

IPC Global®

AMPT/SPT Asphalt Mixture Performance Tester

The Most Useful Tool Available for Evaluating HMA (Hot Mix Asphalt)



The science
of testing
made easy®



INNOVATIVE DESIGN FOR NCHRP 9-19 AND 9-29

The AMPT is specifically designed to perform the three asphalt tests of NCHRP Projects 9-19 and 9-29 - Dynamic Modulus, Flow Number and Flow Time, with ease.

The AMPT helps you to:

IMPROVE

Mix Designs that perform
Structural Designs
Pavement life and reduce maintenance

EVALUATE

HMA Mixes
Modified HMA

ANALYSE

Pavement Failure

CREATE

Master Curves

Complies with AASHTO TP79.

A UNITED EFFORT

IPC Global's AMPT was designed to perform, and has been approved for, the three asphalt tests of Projects 9-19 and 9-29 of the National Cooperative Highway Research Program (NCHRP). The AMPT complies with AASHTO TP79 Determining the Dynamic Modulus and Flow Number for Hot Mix Asphalt (HMA).

FULLY-INTEGRATED AND ROBUST

IPC Global's innovative thinking has produced the all-in-one compact AMPT. A fully-integrated HMA testing machine incorporating high-performance hydraulic actuator; quiet, built-in, air-cooled hydraulic pump; built-in refrigeration and heating unit; compressed air-driven confining pressure system; integrated triaxial cell; environmental chamber with its own temperature control unit; and digital control and data acquisition system. The AMPT is robust and transportable. Its streamlined external controls make it easy to operate. The AMPT is suitable for static laboratories or mobile facilities.

The Asphalt Mixture Performance Tester (AMPT) is the culmination of two National Cooperative Highway Research Program (NCHRP) projects. IPC Global have been involved in these projects from the beginning with development work done on IPC Global equipment. The IPC AMPT has been evaluated successfully by NCHRP.

STREAMLINED OPERATION

The most important feature of the AMPT is the specimen testing chamber. For this, IPC Global employs a high specification triaxial cell, which doubles as an environmental chamber.

The crystal clear acrylic triaxial cell allows unimpeded (360 degree) view of the specimen without special lighting. It is raised and lowered by the unit's compressed air system with a two-button safety interlock.

This innovative design eliminates moving a heavy cell assembly when changing test specimens.

The left-mounted triaxial cell provides ample space for a laptop or PC monitor.

THE ULTIMATE IN HMA TESTING TOOLS

The system's software and controller accurately and automatically control the confining pressure. Temperature controlled air, in the integrated pressure vessel, is re-circulated by electric fan and is regulated by an internal heat exchanger. The air temperature is measured half way up the specimen and controlled using a dedicated temperature (PID) controller that provides thermal equilibrium within three minutes of closing the cell.



1. Place specimen in jig



2. Mount strain transducers



3. 360° view, testing can commence

- Three axial strain transducers, equally spaced around the circumference of the specimen provide strain measurement averaging and eliminate errors caused by non-uniform bending during the dynamic modulus test.
 - The clip-on strain transducer mounts and spring-loaded displacement transducers are quick and easy to attach. Epsilon extensometers are available as an option.
 - The Swiss-made base connectors make a quick and reliable connection.
- IPC Global's innovative AMPT gauge point fixing jig makes it quick and easy to accurately fix gauge points for on-specimen transducers. This eliminates potential errors and saves time.
- A convenient way to glue gauge points to the specimen. Gauge points are positioned on the specimen at the flick of a switch.
 - Fixing jig comes with 'built-in' vacuum generator and handy membrane stretcher.

View our online video demonstration and see how easy it is to operate the AMPT and fixing jig (www.ipcglobal.com.au)

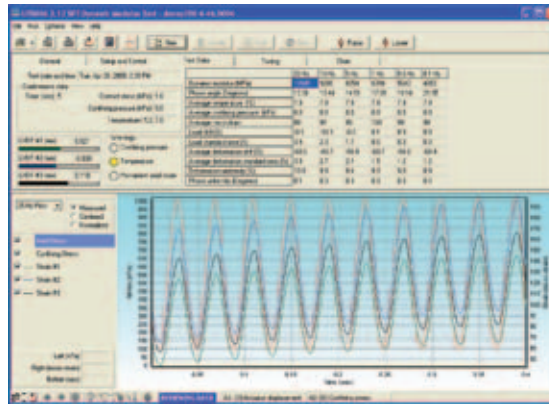
RENOWNED SOFTWARE AND CONTROL

Our world-class UTS test application software is proven for AMPT and is used extensively by transport departments and research laboratories. UTS software delivers:

- Fast accurate testing of Dynamic Modulus E*, Flow Number and Flow Time
- Dynamic Modulus (Time Temperature Superposition) Master Curve development application



- Optional damage characteristic curve of asphalt concrete from direct tension cyclic fatigue test
- Purpose-built applications with dialogue help boxes for automated test routines
- Dynamic Modulus E* Software
 - Automatically steps through each frequency sweep using the preconditioning phase of each sweep to establish the correct load to meet the target strain
 - Records, processes and tabulates results from each frequency
- Displays 'Live' transducer levels from load cell, confining pressure and on-specimen transducers.
- Controls key test parameters and displays a warning if parameters are outside tolerance
- Portable data files for remote reviewing, analysis and troubleshooting
- Powerful, professional Delphi software with real-time graphs
- Easy to read graphics screens for test set up and reviewing results.



