

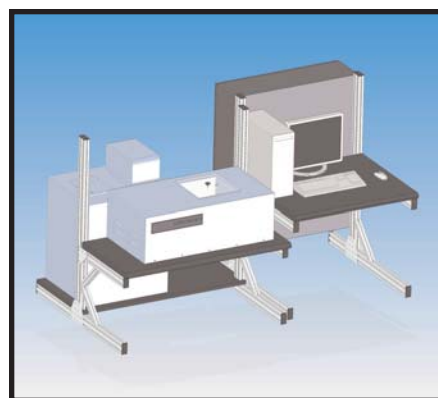
Direct Tension Tester.

from Interlaken Technology

The best choice for Superpave™ low temperature binder testing.

Interlaken is proud to offer its Superpave Direct Tension Tester, a machine for evaluating the low temperature thermal properties of asphalt binder.

The Direct Tension Tester (DTT) is now offered with an optional "Blister Fixture" that allows for the evaluation of crack sealants. The direct adhesion test is also available. The direct adhesion test is used to determine the adhesion strength of hot-poured crack sealant at the application temperatures.



*Get it right the first time
with testing equipment from Interlaken.*





Lab Tested.

Features

The Interlaken Superpave Direct Tension Tester has been evaluated by the Federal Highways Administration and meets the following specifications all AASHTO, SHRP and FHWA specifications. It is designed to perform asphalt binder tests in accordance with the AASTHO T 314 and ASTM D 6723 test protocols.

This is a computer-controlled machine that features:

- * Closed Loop Control and Data Acquisition
- * Fully integrated Software Package
- * Real Time Data Acquisition
- * Manual or Automatic Test Capability
- * Exlar actuator for Higher Accuracy and Dynamic Performance
- * Temperature-Controlled Fluid Bath
- * Choice of Chiller Options

Description

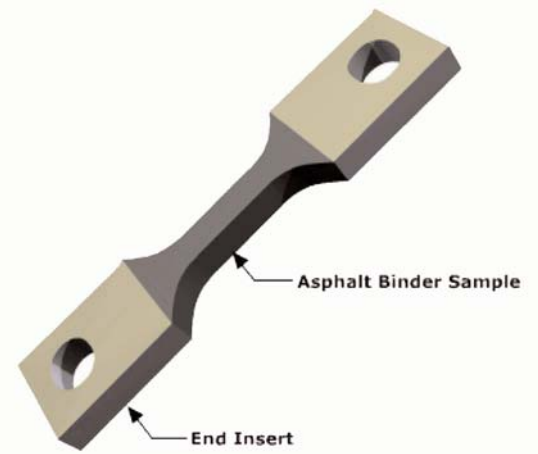
The Interlaken Direct Tension System for asphalt is a complete instrument for evaluating stiffness and failure properties of asphalt binders at low "in-service" temperatures. (Use The Interlaken DT for AASHTO T 314).

Interlaken DT results, in conjunction with Bending Beam Rheometer (BBR) data, provide a more complete characterization of the asphalt binder. In addition, Interlaken DT data predict the temperature at which thermal cracking would occur in the roadway.

The Interlaken DT features both the simplicity required of a routine specification tester for QA/QC and the versatility of a full research instrument, all in one. In fact, it is just as easy to determine the Pass/Fail analysis for asphalt Performance Grading as it is to perform comparisons of binder/additive and binder/modifier interactions over a wide range of strain rates.



With Confidence.



Mechanical System

To provide the most accurate and repeatable results possible, the following key features have been incorporated into the overall system design. The Interlaken Direct Tension System employs a stiff load frame and measuring head that provides very little friction and errors associated with system compliance. The measuring head is driven by a high performance Exlar actuator providing maximum dynamic response and sensitivity without the backlash or wind-up of gearmotor driven systems. All key sensor and load cell components are isolated from the fluid bath, ensuring a safe and stable environment. The linear sensor is mounted across the specimen to provide the most accurate strain rate and position information. The Interlaken system is capable of forces in excess of 500N and speeds from 0.372 mm/min to 312 mm/min. Serviceability and reliability were key considerations in the robust design and final packaging.

