

ADVANCED PAVEMENT TESTING

# BUYER'S GUIDE

## Bitumen Penetration Test STANDARDS

EN 1426 | EN 13880-2 | ASTM D5 |  
ASTM D127 | AASHTO T49 | AFNOR T66-004  
| DIN 52210 | IP 49 | JIS K 2207

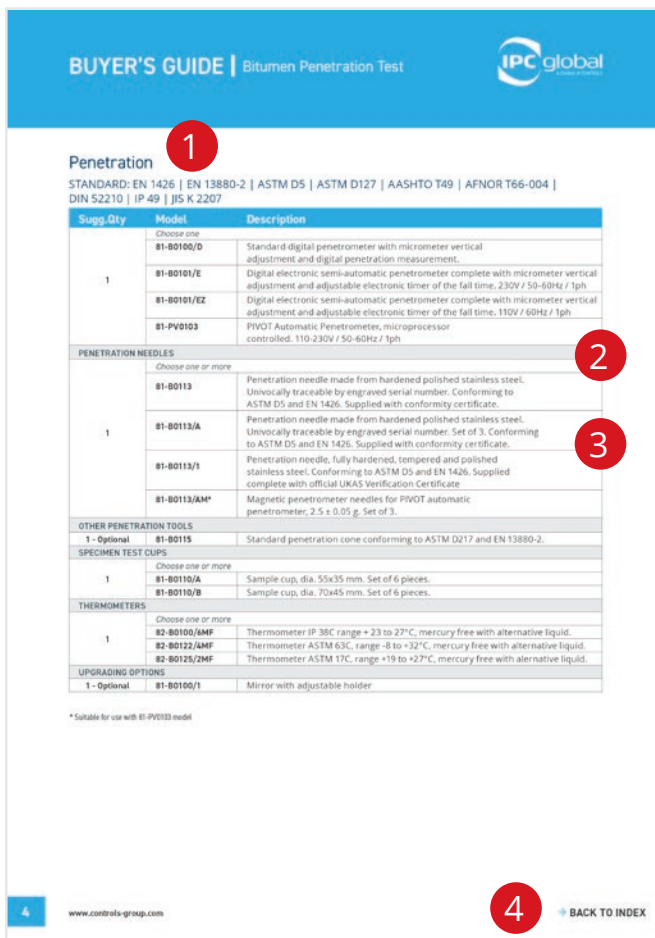
## How to use the Buyer's Guide

IPC Global carries a wide range of advanced pavement testing equipment to fit the specific needs of an asphalt and bitumen materials testing laboratory.

We have developed this Buyer's Guide to help you decide which model of penetrometer is right and useful for your bituminous penetration tests.

First, select and click the model you wish to use in the Index to your right. This will take you to a dedicated page for the selected model that includes a summary table with the suggested instrument and required accessories to perform the test.

