



Anton Paar

GENERAL CATALOG

The Santner Foundation

Since 2003 Anton Paar has been owned by the Santner Foundation, a non-profit organization exclusively and directly aimed at charitable work. The foundation supports non-commercial scientific work and research in the field of natural science and technology for public utility, addiction prevention, and the rehabilitation of drug addicts.



Anton Paar develops, produces, distributes, and provides support for analytical instruments used in research, development, and quality control worldwide.

Ever since Mr. Anton Paar founded his one-man workshop in 1922, the Austrian-based company has continuously found new ways to merge high-precision engineering with scientific curiosity. The company currently has more than 3,400 employees and is active in over 110 countries worldwide.

Anton Paar is the world market leader in the field of density measurement, the determination of dissolved CO₂, and the analysis of materials' deformation and flow behavior. Customers of Anton Paar include the biggest international soft drink producers, breweries, petroleum-, food-, chemical-, pharmaceutical companies, and many more.

Anton Paar is committed to long-term partnerships with our customers and employees as well as responsibility towards society in general.

8	Alcohol Analysis
11	Analysis of Cold Flow Properties, Consistency
12	Analysis of Various Petroleum Properties
13	Atomic Force Microscopy
14	Automation and Robotics
16	Density and Concentration Determination
20	Dissolved CO₂ and O₂ Analysis
21	Flash Point Testing
22	Flash Point and Distillation Testing
23	Hardness Testing
24	Lab Productivity Systems
26	Microwave Digestion
28	Microwave Synthesis
29	Non-ambient XRD
30	Oxidation Stability Testing

31	Particle Characterization
37	Polarimetry
38	Process Instrumentation
46	Raman Technologies
47	Refractometry
49	Rheometry
52	SAXS/WAXS/GISAXS
53	Scratch Testing & Coating Thickness Testing
54	Soft Drink Analysis
55	Sugar Analysis
56	Surface Charge and Zeta Potential Analysis
57	Thermal Analysis
58	Thermometry and Calibration
59	Tribometry
60	Viscometry
64	Index of Standards

INNOVATION AND TRADITION

Innovation builds on research and development, but goes beyond technology and involves all of Anton Paar's employees. Innovation is the art of finding answers to tomorrow's questions. Customers need reliable application solutions which are precise, economic, and easy to use. Here are some of the reasons why our customers can expect more:

- Approx. 16 % of Anton Paar's turnover reinvested into Research & Development
- Cooperation with leading universities and research institutes
- 100 % of instrument production in-house following strict quality guidelines
- Traditionally close-knit contact with the international scientific community
- Longstanding tradition of high-precision manufacturing

Anton Paar offers a range of instruments which provide complete conformity and traceability to meet stringent reference standards as well as national and international regulatory requirements.

ON-SITE INSTALLATION

Your measurement solution of choice is installed on-site by an Anton Paar certified sales representative or certified service engineer in accordance with your individual requirements.

SALES AND SERVICE NETWORK

In addition to a broad product portfolio, Anton Paar meets your needs with its worldwide sales and service network. Specialists trained and certified in-house are at your service. Anton Paar is present around the world with:

- 9 producing subsidiaries
- 32 sales subsidiaries
- 50 distribution partners

APPLICATION SUPPORT

Benefit from Anton Paar's application know-how for a measurement solution custom-tailored to your application. Anton Paar provides a wide range of application solutions embodying decades of technical expertise.

CERTIFIED SERVICE

From the recommended preventive maintenance programs to repair coverage and emergency service, Anton Paar accompanies you with certified service programs throughout the whole life cycle of your instrument.

TRAINING PROGRAMS

Anton Paar offers customer trainings and qualification tailored to every knowledge level. You are provided with future-oriented tips and advice for your measuring requirements, as well as the opportunity to exchange information with Anton Paar engineers experienced in your field of application.

PHARMA COMPLIANCE AND DATA INTEGRITY

Anton Paar offers instrument-specific pharma qualification packages for defined instruments to meet the requirements of GMP, 21 CFR Part 11, GAMP 5, and USP. The instruments comply with relevant Pharmacopoeia methods and cover the necessary security and compliance software features.

Persist when others don't.



