulator, mounted on a case painted with anti-acid epoxides products.

Calibrated brass cup, gas ignition device fitted with a pivot manually passing through the cup. Fitted with pincers for the thermometer.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>250x300x250 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>5 kg</td>
</tr>
</tbody>
</table>
Asphalt Binder Analyser

DESCRIPTION:
The Asphalt Binder Analyzer consists essentially of a high precision apparatus combining an ignition oven to a continuous weighing system to monitor the loss of weight of the asphalt sample and to automatically determine, at the end of the test, the binder content and percentage.

An independently controlled auxiliary afterburner chamber significantly reduces the furnace emissions.

The Analyzer is supplied complete with:
- Double sample basket/safety cover, extraction fork
- 3 meters of the metal exhaust pipe.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max temp</td>
<td>750°C</td>
</tr>
<tr>
<td>Dimensions: Internal</td>
<td>220x350x450 mm</td>
</tr>
<tr>
<td>Dimensions: External</td>
<td>980x600x775 mm</td>
</tr>
<tr>
<td>Configuration</td>
<td>Bench-top</td>
</tr>
<tr>
<td>Thermocouple type</td>
<td>K</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>120 kg</td>
</tr>
<tr>
<td>Max power</td>
<td>8000 W</td>
</tr>
</tbody>
</table>

Loss On Heating Oven (TFOT)

DESCRIPTION:
The Loss on Heat Oven test method is used for determining the loss in mass, the effect of heat and air on a film of semi-solid bituminous materials.

Completely made from stainless steel, natural ventilation, internal support rotating at 5-6rpm controlled by a geared motor located on the oven top, digital thermoregulator PID with over-temperature alarm and probe, double-wall locking door with toughened glass window.

The Loss on Heat Oven supplied complete with:
- A Rotating shelf with 9 sample containers dia. 55x35 mm and thermometer ASTM 13C, +155 to +170°C, 0.5°C divisions. Conforming to all standards.

MAIN FEATURES:
- Digital control
- Independent overheat thermostat
- Mains switch
- ON/OFF switch for turntable motor
- Indicator lamps
Loss On Heating oven (TFOT)

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>57x87x63 cm</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>50 kg</td>
</tr>
<tr>
<td>Temperature</td>
<td>200°C</td>
</tr>
</tbody>
</table>

**ASPHALT EQUIPMENT**

**ORDERING:**

- **AS 0135**
  - Loss on Heat Oven complete set.

**ACCESSORIES:**

- **AS 0135-1**
  - Glass Sample Containers, 8 pcs
- **AS 0135-2**
  - ASTM 13C Thermometer, +155 to +170°C, 0.5°C divisions
- **AS 0135-3**
  - Air compressor

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>750x750x910</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>65 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>220 V, 50-60 Hz, 1 ph</td>
</tr>
</tbody>
</table>

Rolling Thin Film Oven (RTFO)

**DESCRIPTION:**

The Rolling Thin Film Oven provides simulated short term aged asphalt binder for physical property testing.

Asphalt binder is exposed to elevated temperatures to simulate manufacturing and placement aging. It also provides a quantitative measure of the volatiles lost during the aging process.

Supplied complete with:
- Forced ventilation flowmeter with a regulator valve
- Aluminum carriage rotating at 15rpm - 8 heat resistant glass containers
- Internal fan controlled by a motor
- Copper coil with nozzle preheating the air containers
- Digital thermometer and regulator

**MAIN FEATURES:**

- Double-wall stainless steel construction
- The easily removable bottom tray allows for a quick change of elements or spill clean-up

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>750x750x910</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>65 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>220 V, 50-60 Hz, 1 ph</td>
</tr>
</tbody>
</table>
**Ductility Testing Machine**

**DESCRIPTION:**
The Ductility Testing Machine used for determining the ductility of bituminous materials by measuring the elongation of briquette mold with molten bitumen in it which is pulled apart at a specified speed and at a specified temperature.

The test shall be made at a temperature of 25 ± 0.5°C with a speed of 5 cm/min + 5.0%.

Digital thermoregulator with over-temperature alarm and probe, cooling coil, traction carriage holding molds, circulation pump for stirring the water.