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**Penetration**

STANDARD: EN 1426 | EN 13880-2 | ASTM D5 | ASTM D127 | AASHTO T49 | AFNOR T66-004 | DIN 52210 | IP 49 | JIS K 2207

Sugg. Qty	Model	Description
Choose one		
1	81-80100/D	Standard digital penetrometer with micrometer vertical adjustment and digital penetration measurement.
	81-80101/E	Digital electronic semi-automatic penetrometer complete with micrometer vertical adjustment and adjustable electronic timer of the fall time. 230V / 50-60Hz / 1ph
	81-80101/EZ	Digital electronic semi-automatic penetrometer complete with micrometer vertical adjustment and adjustable electronic timer of the fall time. 110V / 60Hz / 1ph
	81-PV0103	PIVOT Automatic Penetrometer, microprocessor controlled. 110-230V / 50-60Hz / 1ph
PENETRATION NEEDLES		
Choose one or more		
1	81-80113	Penetration needle made from hardened polished stainless steel. Univoically traceable by engraved serial number. Conforming to ASTM D5 and EN 1426. Supplied with conformity certificate.
	81-80113/A	Penetration needle made from hardened polished stainless steel. Univoically traceable by engraved serial number. Set of 3. Conforming to ASTM D5 and EN 1426. Supplied with conformity certificate.
	81-80113/I	Penetration needle, fully hardened, tempered and polished stainless steel. Conforming to ASTM D5 and EN 1426. Supplied complete with official UKAS Verification Certificate
	81-80113/AM*	Magnetic penetrometer needles for PIVOT automatic penetrometer; 2.5 ± 0.05 g. Set of 3.
OTHER PENETRATION TOOLS		
1 - Optional	81-80115	Standard penetration cone conforming to ASTM D217 and EN 13880-2.
SPECIMEN TEST CUPS		
Choose one or more		
1	81-80110/A	Sample cup, dia. 55x35 mm. Set of 6 pieces.
	81-80110/B	Sample cup, dia. 70x45 mm. Set of 6 pieces.
THERMOMETERS		
Choose one or more		
1	82-80100/AMF	Thermometer IP 38C range + 23 to 27°C, mercury free with alternative liquid.
	82-80122/AMF	Thermometer ASTM 63C, range -8 to +32°C, mercury free with alternative liquid.
	82-80125/2MF	Thermometer ASTM 17C, range +19 to +27°C, mercury free with alternative liquid.
UPGRADING OPTIONS		
1 - Optional	81-80100/I	Mirror with adjustable holder

\* Suitable for use with 81-PV0103 model

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1. Test method and configuration type
2. Name of main instrument or accessory
3. Choose one or several accessories
4. Go back to Index by clicking here "BACK TO INDEX" button

## Introduction to Penetration

The penetration test is performed for determining the consistency of bituminous materials by measuring the resistance to penetration by a needle, typically loaded by 100g weight, with measurement time of 5 seconds. The test specimen is poured into a metal cup and the test temperature is typically 25°C. The result is measured with a resolution to 0.1mm and reported into penetration units. The test is one of the oldest ones for binder properties determination and it's still used for binders' classification (so called "Penetration Grading").

**The product range includes:**

### Digital Penetrometer - Manual and Semi-Automatic Version

#### Digital Penetrometer

**The digital penetrometer includes a digital penetration measurement gauge with 0.01 mm precision and automatic zeroing function, and a plunger release button.**

The semi-automatic model is supplied complete with automatic controller with adjustable timer, automatically releasing the plunger by a magnet. Both models are provided with lead screw gear arrangement, leveling screws, and spirit level. The test requires the penetration cup to be put into a thermostatically controlled water bath. → [Explore Online](#)

### PIVOT - Fully Automatic Penetrometer

#### PIVOT

**This model allows a fully automatic performance of the penetration test.**

The entire test cycle (rapid approach, starting point determination, penetration and return to the initial position) is automatically performed by simply pressing the start button on the touch screen display. The penetration is measured by a contactless displacement transducer, with 0.01 mm resolution, and the real time penetration / time curve is displayed. → [Explore Online](#)

