Penetrometers

Automatic Ring and Ball Apparatus

UTAS-0128

The UTAS-0128 Automatic Ring and Ball Apparatus is a microprocessor-controlled automatic tester, which uses water or glycerol as the heating fluid to measure the softening point of bituminous materials.

A disk of the sample is held within a horizontal ring and forced downward a distance of 25.4 mm under the mass of a steel ball as the sample is heated at a prescribed rate in a water or glycerine bath.

The softening point is taken by two suitably positioned light barriers and the temperature is measured by a PT100 sensor. A magnetic stirrer, which is equipped with an adjustable speed control system, is used to maintain a consistent temperature distribution throughout the test.

The machine is equipped with software that is used to:

- Select the test method and the test parameters
- Run the test automatically
- Store, retrieve and print data
- Diagnose and calibrate the instrument.

The machine has an additional cooling system, which allows the sample to be cooled down quickly so the user can handle the glassware safely. This also allows the user to perform a number of tests throughout the day, by reducing the dead times between consequence analysis.

The apparatus consists of a heater, cooling system, electric lifting system, and magnetic stirrer with speed control, temperature probe, glass beaker, ring and ball support, brass ring with steel ball and ball centering guides (2 pcs. each), light barrier system, microprocessor system and large graphic display with touch screen, RS 232 C port for PC or printer.

Main Features

- Pyrex beaker 800 cc capacity for sample heating.
- Microprocessor control with automatic programmable test sequences for water or glycerol
- RS 232 serial port for connection to PC or printer
- Colour large TFT graphic display with touch screen
- Electric lifting system
- PID controlled heating system
- Cooling system with solenoid valve control
- Magnetic stirrer with adjustable speed
- Digital light barrier system determines exact softening point of bituminous sample
- Software controlled system allows select test parameters, store and retrieve test results.

Firmware

- Date/Time, operator name, test number
- Test parameters conforming the type of test: 80°C and 80-150°C
- Preheating temperature and thermocouple calibration for measuring the heater temperature
- Magnetic stirrer speed adjustment from 10 to 150 rpm.
- Baud rate selection for PC and for printer

Safety Features

- Heater is automatically shut down at the end of the test cycle and cooling media and a solenoid valve is automatically opened by the controller.
- Automatic test interruption when there is a probe failure or when the probe is not positioned properly

Penetrometers

Semi-Automatic Digital Bitumen Penetrometer

UTAS-0120

The UTAS-0120 Semi-Automatic Digital Bitumen Penetrometer is used to examine the penetration of bituminous samples under a constant load, time and temperature. The Penetrometer consists of a cast iron base with coarse and fine levelling screws, a penetration timer unit, and a digital penetration measurement gauge with 0.01 mm readability.

To start the 5 second test, the user must press the start button of the penetration timer unit and the plunger, which is fitted with the needle, will be released.

A water bath (UTGE-4000 or UTGE-4050, 25±0,1 C) and a thermometer (IP38, ASTM 17C or 63C) required for the test should be ordered separately.

The Semi-Automatic Digital Penetrometer is supplied complete with;

- Penetration Needle, 2,5g, 1 pieces
- Transfer Dish
- Sample Cup Ø 55x35 mm, 3 pieces, stainless steel

Ring and Ball Test Set

UTAS-0130

The UTAS-0130 Ring and Ball Test Set uses the ring and ball method to determine the softening point of bituminous materials.

The Ring and Ball Test Set is supplied complete with;

- Hot Plate with Magnetic Stirrer
- Brass Rings, 2 pcs.
- Ball Centering Guides, 2 pcs.
- Thermometer, Temperature Sensor with Holder
- Steel Balls, 9.5 mm dia., 2 pcs.
- Ring Holder and Assembly
- Borosilicate Glass Vessel Beaker 600ml

Penetrometers

Automatic Digital Bitumen Penetrometer

UTAS-0126

The UTAS-0126 Automatic Electronic Penetrometer is used for determination of the needle penetration according to EN 1426, ASTM D5 and AASHTO T49 standards. To determine the penetration depth of the needle, a pulse type electronic measuring system is used. The needle is separated from the plunger during the test and this essentially eliminates friction during the test.

Before the start of each test, the measuring system automatically resets. The penetration needle then moves towards the sample by using the electric drive. By using the joystick situated on the front panel, the position of the needle can be adjusted. An ultra-bright LED lamp and a magnifying glass come supplied with the apparatus. The plunger is then automatically released onto the sample, and once the test is finished, it is raised automatically. The test result is displayed on the digital display. The user can easily remove the plunger, if the weight needs to be calibrated.

A water bath (UTGE-4000 or UTGE-4050, 25±0.1°C) and a thermometer (IP38, ASTM 17C or 63C) required for the test are ordered separately.

The Automatic Electronic Penetrometer is supplied complete with;

- Penetration Needle, 3 pieces
- Transfer Dish
- Sample Cup, Ø 55x35 mm, 6 pieces, stainless steel

Technical Specifications

Automatic Digital Bitumen Penetrometer	
Measuring Range	0-50 mm
Resolution	0.01 mm
Test Load	100 g (plunger 97.5 g + 2.5 g penetration needle)
Test Time	5 seconds (adjustable from 0.1 to 9999 sec.)
Dimensions	270x480x750 mm
Weight (approx.)	24 kg
Power	75 W

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclinometers, Extensometers, Tiltmeters, Load Cells and Dataloggers