**ACCURACY:**

Alcohol content of beer/wine:
0.2 %v/v
Alcohol content of spirits
(extract <100 g/L): 0.2 %v/v
Alcohol content of liqueurs
(extract >100 g/L): 0.4 %v/v
Density: 0.001 g/cm³

MEASURING RANGE, ALCOHOL:

Beer: 0.5 %v/v to 15 %v/v
Wine: 8 %v/v to 20 %v/v
Cider: 2 %v/v to 10 %v/v
Spirits/liqueurs: 10 %v/v to
41 %v/v
Sake: 5 %v/v to 20 %v/v

MEASURING RANGE, DENSITY:

0.95 g/cm³ to 1.2 g/cm³

**REPEATABILITY S.D.:**

Alcohol: 0.01 %v/v
Original extract: 0.03 °Plato
Real extract: 0.01 %w/w
Apparent extract: 0.01 %w/w

TYPICAL MEASURING TIME:

4 minutes incl. filling

OPTIONS:

Color, pH, turbidity, viscosity

**REPEATABILITY S.D.:**

Alcohol: 0.01 %v/v
CO₂: 0.01 g/L (0.005 vol.)
Original extract: 0.03 °Plato

OUTPUT PARAMETERS:

Alcohol, real extract, original extract,
apparent extract, CO₂, degree of
fermentation, calories

OPTIONAL PARAMETERS:

Color, pH, turbidity, O₂

**MEASURING RANGE:**

0 %v/v to 20 %v/v alcohol

REPEATABILITY S.D.:

0.01 %v/v alcohol

TYPICAL MEASURING TIME:

Less than 3 minutes incl. filling

OPTIONAL MODULES:

pH ME, HazeQC ME, DMA M,
Xsample 320 / Xsample 520

**MEASURING RANGE:**

Alcohol content:
0 %v/v to 20 %v/v
CO₂: 0 g/L to 12 g/L
(0 vol. to 6 vol.)
O₂ (optional): 0 ppm to 4 ppm
pH (optional): 0 pH to 14 pH

REPEATABILITY S.D.:

Alcohol content: 0.01 %v/v
CO₂: 0.01 g/L (0.005 vol.)
O₂ (optional): ±2 ppb
pH (optional): 0.02 pH

**PARAMETERS FOR WINE:**

Ethanol, fructose, glucose,
titratable acidity, volatile acids,
malic acid, tartaric acid, lactic
acid, pH, density, extract, glycerol

ADDITIONAL PARAMETERS FOR MUST AND MUST IN FERMENTATION:

Must weight, yeast assimilable
nitrogen

TYPICAL MEASURING TIME:

Less than 1 minute

SPECIFICATIONS

SPECIFICATIONS

**Alcohol and Extract Meter:
Alex 500**

Alex 500 is a compact alcohol and extract meter that is capable of analyzing beers, wines, spirits, and liqueurs. Besides alcohol and extract content it determines related parameters, such as calories or degree of fermentation. Alex 500 accurately measures all types of samples, in all production steps, from juice, wort, or mash to the fermentation process, and from the blending procedure to the bottled product.

**Alcolyzer Beer Analyzing
System**

Alcolyzer Beer ME in combination with a DMA M density meter determines the alcohol content, real-, apparent-, and original extract as well as other important quality parameters of all types of beer, including low-alcohol and non-alcoholic beer, beer mixtures, cider, and malt beverages. The patented, MEBAK-approved NIR measuring method eliminates the influence of other sample constituents on the alcohol measurement and therefore generates highly precise results.

**Packaged Beverage Analyzer
for Beer: PBA-B M**

PBA-B M determines all relevant quality parameters such as alcohol, original extract, CO₂, O₂, pH, and turbidity in all types of beers, including low-alcohol and non-alcoholic beer. After automatic filling directly from the package and without the need for sample preparation, all parameters are determined simultaneously and displayed after only 4 minutes.

Alcolyzer Wine M

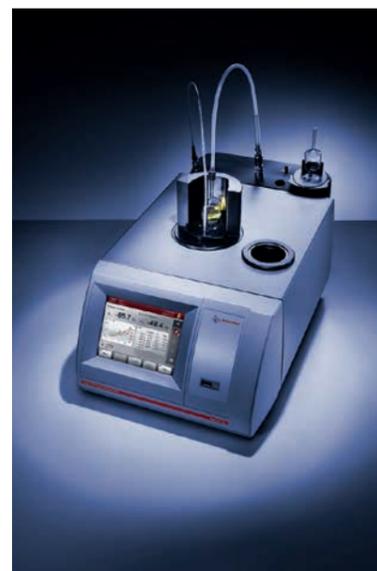
Alcolyzer Wine M measures the alcohol content of wine, sparkling wine, cider, and sake using a patented NIR measuring method. Other sample constituents do not influence the alcohol analysis. In combination with a density meter, the system also determines the total extract of the sample. These parameters are provided after a typical measuring time of just 3 minutes.