Controlling AMPT is IPC Global's Integrated Multi-Axis Control System (IMACS). IMACS delivers leading edge performance, unparalleled control and the ultimate in flexible data acquisition;

- Real-time digital computer control
- Excellent waveform fidelity from the integrated acquisition and control functions at speeds up to 5kHz, simultaneous on all channels
- Low data noise performance with at least 4x over-sampled data
- Exceptional data resolution and control with up to 20bit auto-ranging data acquisition
- Flash based firmware allows field updates of all modules
- USB communication port at 10Mb/s
- Total confidence in measurements from analogue inputs that auto-calibrate on power-up
- Measure and Control – axial displacement, axial load, on-specimen axial displacement x3, confining pressure, temperature.

GREAT BENEFITS

Complete confidence in your data and results

- IPC Global AMPT is tried, tested and proven
- Involved from the start of the NCHRP 9-19, IPC Global produced the first commercial AMPT on the market

Saves you time and is easy to use

- Technician friendly–quick and easy test set-up
- Simple, reliable, accurate specimen preparation

Amazing value for money

- Fully integrated, the AMPT has everything you need
- Refined systems that are robust and reliable



DYNAMIC MODULUS E*

Dynamic Modulus E*, a performance-related property, for mixture evaluation and characterising the stiffness of HMA for use as an input parameter for AASHTO “Mechanistic-Empirical Pavement Design Guide”.

- Evaluate potential for **rutting** and **fatigue cracking**
- Create master curves for structural design
- Improve mixture design
- Assess modified binders and local materials
- Forensic analysis of pavement failure

FLOW NUMBER

Flow number is related to the resistance of HMA to permanent deformation.

- Repeated load creep tests
- Evaluate rutting
- Accurate simulation of actual loading

FLOW TIME

Flow time is a quick and simple measurement of the resistance of HMA to permanent deformation.

- Static creep tests
- Measure permanent deformation for rutting evaluation

IPC Global’s AMPT is the easiest and most reliable way of performing these tests.

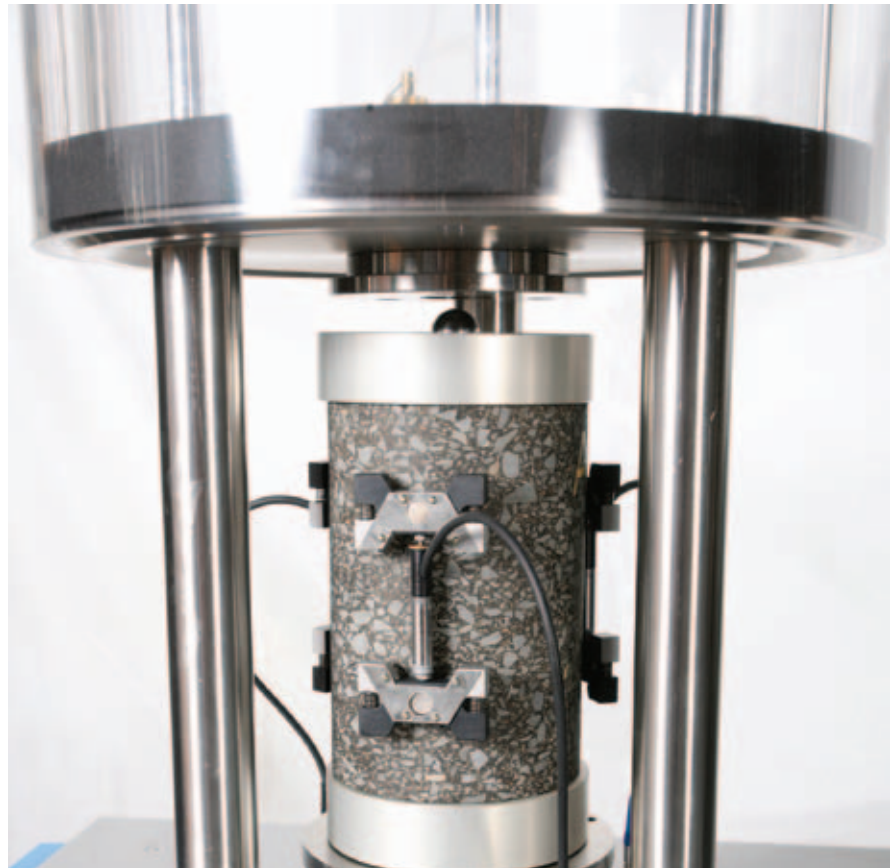
Minimal training is needed for your technicians to become AMPT test experts.

Optional—Direct Tension Cyclic Fatigue, Indirect Tension and Overlay test packages.

SPECIFICATIONS



Load Capacity	Static: 15 kN Dynamic: 13.5kN
Actuator stroke	30mm
Specimen Size	100mm (dia) x 150mm (H) nominally
Environmental Temperature	4 to 60°C
Confining Pressure	0 to 210kPa
Mains Power	208V / 230V 50 or 60Hz; 3.4kW
Noise Level	Less than 70db at 2m
Air Supply	Clean dry air at 400 to 500kPa; 2 litres/sec
Size	1330 (H) x 630 (D) x 1100 (W) mm
Weight	250kg (excluding oil)





IPC Global Customer Care

At IPC Global we are proud of our products.

We're dedicated to supplying high quality, accurate, affordable, easy-to-use systems for advanced testing of asphalt, soil, unbound granular and other construction materials.

As a valued customer of IPC Global you will receive continuous, expert support and advice for your instrument. Furthermore, we ensure new users are trained in the correct operation of your IPC Global equipment.

For support from our expert customer care team, contact your local IPC Global distributor or IPC Global directly on +61 3 9800 2200 or email techsupport@ipcglobal.com.au.

Visit our website for more information:
www.ipcglobal.com.au

Above: Clip-on strain transducer mounts and spring-loaded displacement transducers

Disclaimer:

The design and specifications of any IPC Global product may be subject to change without notice.

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The science of testing **made easy**®

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