The Ductility Testing Machine with Cooling Unit has the same specifications as the ductility Testing Machine but with an additional cooling unit for better temperature control.

The Force Ductility Testing Machine has 3 load cells and variable speeds. The accuracy of load cells is ±0.1N with a maximum capacity of 300 N. It has a cooling unit and digital graphic display, automatic control and Data Acquisition Unit, load-displacement curves and software.

The speed can be set and load-displacement curves are drawn through the software.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Range</td>
<td>5° to 25°C ±0.5° (41° to 77°F ±0.9°)</td>
</tr>
<tr>
<td>Electrical</td>
<td>1000W Heater, 500W Cooler</td>
</tr>
<tr>
<td>Product Dimensions</td>
<td>1,880 x 360 x 680 mm</td>
</tr>
<tr>
<td>Estimated Shipping Weight</td>
<td>117.03 kg</td>
</tr>
</tbody>
</table>

**ORDERING:**

**AS 0137**
Ductility Testing Machine without cooling unit

**AS 0138**
Ductility Testing Machine with cooling unit

**AS 0139**
Force ductility Testing Machine with cooling unit

**ACCESSORIES:**

**AS 0137-1**
Ductility Briquette Mould.

**AS 0137-2**
Ductility Mould Base Plate

**MAIN FEATURES:**

- Able to test three specimens simultaneously
- Heating and cooling circulator digitally regulates temperatures
- Vibration-free operation
- Direct-drive motor maintains a constant speed
- Force ductility comes with adjustable speed
Emulsified Asphalts Apparatus

DESCRIPTION:
The Emulsified Asphalt test methods and practices cover the examination of asphalt emulsions composed principally of a semisolid or liquid asphaltic base, water, and an emulsifying agent.

Used for determining the cutback of asphalt material by distillation method.

The Emulsified Asphalt comprises Aluminum boiler container, connection glass tube with protection shield, glass condenser for water circulation, 2 thermometers ASTM 7°C range -2 to +300°C, gas ring burner with gas stop valve controlled by a flame sensor. 100ml graduated cylinder, supporting ring, bases with rods.

Dean and Stark Apparatus

DESCRIPTION:
The Dean and Stark Apparatus 3 places test method covers the determination of water in the range from 0 to 25% volume in petroleum products, tars, and other bituminous materials by the distillation method.

The Dean and Stark Apparatus consist of: Mantle heater with a steel rod and clamp, 500ml flask, condenser and graduated 10ml receiver.

Distillation of Cut-Back Asphaltic (Bituminous) Product

DESCRIPTION:
This apparatus is used for the examination of the amount of the more volatile constituents in cutback asphaltic products.

It consists of:
Distillation flask, Condenser, Adapter, Shield, Shield and flask support, Electric heater with thermoregulator, Cylinder receiver, Thermometer -2 to +400°C
Digital Viscometer Bath

**DESCRIPTION:**
The Digital Viscometer Bath is used for measuring oils viscosity by Cannon-Fenske, Ubbelohde, and similar capillary.

Working temperature from ambient to 150°C ±0.1°. Borosilicate tank, cover with 5 holes 50.8mm, stainless steel control box on the cover.

Digital thermoregulator PID with over-temperature alarm and probe, cooling coil for improved control near to ambient temperature, stainless steel heater, motor stirrer, with stand-by stainless steel covers, protection Lexan jacket.

The Large Digital Viscometer Bath Structure is made of stainless steel, cover with 5 holes or 7 holes, 50.8mm, temperature control by digital thermoregulator PID stability ±0.02°C and display resolution 0.01°, adjustable high and low-temperature cut-out, low-level liquid alarm, cooling coil, stand-by stainless steel covers, light.

**MAIN FEATURES:**
- Working temperature from ambient to +70°C
- Transparent tank
- Cover with 5 or 7 holes 51 mm

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th></th>
<th>AS 0143</th>
<th>AS 0144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>220 V 50/60 Hz</td>
<td>220 V 50/60 Hz</td>
</tr>
<tr>
<td>Dimensions</td>
<td>50×60 cm</td>
<td>45×60×60 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>12 kg</td>
<td>25 kg</td>
</tr>
</tbody>
</table>

Digital Saybolt Viscometer

**DESCRIPTION:**
The Digital Saybolt Viscometer a device used to measure the viscosity of a fluid such as an asphalt. Calibrated brass oil cup with stainless steel flowing orifice, polished and calibrated 1.76mm dia Universal and 3.15mm dia Furol.