**Packaged Beverage Analyzer
for Wines and Sparkling
Wines: PBA-W**

The modular PBA-W M system determines all relevant parameters for wines and sparkling wines such as alcohol, extract, CO₂, O₂, pH, and turbidity after sampling directly from the package. After automatic filling, all parameters are determined simultaneously and displayed after only 4 minutes.

**FTIR Wine Analyzer:
Lyza 5000 Wine**

Lyza 5000 Wine is the solution for analysis of wine, must, and must in fermentation with pre-installed models for more than 13 parameters including ethanol, sugars, and acid profile. Use the FTIR analyzer as a stand-alone device, automated for high throughput, or connected to your benchmark instruments – Anton Paar density meters and alcohol meters – for the most powerful wine analysis.



ACCURACY, ALCOHOL:

0.2 %v/v (Snap 41)
0.1 %v/v (Snap 51)

REPEATABILITY S.D., ALCOHOL:

0.1 %v/v (Snap 41)
0.05 %v/v (Snap 51)

MEASURING RANGE, ALCOHOL:

0 %v/v to 100 %v/v

MEASURING RANGE, TEMPERATURE:

5 °C to 30 °C (Snap 41)
0 °C to 40 °C (Snap 51)

Snap 51: PQP-S available

MEASURING RANGE:

Alcohol content of spirits:
35 %v/v to 65 %v/v
Alcohol content of liqueurs:
15 %v/v to 40 %v/v

REPEATABILITY S.D.:

0.01 %v/v

TYPICAL MEASURING TIME:

3 to 4 minutes

OPTIONAL PARAMETERS:

pH, color, turbidity

MEASURING RANGE:

Beers: 0 %v/v to 12 %v/v
Wines: 0 %v/v to 20 %v/v
Spirits: 35 %v/v to 65 %v/v

REPEATABILITY S.D.:

0.01 %v/v

OPTIONAL PARAMETERS:

pH, color, turbidity

STANDARD METHODS:

ASTM D6371, EN 116, EN 16329,
JIS K 2288, IP 309

APPLICATION RANGE:

-60 °C to 45 °C

COOLING PROFILES:

Programmable stepped or linear
(from 6 °C/h to 100 °C/h)

DATA MEMORY:

1000 results
90 user-defined programs

STANDARD METHODS:

ASTM D5, ASTM D217,
ASTM D937, ASTM D1321,
ASTM D1403, ASTM D7342,
ISO 2137, ISO 6873, EN 1426,
EN 13179-2, JIS K 2207,
JIS K 2235, DIN 51579, IP 50,
IP 179, IP 310, IP 376, European
Pharmacopoeia 2.9.9.

MEASURING RANGE:

Up to 80 mm

DATA STORAGE:

200 measurements

STANDARD METHODS:

ASTM D36, EN 1427, JIS K 2207,
AASHTO T53, IP 58

APPLICATION RANGE:

Up to 160 °C

HEATING:

IR radiation, ROBAX® heating
plate, spill protection

STIRRING:

100 rpm to 150 rpm

TEST PLACES:

2

SPECIFICATIONS

SPECIFICATIONS

Portable Alcohol Meters for Distilled Spirits: Snap 41, Snap 51

The Snap 41/51 portable alcohol meter measures the alcohol concentration of sugar-free distilled spirits in all strengths, replacing all glass hydrometers in the distillery. It allows very small distilleries to move into the digital age. The portable instrument measures your samples directly at the container within a few seconds. Results are temperature-compensated and shown in %v/v or °Proof.

Alcolyzer Analyzing System for Spirits and Liqueurs

The Alcolyzer Analyzing System for Spirits directly determines the most important parameters in spirits production: alcohol and total extract. Modular extensions for turbidity, pH, and color measurement can be fitted to create a custom-tailored solution. Expanding the system with an MCP 100 circular polarimeter enables the direct alcohol analysis in saccharose-based or invert-sugar-based liqueurs in the range of 15 %vol to 40 %vol.

