Pave your way to comprehensive asphalt measurement.

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Asphalt and bitumen literally ground our daily lives in the shape of roads, pavements, runways, and more. Anton Paar offers a variety of solutions for measuring the density and viscosity as well as the deformation and flow behavior of asphalt components and compositions, for digesting asphalt samples for subsequent trace analysis, and for determining parameters such as the softening point, penetration, and breaking point.
Production of asphalt/bitumen

01 Dynamic shear rheometer: SmartPave 102
SmartPave 102 is based on the well-established EC motor system from MCR-rheometers and meets the highest measuring requirements, especially in research and development. It incorporates innovative features like Toolmaster™, a Peltier temperature device for dry sample heating, and step-by-step instructions for measuring procedures that take bitumen and asphalt binder rheology to previously unattained levels of accuracy.

Standards:
- AASHTO T315, ASTM D7175 (SHRP-Test/Superpave PG)
- AASHTO T316, ASTM D4402,
- DIN EN 13302 & 13702 (Rotational Viscosity)
- AASHTO T350, ASTM D7405,
- DIN EN 16659 (MSCR-Test)
- AASHTO TP101-UL (LAS-Test)
- AASHTO TP123 (BYET)
- FGSV AL 720 (BTSV)
- FGSV AL 721 (Constant Shear Rate)
- FGSV AL 722,
- DIN EN 14770 (Temperature Sweep)
- FGSV AL 723 (MSCR-Test)

Parameters:
- Rotational viscosity
- Complex shear modulus
- Phase angle
- Performance grade
- Elastic response
- Temperature
- Non-recoverable creep compliance
- Percentage recovery

02 Dynamic shear rheometer: SmartPave 92
SmartPave 92, also based on the well-established, highly accurate EC motor system, is the ideal device for the daily measuring routines and quality control in test laboratories. The step-by-step software, Toolmaster™, TruRay (integrated light), QuickConnect (fast and easy mounting of the measuring system), and many other features guarantee excellent ease of use and convenient operation for bitumen and asphalt measurements.

Standards:
- AASHTO T315, ASTM D7175 (SHRP-Test/Superpave PG)
- AASHTO T316, ASTM D4402,
- DIN EN 13302 & 13702 (Rotational Viscosity)
- AASHTO T350, ASTM D7405,
- DIN EN 16659 (MSCR-Test)
- FGSV AL 720 (BTSV)
- FGSV AL 721 (Constant Shear Rate)
- FGSV AL 722,
- DIN EN 14770 (Temperature Sweep)
- FGSV AL 723 (MSCR-Test)

Parameters:
- Rotational viscosity
- Complex shear modulus
- Phase angle
- Performance grade
- Elastic response
- Temperature
- Non-recoverable creep compliance
- Percentage recovery

03 Rotational rheometer: RheolabQC
RheolabQC is a very robust and reliable instrument that measures the rotational viscosity of bitumen and asphalt products at elevated temperatures. The determination of flow curves and the temperature-dependent flow behavior of these materials gives you valuable information about their processability. A Peltier temperature device ensures fast and accurate heating up to 180 °C and disposable cups minimize the cleaning required.

Standards:
In correlation with ASTM D4402, AASHTO T316, and DIN EN 13302 (temperature control up to max. 180 °C)

Parameters:
- Rotational viscosity
- Temperature
- Shear rate
- Shear stress

04 Density meter for petroleum products: DMA 4200 M
DMA 4200 M measures the density and specific gravity of highly viscous samples like bitumen and asphalt. Its U-tube made of Hastelloy C276 is highly resistant and virtually unbreakable. It improves, accelerates, and simplifies density measurement of bitumen and asphalt binders. Using DMA 4200 M makes tedious, manual, and time-intensive measurement with pycnometers or hydrometers a thing of the past.

Standards:
- ASTM D8188, in correlation with ASTM D70 and ASTM D3142

Parameters:
- Density
- API gravity
- Relative density

05 Softening point tester: RKA 5
The RKA 5 ring-and-ball softening point tester with its laser-based detection system automatically determines the temperature at which bitumen attains a particular degree of softness. The instrument is ideal for bitumen as the mixtures have no sharply defined melting point and become softer and less viscous as the temperature rises.

Standards:
- ASTM D36, EN 1427, EN 13179-1, JIS K 2207, AASHTO T53
- FGSV AL 720 (BTSV)
- FGSV AL 721 (Constant Shear Rate)
- FGSV AL 722,
- DIN EN 14770 (Temperature Sweep)
- FGSV AL 723 (MSCR-Test)
Microwave-assisted acid digestion:
Multiwave 7000
Multiwave 7000 completely digests your bitumen and asphalt samples for further analysis with ICP technology. When monitoring and analyzing contaminations, good sample preparation is the key factor: only with the right microwave-assisted sample preparation can a complete and sufficient digestion be guaranteed.

Parameters
Sample preparation for elemental analysis

Fraass breaking point tester:
BPA 5
The BPA 5 automatic Fraass breaking point tester determines the brittle behavior of bitumen and asphalt at low temperatures. A thin, flat steel plaque, coated with the sample, is flexed under specified conditions at a descending series of temperatures until a crack occurs.

Standards:
EN 12593, IP 80, JIS K 2207
Parameters
Fraass breaking point

Penetrometer:
PNR 12
The modular PNR 12 penetrometer automatically measures the resistance a material provides against being pierced by a specifically shaped penetrator such as a needle. PNR 12 is suitable for consistency determination and provides the basic value for the product specification of bitumen and asphalt.

Standards:
ASTM D5, EN 1426, EN 13179-2, AASHTO T49, JIS K 2207, GOST 33136
Parameters
Penetration

Cleveland flash and fire point tester:
CLA 5
The CLA 5 automatic open-cup flash and fire point tester measures the flash point, which describes the tendency to form a flammable mixture with air, and the fire point, which indicates the tendency for sustained burning, in bituminous materials.

Standards:
ASTM D92, ISO 2592, JIS K 2265-4, AASHTO T48, FTM 791-1103, IP 36, GOST 4333
Parameters
Flash point
Fire point

Particle size analyzer:
PSA 1090 L
The PSA measures the size of colloids in bitumen emulsions, enabling the optimization of application-relevant properties. The instrument is controlled by the user-friendly and easy-to-use software “Kalliope” and can be operated in the harshest environments due to its robust design. All optical components are mounted on a cast-iron base plate to ensure that the system remains in permanent alignment.

Standards:
ISO 13320, ISO 9276
Parameters
Particle size
Particle size distribution