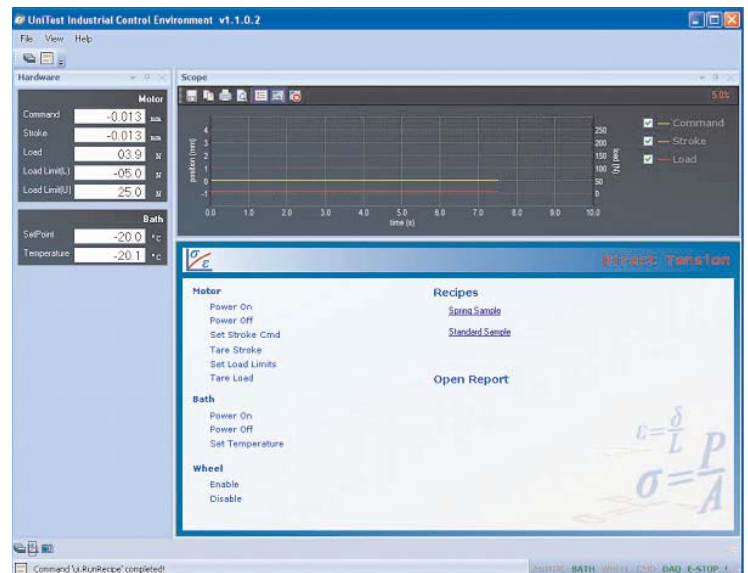
Control and Data Acquisition

The Windows® based software is completely automated requiring minimal operator intervention. Developed specifically for performing the AASHTO TP314 asphalt binder test of low temperature thermal properties, it controls and records all appropriate parameters. Results can be simultaneously displayed on the computer screen and saved to disk, while the test is in progress. The data may be easily exported to other applications such as Microsoft Excel. Both data acquisition & closed loop control utilize integrated 16 bit digital processing to ensure precision and sensitivity.

Key Features:

- Fully Integrated Software Package
- 16 Bit Real Time Data Acquisition
- Automatic or Manual Operation
- Specification & Research Modes
- Closed Loop Drive Control

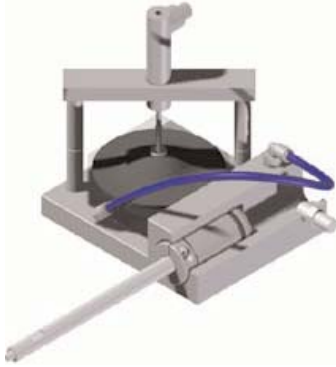
- Wide Range Precision Linear Servo-Motor
- Computer Controlled Fluid Bath
- Standard PC & Windows® Compatible



Blister Test Option

The blister test is used to determine the adhesion strength of hot-poured crack sealant at the application temperatures.

The blister test is a test of fracture. The objective of the test is to inject alcohol between a substrate (aluminum plate) and hot-poured crack sealant in such a way that the sealant is detached from the substrate in the form of a blister. The energy balance principle is used to calculate the adhesive fracture energy, which is a fundamental and unique property of each individual interface. Pressure of the injected alcohol is measured using a pressure transducer, while the height of the blister in the center of the dome will be measured through an LVDT. Using the data collected from the test period and the energy balance principle, one can calculate the adhesive fracture energy.

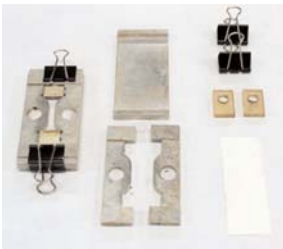


Adhesion Test Option

The adhesion test is a test of fracture. The object of the test is to apply tensile forces to the interface between sealant and aggregate. Sealant is confined between two half cylindrical aggregate (aluminum can be used for standard test). The applied force and displacement can be recorded as functions of time. Energy required to break the bond can be calculated by measuring the area under the load-displacement curve. This energy can be considered a measure of bonding. In addition, the maximum force to failure can be reported as adhesion strength.

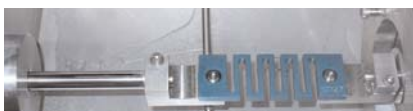
Specimen Prep Kit

System includes 6 asphalt specimen molds and 6 end tabs, developed for performing AASHTO TP314. Additional sets are optionally available.



Verification Specimen

A verification spring along with stress-strain characteristics are provided with your Interlaken Direct Tension Tester. The verification spring is provided to verify calibration of the load cell and displacement transducer at least every six months and when measurements are suspect.



Pictured at left: Verification spring positioned in Direct Tension Tester.

Specifications

SPECIFICATIONS:

Maximum load: 500 N
Speed: 0.372 to 312 mm/min
Stroke: 75 mm
Temperature (std) Range: +6° to -25° C, other temperature options available to -40° C.
Temperature Stability: +/-0.1° C or better
Accuracy: Rate:
Force: +/-0.1% of setting
+/-0.5% of reading
(to 2% of capacity)
Power: 110VAC 60Hz 15 amps,
220 VAC, 50Hz
DT Unit Dimensions:
Overall (LxHxW): 38"x27"x15"
Bath (LxW): 11"x11.5"
Control System/Desk Dimensions:
Overall (LxHxW): 46"x52"x30"

AASHTO 314 requires 20 mm travel with 1 micron resolution (4 *10E-5 in) and 500 N load. Test speed is 1 mm / min.

Actuator: Exlar GSM20-0301

2048 count encoder

0.11 in. lead

4.89*10E-5 in. / count

5 counts / sec minimum

Minimum Speeds

2.44*10E-4 in / sec minimum rate or 1.46*10E-2 in / min minimum

6.20*10E-3 mm / sec minimum rate or 0.372 mm / min minimum

10E6 counts / sec maximum (B&R)

Maximum Speeds

3000 RPM max speed, this requires 51 volts at no load.

Max RPM based on counts is 123

12.3 in / min max speed 312 mm / min max speed

0.2 in / sec max speed 5 mm / sec max speed

Note: Specifications are subject to change without notice

Interlaken Technology Corporation

8175 Century Boulevard
Chaska, MN 55318 USA
Call +1 952 856 4210
e-mail sales@interlaken.com
www.interlaken.com