All-in-one Alcohol Measuring Module: Alcolyzer ME

The Alcolyzer Analyzing System is the all-in-one solution for alcoholic beverage analysis which measures the alcohol and extract content of various alcoholic beverages such as spirits, wines, and beers. Optional modules for pH, color, and turbidity analysis are available in order to efficiently cover analysis of the required QC parameters with one single system.

Cold Filter Plugging Point Tester: Callisto 100

The fully automated and compact CFPP tester Callisto 100 comes with a newly developed state-of-the-art Peltier element technology which allows the connection of a methanol-free cooling system. It ensures outstanding homogeneity of the cooling jacket, which is the most critical and decisive parameter for CFPP value determination. Callisto 100 determines the low-temperature operability of diesel fuel, biodiesel, and blends.

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, cone, rod, or disk. To ensure a high flexibility in application you may choose between test kits for various standards and applications (bitumen, grease, wax, food, cosmetics, or pharmaceuticals). PNR 12 is suitable for consistency and plasticity determinations of pasty, creamy, semi-solid, or highly viscous samples.

Softening Point Tester: RKA 5

The ring-and-ball softening point tester automatically determines the temperature at which a substance attains a particular degree of softness. It is used for samples without sharply defined melting points, which become softer and less viscous as the temperature rises. A heating rate chart can be used to conduct conformity checks quickly and easily for each test. RKA 5 with its different ball-centering and ball-dispensing devices is suitable for bitumen.

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STANDARD METHODS:
ASTM D381, ISO 6246, DIN 51784, IP 131, IP 540, JIS K 2261, FTM 791-3302

OPERATING TEMPERATURE:
With air and steam supply:
up to 260 °C
With air supply:
up to 246 °C

SAMPLE VOLUME:
50 mL per tube



STANDARD METHODS:
ASTM D1401, ISO 6614

OPERATING TEMPERATURE:
Ambient to 85 °C

STIRRER SPEED:
500 rpm to 1600 rpm

TEST PLACES:
8 (2 additional pre-tempering places)



STANDARD METHODS:
EN 12593, JIS K 2207, IP 80

APPLICATION RANGE:
-45 °C to 60 °C

BENEFITS AT A GLANCE:

- Peltier cooling for the refrigeration of the test chamber
- Touch-key panel with large LC display
- Software (optional) for sophisticated analysis
- Melting apparatus BPM 5 (optional) for steel plaque coating



X-Y SCAN RANGE:
100 µm x 100 µm

Z SCAN RANGE:
15 µm

STANDARD MODES:
Contact mode, tapping mode (including phase image), lateral force microscopy, force distance curve

MAX. SCAN SPEED:
10 lines per second



X-Y SCAN RANGE:
50 µm x 50 µm*

Z SCAN RANGE:
10 µm**

STANDARD MODES:
Contact mode, tapping mode (including phase image), lateral force microscopy, force distance curve

*optional upgrade to 90 µm x 90 µm available
**optional upgrades to 12 µm or 15 µm available



DIMENSIONS:
130 mm x 50 mm x 53 mm

WEIGHT:
450 g

SUPPORTED CANTILEVERS:
3.4 mm x 1.6 mm x 0.3 mm

SPECIFICATIONS

SPECIFICATIONS

Content Tester: GUM

GUM helps to prevent induction-system difficulties by measuring the unevaporated residue of fuel that may lead to deposits and sticking of intake valves. It is suitable for aircraft fuels, motor gasoline, and other volatile distillates. The multi-function head for simultaneous positioning of all 5 sample tubes increases accuracy, safety, and throughput.

Options:

- GUM for tests with air or steam supply
- GUM for tests with air supply only

Herschel Emulsifier: DH 5

The DH 5 Herschel emulsifier measures the ability of petroleum oils or synthetic fluids to separate from water. DH 5 is suitable for new or in-service oils which are subject to water contamination. A constant stirrer speed is guaranteed, even when the viscosity of the sample changes during the test.

Fraass Breaking Point Tester: BPA 5

The automatic breaking point tester determines the brittle behavior of bitumen at low temperatures. The Fraass breaking point is the temperature at which the first crack appears in the coating of a thin, flat steel plaque flexed under descending temperatures.