Digital thermoregulator PID with Over-temperature alarm and PT 100A probe, stirrer, cooling coil, 18/8 stainless steel water bath, insulated double wall and front opened jacket.

Monitoring the time required for the flow of specific volume to fill a 60cc container flask. The time recorded in seconds at three different temperatures. It has 2 sample testing capacity with a digital display.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th></th>
<th>AS 0145</th>
<th>AS 0146</th>
<th>AS 0147</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>220 Vac ±10%, 50 Hz</td>
<td>1200W</td>
<td>1200W</td>
</tr>
<tr>
<td>Max. power consumption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating range</td>
<td>21°C to 99°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precision</td>
<td>0.05°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>260x260x530 mm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>4 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working temperature</td>
<td>0 to 50°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-10 to 70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient relative humidity</td>
<td>&lt;90% rH not condensing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AS 0143: Digital stopwatch
AS 0143-1: Silicone oil – Kinematic viscosity 50 mm²/s at 25°C, can of 25 liters
AS 0143-2: Viscometer holders PTFE for Cannon-Fenske, pack of 5 pcs.
AS 0143-3: Viscometer holders in metal for Ubbelohde pack of 5.

AS 0145: Digital Saybolt Viscometer, 2 places
AS 0145-1: Saybolt Viscosity Flask 60 ml
AS 0145-2: Set of Glass Thermometers 6 pcs
AS 0145-3: Filter funnel With stainless steel wire mesh
**Water Bath**

**DESCRIPTION:**
The Water Bath is Used to condition Marshall specimens and other materials in water. The water baths are available in different dimensions: 30, 56 and 110 liters capacity. Digital thermoregulatory and temperature display, internal and external outer case in stainless steel. Complete with perforated base shelf and cover.

Our Water Bath can be fitted with cooling unit

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recirculation</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Capacity</td>
<td>30 liters</td>
<td>56 liters</td>
<td>110 liters</td>
</tr>
<tr>
<td>Marshall specimen capacity</td>
<td>12</td>
<td>20</td>
<td>30 (4&quot;) 12 (6&quot;)</td>
</tr>
<tr>
<td>Temperature range: ambient to</td>
<td>60°C</td>
<td>60°C</td>
<td>95°C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1°C</td>
<td>±1°C</td>
<td>±1°C</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1°C</td>
<td>0.1°C</td>
<td>0.1°C</td>
</tr>
<tr>
<td>Power</td>
<td>1200 W</td>
<td>1200 W</td>
<td>2500 W</td>
</tr>
<tr>
<td>Inside dim. (mm)</td>
<td>500x300x185(h)</td>
<td>610x500x185(h)</td>
<td>600x500x280(h)</td>
</tr>
<tr>
<td>Outside dim. (mm)</td>
<td>640x340x240(h)</td>
<td>650x540x240(h)</td>
<td>816x547x600(h)</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>9.5 kg</td>
<td>20 kg</td>
<td>30 kg</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Ideal for conditioning asphalt specimens
- Water conditioning up to 60°
- wide internal area to accommodate several specimens

**ORDERING:**
- **AS 0148**
  - Digital water bath, 30 ltr. Cap.
  - 230V, 50-60 Hz, 1 ph
- **AS 0149**
  - Digital water bath, 30 ltr. Cap.
  - 230V, 50-60 Hz, 1 ph with cooling device
- **AS 0150**
  - Digital water bath, 48 ltr. Cap.
  - 230V, 50-60 Hz, 1 ph
- **AS 0151**
  - Digital water bath, 48 ltr. Cap.
  - 230V, 50-60 Hz, 1 ph with cooling device
- **AS 0152**
  - Digital water bath, 56 ltrs. Cap.
- **AS 0153**
  - Digital water bath, 56 ltrs. Cap.
  - with cooling device
- **AS 0154**
  - Digital water bath 110 ltr.
- **AS 0155**
  - Digital water bath 110 ltr.
  - with Cooling Device.