## Penetration

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Sugg.Qty	Model	Description
1	<i>Choose one</i>	
	<b>81-B0100/D</b>	Standard digital penetrometer with micrometer vertical adjustment and digital penetration measurement.
	<b>81-B0101/E</b>	Digital electronic semi-automatic penetrometer complete with micrometer vertical adjustment and adjustable electronic timer of the fall time. 230V / 50-60Hz / 1ph
	<b>81-B0101/EZ</b>	Digital electronic semi-automatic penetrometer complete with micrometer vertical adjustment and adjustable electronic timer of the fall time. 110V / 60Hz / 1ph
	<b>81-PV0103</b>	PIVOT Automatic Penetrometer, microprocessor controlled. 110-230V / 50-60Hz / 1ph
<b>PENETRATION NEEDLES</b>		
1	<i>Choose one or more</i>	
	<b>81-B0113</b>	Penetration needle made from hardened polished stainless steel. Univocally traceable by engraved serial number. Conforming to ASTM D5 and EN 1426. Supplied with conformity certificate.
	<b>81-B0113/A</b>	Penetration needle made from hardened polished stainless steel. Univocally traceable by engraved serial number. Set of 3. Conforming to ASTM D5 and EN 1426. Supplied with conformity certificate.
	<b>81-B0113/1</b>	Penetration needle, fully hardened, tempered and polished stainless steel. Conforming to ASTM D5 and EN 1426. Supplied complete with official UKAS Verification Certificate
	<b>81-B0113/AM*</b>	Magnetic penetrometer needles for PIVOT automatic penetrometer, 2.5 ± 0.05 g. Set of 3.
<b>OTHER PENETRATION TOOLS</b>		
<b>1 - Optional</b>	<b>81-B0115</b>	Standard penetration cone conforming to ASTM D217 and EN 13880-2.
<b>SPECIMEN TEST CUPS</b>		
1	<i>Choose one or more</i>	
	<b>81-B0110/A</b>	Sample cup, dia. 55x35 mm. Set of 6 pieces.
	<b>81-B0110/B</b>	Sample cup, dia. 70x45 mm. Set of 6 pieces.
<b>THERMOMETERS</b>		
1	<i>Choose one or more</i>	
	<b>82-B0100/6MF</b>	Thermometer IP 38C range + 23 to 27°C, mercury free with alternative liquid.
	<b>82-B0122/4MF</b>	Thermometer ASTM 63C, range -8 to +32°C, mercury free with alternative liquid.
	<b>82-B0125/2MF</b>	Thermometer ASTM 17C, range +19 to +27°C, mercury free with alternative liquid.
<b>UPGRADING OPTIONS</b>		
<b>1 - Optional</b>	<b>81-B0100/1</b>	Mirror with adjustable holder

\* Suitable for use with 81-PV0103 model

## Penetration (Continued)

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Sugg.Qty	Model	Description
<b>WATER BATH AND TEST TEMPERATURE CONTROL</b>		
<b>1 - Optional</b>	<i>Choose one or more</i>	
	<b>81-B0109</b>	Transfer dish with support.
	<b>81-B0109/A</b>	Transfer dish with support and locking elements for 55 mm dia. and 70 mm dia. sample cups (recommended for magnetic needles).
	<b>81-PV0102</b>	Water bath for bitumen penetration tests, including heating controller and cooling coil, immersion temperature probe, internal support grid and connections to mains water or water chiller. Temperature range 25 to 60 ± 0.1°C. 230V / 50-60Hz / 1ph
	<b>81-PV0102/Z</b>	Water bath for bitumen penetration tests, including heating controller and cooling coil, immersion temperature probe, internal support grid and connections to mains water or water chiller. Temperature range 25 to 60 ± 0.1°C. 110V / 60Hz / 1ph
	<b>81-PV0102/A</b>	Water bath for penetration test complete with internal water coil, support for specimen and water connections. To be used with external chiller series 81-PV0102/CHx
	<b>81-PV0102/CH</b>	Water chiller, with temperature controller with ± 0,1°C accuracy and fluid temperature range between 5 and 30°C. Suitable for chilling penetrometer water baths or temperature controlled setting time tests. 230V / 50-60Hz / 1ph
<b>81-PV0102/CHZ</b>	Water chiller, with temperature controller with ± 0,1°C accuracy and fluid temperature range between 5 and 30°C. Suitable for chilling penetrometer water baths or temperature controlled setting time tests. 110V / 60Hz / 1ph	

\* Suitable for use with 81-PV0103 model

## IPC Global Customer Care

IPC Global is the Advanced Pavement Testing Division of CONTROLS. As one of the longest established manufacturing companies in the world of Construction Materials Testing solutions, we are dedicated to supplying high quality, accurate, affordable, easy to use systems.

As a valued customer of CONTROLS, you will receive continuous, expert support and advice for your IPC Global equipment. Furthermore, we can offer full installation and training in the correct operation of your equipment.

For support from our expert Customer Care Team, contact your local CONTROLS office / distributor or email [support@controls-group.com](mailto:support@controls-group.com).

For more information, please visit [www.controls-group.com](http://www.controls-group.com).

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