Atomic Force Microscope: Tosca 400

Tosca 400 is a large-sample, premium AFM. It combines a premium technology with time-efficient and user-friendly operation. Tosca 400 employs a new form of automation on every level of operation, providing fully automatic laser alignment and a side-view camera for the easiest possible sample engagement procedure to increase the efficiency and simplify the handling of AFM measurements.

Atomic Force Microscope: Tosca 200

Tosca 200 is an AFM for medium-sized samples and limited budgets. The high degree of automation and a workflow-oriented control and analysis software are integral elements on every level of operation, decreasing the time-to-result and simplifying the overall handling of AFM measurements.

Tosca Accessory: Probemaster

Patented Probemaster is the perfect tool for fast and safe cantilever exchange – a game changer in the world of atomic force microscopy. Just place the cantilever in the marked area of the Probemaster and easily slide it into the actuator body. Due to the innovative design, this tool allows for fast and safe cantilever mounting, also for inexperienced users.

**WORKS WITH:**

- Viscometers
- Density and concentration meters
- Abbe refractometers
- MCP polarimeters
- PQ index wear debris
- pH meters
- FTIR spectrometers
- Color measurement
- Particle size analyzers

SOFTWARE:

- HTX control software
- LIMS/SAP interface

APPLICATIONS:

- Food
- Polymers
- Paints & coatings
- Cosmetics
- Personal hygiene
- Home care

SAMPLE PREPARATION:

Dilutions, blends, mixtures, subsampling, homogenization

FEATURES:

Precise multichannel dosing, capping/decapping, weighing, direct connectivity to measuring instruments, temperature control

SOFTWARE:

Fully automated process control and data transfer based on established industry standards

FEATURES:

- Capping and decapping of sample cups and vials
- Subsampling, transferring of liquids
- Volumetric or gravimetric dosing
- Vessel identification via bar code
- Shaking of samples prior to analysis
- Addition of reagents or stabilizers
- Monitoring and recording of all work steps by cameras
- Observation of specimen collection
- Spillage detection

BEVERAGE KEY QUALITY PARAMETERS DELIVERED IN ONE RUN:

Alab 5000 determines CO₂, O₂, density, extract, °Brix, alcohol, and sugar inversion from one and the same sample of the respective final product. Additionally, key package parameters such as torque and net content are determined.

DATA TRANSFER:

Via Anton Paar's Davis 5 system

SPECIFICATIONS

SPECIFICATIONS

HTX Automation Platform

The HTX floor-standing automation platform can integrate up to ten different analytical instruments such as viscometers, density meters, or refractometers for concurrent multiparameter analysis. Its modular concept allows fully customized workflows for sample conditioning, preparation, and measurement. The software uses standard industry protocols such as PROFINET, Ethernet, CANOpen, and Profibus and enables LIMS integration (file transfer, database, Ethernet).

Automated High Throughput Rheometer: HTR

The HTR automation series offers an optimized analysis workflow for rheological investigations based on Anton Paar's MCR 702 rheometer. The extensive set of features and built-in flexibility make it the ideal choice for sophisticated and high-throughput R&D or QC work. There are up to 96 measuring geometry units (e.g. for polymer melts) and 3 different rheological geometries offered (CC, CP, PP). Samples can be stored under temperature-controlled conditions down to 4 °C.

Automated High Throughput Rheometer: HTR compact

The HTR compact series offers automated sample handling and conditioning for rheological measurements with Anton Paar's MCR 102 or MCR 302 rheometers in a lightweight benchtop design. It is the ideal choice for first-level rheology automation. The setup has a capacity for 36 samples in two trays with 18 cups each. A sample drawer makes it easy to add vials during operation. After measurement of each sample, the upper geometry is cleaned in an automated work step.

Automated Handling of Liquids and Powders: Modular Sample Processor

The Modular Sample Processor carries out automatic dosing, blending, subsampling, and transferring of liquids prior to analysis. It is available as a stand-alone benchtop unit or can optionally be integrated into complete automated workflows. With individual adaptations the Modular Sample Processor perfectly carries out any desired liquid handling operation.

Automated Sample Preparation for Urine Drug Testing: Specimen Handling Processor

The Specimen Handling Processor fully automates all steps between sample collection and analysis. After placing the sample in the sample holder no further human interaction is required. The Specimen Handling Processor meets the requirements of a drug testing lab to avoid adulteration, dilution, or other tampering of the test specimen. With the Specimen Handling Processor the chain of custody is maintained and documented from sample collection up to the required analytical procedure.