**Rate of Spread Balance**

**DESCRIPTION:**
The Rate of Spread Balance determines the spread of coated chippings. This is determined using the calibrated spring balance and the rate of spread of tray. The spring load balance will accept rates of the spread between 4 and 16kg/m².

Comprises:

Rate of Spread Tray, manufactured from aluminum, 300mm square complete with four chains and lifting eye attached to a spring balance

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>ACCESSORIES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 0156-1</td>
</tr>
<tr>
<td>AS 0156-2</td>
</tr>
</tbody>
</table>

**ORDERING:**
- **AS 0156**
  - Rate of spread complete

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>850g</td>
</tr>
</tbody>
</table>
Rice Test Vibrating Apparatus

**DESCRIPTION:**
The Rice Vibrating Apparatus is designed to be used in maximum specific gravity (rice test) and density determinations of bituminous paving mixtures with maximum accurate size up to 19.1 mm (3/4 inch).

The material designation that entraps air is virtually eliminated through the shaking process, resulting in more accurate and uniform test results.

The equipment comes complete with clip mounting and removal clamp for the pycnometer. There are several models of Pyknometer to choose from depending on the standard.

The Vacuum pump, vacuum pressure gauge, and connecting tubes are ordered separately.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>495x30 mm</td>
<td>5.5 kg</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Reduces operator errors improving accuracy and repeatability.

**ACCESSORIES:**
- AS 0157 Rice Test Vibrating Apparatus complete
- AS 0157-1 Filter flask, 1L
- AS 0157-2 Filter flask, 2L
- AS 0157-3 Filter flask, 4L
- AS 0157-4 Vacuum pressure gauge and connecting tube.
- AS 0157-5 Vacuum pump.

Vacuum Pyknometer

**DESCRIPTION:**
The Vacuum Pyknometer is used in the Rice Test to determine the maximum specific gravity of bituminous.

There are 3 models available of the Vacuum Pyknometer:

Vacuum Pyknometer 2000gr. aluminum with transparent cover for easy observation of sample testing connected with pressure gauge.

Vacuum Pyknometer 4000gr. aluminum with transparent cover for easy observation of sample testing connected with pressure gauge.

Vacuum Pyknometer 6000gr., 10 ltr capacity made from hard plastic fitted with pressure gauge and connecting tubes.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic 6000 gr.</td>
<td>(273 mm) x (406 mm) h.</td>
</tr>
<tr>
<td>Aluminum 2000 gr.</td>
<td>(191x152mm)</td>
</tr>
<tr>
<td>Aluminum 4000 gr.</td>
<td>(191x229mm)</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Optimal for mixes with aggregates
- O-Ring design seal prevents leakage
- Complete user control of water level with adjustable valve

**ORDERING:**
- AS 0157 Vacuum Pyknometer, 2000 gr. aluminum.
- AS 0159 Vacuum Pyknometer, 4000 gr. aluminum.
- AS 0160 Vacuum Pyknometer, 6000 g plastic.

**ACCESSORIES:**
- AS 0158-1 Vacuum Pressure gauge and connecting tubes
**Percentage Refusal Density (PRD)**

**DESCRIPTION:**
The Vibrating compaction hammer is mainly used for the P.R.D. Percentage refusal density test as well as the compaction of Proctor, CBR soil specimens. As it provides an alternative method for the compaction of soil samples in the determination of dry density/moisture content relation.

The set comes complete with: the vibrating hammer, supporting frame, 2 sizes tamping foot (Small, 102 mm dia. Large, 146 mm dia.), extension shank 300mm. P.R.D. Split mold and baseplate, 1 pcs.

**MAIN FEATURES:**
- Constant speed with variable speed control
- Durable aluminum housing
- Soft grip and shock-absorbing handle
- Easy to change tool by the single-step holder
- Functional and robust design

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Overall dimensions</th>
<th>105x430x270 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight approx.</td>
<td>7 kg</td>
</tr>
</tbody>
</table>

**ORDERING:**
AS 0161
Percentage Refusal Density complete with accessories

**ACCESSORIES:**

<table>
<thead>
<tr>
<th>AS 0161-1 Helding frame</th>
<th>AS 0161-5 Large Tamping Foot 146 mm Dia</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 0161-2 Split Mold and Baseplate</td>
<td>AS 0161-6 300mm Shank, For Tamping foot</td>
</tr>
<tr>
<td>AS 0161-3 Vibrating Hammer</td>
<td>AS 0161-4 Small Tamping Foot 102 mm dia</td>
</tr>
</tbody>
</table>