Automated QC of Beverages Directly at the Line: Alab 5000

Alab 5000 is a fully automated quality control lab which continuously measures all key parameters of beers, soft drinks, and mineral water right after the final filling. It consists of four modules: one for piercing and shaking, one for the beverage analysis, one for weighing in order to determine the net content, and a torque module to measure the opening torque and the application angle. Its modular design and small dimensions make it a perfect fit for both new installations and existing production lines.



ACCURACY:
 Extract: 0.3 %w/w
 Sugar: 0.3 °Brix
 Alcohol: 0.5 %v/v
 Minimum sample volume: 2 mL

COMPATIBLE SMARTPHONES:
 Mobile operating system:
 Android 4.3 / iOS version 7.0 or higher
 Interface: Bluetooth Low Energy



ACCURACY:
 0.001 g/cm³

REPEATABILITY S.D.:
 0.0005 g/cm³

MEASURING RANGE:
 0 g/cm³ to 3 g/cm³

MINIMUM SAMPLE VOLUME:
 2 mL



ACCURACY, DENSITY:
 0.001 g/cm³

REPEATABILITY S.D., DENSITY:
 0.0005 g/cm³

MEASURING RANGE, DENSITY:
 0 g/cm³ to 3 g/cm³

INTRINSIC SAFETY (EX & EX PETROL):
 Ex II 2 G Ex iB IIC T4

MINIMUM SAMPLE VOLUME:
 2 mL

PQP-S AVAILABLE



ACCURACY, DENSITY:
 0.001 g/cm³

REPEATABILITY S.D., DENSITY:
 0.0002 g/cm³

MEASURING RANGE, TEMPERATURE:
 15 °C to 40 °C (59 °F to 104 °F)

STANDARDS:
 21 CFR Part 11, Pharmacopeia (US, EU, JP)

PQP /PQP-S AVAILABLE



ACCURACY, DENSITY:
 0.0001 g/cm³

REPEATABILITY S.D., DENSITY:
 0.00005 g/cm³

MEASURING RANGE, TEMPERATURE:
 15 °C to 60 °C (59 °F to 140 °F)

STANDARDS:
 ASTM D4052, ASTM D5002, ISO 12185, 21 CFR Part 11, Pharmacopeia (US, EU, JP)

PQP/ PQP-S AVAILABLE



ACCURACY, DENSITY:
 0.0001 g/cm³

REPEATABILITY S.D. DENSITY:
 0.00001 g/cm³

TEMPERATURE RANGE:
 0 °C to 100 °C (32 °F to 212 °F)

PQP/PQP-S AVAILABLE

SPECIFICATIONS

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Density and Concentration Meter: EasyDens

EasyDens determines the extract content in beer wort, the sugar content in juices, or the alcohol content in spirits with no sugar added. Furthermore, it is used for fermentation control of home-produced beer and wine. After downloading the free app for EasyDens, you have the results displayed on your smartphone within seconds, ready for export to a PC. In contrast to glass hydrometers, it covers the whole measuring range relevant for your application.

Portable Density Meter: DMA 35 Basic

DMA 35 Basic is the entry-level portable density meter that takes samples directly from the storage container with the help of the built-in pump and measures them on-site. Results are given as density or concentration, such as °Brix, %v/v alcohol, or %w/w H₂SO₄. Because of its lightweight and flat design, hard-to-reach samples, e.g. automotive batteries stored on narrow racks or stacked wine barrels, can be conveniently measured.

Portable Density Meters: DMA 35 Standard, Ex and Ex Petrol, Ampere

DMA 35 is a portable density meter that identifies sampling points via RFID, measures the sample in a few seconds on-site, and exports stored results wirelessly via Bluetooth. It is designed to withstand the knocks and spills of outdoor use. Intrinsically safe versions are available for use in hazardous areas for chemical and petroleum applications.

Density Meter: DMA 501

DMA 501 is a compact and stand-alone 3-digit density meter. It easily fits into tight spaces in your production area, storage facilities, or in the lab, enabling you to perform quick quality checks just around the corner. Its rugged design and intelligent environmental condition monitoring system makes it ready for operation sites outside the traditional lab space. Even if the sample characteristics are challenging (e.g. creams, pastes, varnish), the instrument delivers the most stable density results.