**Solvent Recovery Unit**

**DESCRIPTION:**
Used to recover the solvent liquid after its use for the extraction tests. This unit has been designed to recover non-flammable solvents and consists of two stainless steel chambers, one for dirty solvent and the other for the cleaned solvent. An electric heater in the left-hand chamber distils the solvent, which then passes through a water cooling system and drops into the second chamber ready for re-use in a new test. Once the process is completed, a temperature switch automatically stops the heating elements.

Supplied complete with: 10 m plastic tube, tube clamps, sieve insert 0.6 mm opening and one lid. Particularly useful to recover solvent used with the Paper filter extractor, Wire mesh extractor, Kumagawa extractor, Reflux extractors, Filterless centrifuge binder extractors.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Max. temperature</th>
<th>150°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>1200 W</td>
</tr>
<tr>
<td>Overall dimensions</td>
<td>400x320x650 mm</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>17 kg</td>
</tr>
</tbody>
</table>
**Vialit Plate, Adhesion Test Apparatus**

**DESCRIPTION:**
The Vialit Plate Apparatus is used to assess the adhesion property of aggregates to bitumen.

Supplied complete with a metal basement with three vertical pointed rods to hold the flat steel plate, 50 cm. high vertical rod with a slot at the upper end for the steel ball to drop, a 512 g steel ball, 6 metal test plates and a hand-operated rubber wheel roller.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400x1400x400 mm</td>
<td>45 kg</td>
</tr>
</tbody>
</table>

**ORDERING:**
AS 0163
Vialit Plate

**ACCESSORIES:**
AS 0163-1
Steel Ball, 512gr
AS 0163-2
Mechanic Aggregate Deployment
AS 0163-3
6 Metal test plates

---

**Benkelman Beam Apparatus**

**DESCRIPTION:**
The Benkelman Beam Apparatus is designed to determine the deflection of a flexible pavement or road surface under moving wheel loads.

The Benkelman Beam Apparatus Comprises:
The equipment is lightweight and made of aluminum for easy portability and use at any test location, the length of the Benkelman beam is 250 cm. One end of the beam rests at a point under investigation while the beam is pivoted in the center.

The free end carries a dial gauge to record the deflections while the other end is kept on a stable platform.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Main Body</th>
<th>1397 mm long</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe Beam</td>
<td>Aluminum, 2.4 m long</td>
</tr>
<tr>
<td>Open Length</td>
<td>3.7 m</td>
</tr>
<tr>
<td>Weight</td>
<td>15.9 kg</td>
</tr>
</tbody>
</table>
Traveling Beam Device

**DESCRIPTION:**
The Travelling Beam Device is used for detecting surface irregularities in both concrete and asphalt pavement.

The apparatus comprises of a 3-meter length beam with rigid wheels at the extremes and the middle, which can detect any vertical deviation of the surface from a straight-line between the two wheels at the ends of the machine.

Measuring the capacity of the device is ±25 mm with 5mm increments. It comprises manual dye marker which can mark irregular surfaces of the road.

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATIONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>720x1600x500 mm</td>
</tr>
</tbody>
</table>

Rolling Straightedge Apparatus

**DESCRIPTION:**
The Rolling Straightedge measures depressions on the pavement surface on analog scale 0-12mm + 0.25mm. The straightedge also has an odometer for accurate determination of distance traveled in units of 1 meter.

The Rolling Straightedge is pushed at 1-2km/h and the number of irregularities, their length, and distance from the start, are recorded.

The national specifications for surface regularity are then compared and the pavement accepted or rejected and or remedial work undertaken.

The Rolling Straightedge simulates a 3m rigid straightedge sliding along the road surface, and consists of a rigid frame supported on rubber-tyred wheels arranged in two parallel rows, with the centers of the wheels in one row opposite the gaps between the two parallel rows of supporting wheels, is free to move such that it detects vertical movements of this wheel which are then transmitted to a pointer and scale, on the instrument head.

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATIONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>1300x500x450 mm</td>
</tr>
</tbody>
</table>