Density Meter: DMA 1001

DMA 1001 has everything that industry standards for density measurement stipulate: 4 digits in density measuring accuracy combined with a comprehensive incident documentation and user support. The sample filling process is monitored via the pin-sharp real-time camera image and the instrument automatically detects filling errors and documents the incident. But there's more: The new unique one-point water adjustment is the quickest way to get your highly accurate measurement work started.

Density Meter: DMA 4100 M

DMA 4100 M applies a revolutionary density measuring principle for quick and easy quality control. The density meter provides the 4-digit density values you need and is not affected by your working environment. The patented Pulsed Excitation Method delivers the most stable density results based on comprehensive knowledge of the oscillation characteristics. The integrated camera allows you to check the filling procedures of your operators at any time.

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ACCURACY, DENSITY:
0.0002 g/cm³

TEMPERATURE RANGE:
-10 °C to 200 °C

PRESSURE RANGE:
0 bar to 500 bar

STANDARDS:
ASTM D4052, ASTM D5002,
ASTM D8188, ISO 12185



ACCURACY, DENSITY:
0.00005 g/cm³

REPEATABILITY S.D., DENSITY:
0.000005 g/cm³

TEMPERATURE RANGE:
0 °C to 100 °C (32 °F to 212 °F)

PQP/PQP-S AVAILABLE



ACCURACY, DENSITY:
0.000007 g/cm³

REPEATABILITY S.D., DENSITY:
0.000001 g/cm³

TEMPERATURE RANGE:
0 °C to 100 °C (32 °F to 212 °F)

PQP/PQP-S AVAILABLE



ACCURACY:
Density: 0.000007 g/cm³
Concentration: 0.01 % to 0.1 %
(typically)

REPEATABILITY S.D.:
Density: 0.000001 g/cm³
Sound velocity: 0.1 m/s

TEMPERATURE RANGE:
0 °C to 100 °C (32 °F to 212 °F)



TEMPERATURE RANGE:
-10 °C to 200 °C

PRESSURE RANGE:
0 bar to 1400 bar

ACCURACY, DENSITY:
Up to 0.0001 g/cm³



CHOICE OF PARAMETERS:
Density, refractive index, optical
rotation, turbidity, viscosity, pH,
sound velocity, alcohol

PQP/PQP-S AVAILABLE

SPECIFICATIONS

SPECIFICATIONS

Density Meter: DMA 4200 M

DMA 4200 M, the density meter for the heavy petroleum industry, measures the density and specific gravity of highly viscous samples, e.g. bitumen and asphalt, bunker oil, and even LPG. The Temperfect™ feature of DMA 4200 M allows immediate density measurements at any temperature between 0 °C and 150 °C at ambient pressure. FillingCheck™ ensures results according to ASTM D4052 and ASTM D5002. The U-tube is made of Hastelloy C276 and is very resistant to chemicals such as sour gas, hydrochloric acid, and hydrofluoric acid.

Density Meter: DMA 4500 M

Thousands of users around the world count on DMA 4500 M density meters whenever reliable and accurate 5-digit density values are required. To achieve this, the revolutionary measuring principle - the patented Pulsed Excitation Method - delivers the most stable density results based on comprehensive knowledge of the oscillation characteristics of the U-tube. The automatic bubble detection system gives you back control of your filling.

Density Meter: DMA 5000 M

With its six-digit accuracy, DMA 5000 M is the most precise digital density meter you can get. The patented Pulsed Excitation Method delivers the most stable density results based on comprehensive knowledge of the oscillation characteristics. The influence of viscosity is compensated twice as effectively as ever before. It is ideal for your high-end R&D applications and sets the tone at authorities as well as standards organizations.

Density and Sound Velocity Meter: DSA 5000 M

DSA 5000 M is the only instrument that combines density and sound velocity measurements in one setup. It determines the concentration of two- and three-component solutions using the most accurate density results on the market, measured with the Pulsed Excitation Method. Quality control and R&D departments in many different industries already make use of this unique opportunity to measure both parameters in one go.

External Measuring Cell: DMA HPM

The DMA HPM external density measuring cell measures density at high pressures and/or high temperatures. DMA HPM is commonly used in reservoir studies, either integrated into a PVT system or into slim-tube apparatus for enhanced oil recovery (EOR) experiments and in studies for determining the density for the equation of state.

Multiparameter Measuring Systems: Modulyzer

With a Modulyzer you can obtain up to eight parameters from one sample in only one measuring cycle. Combined with a sample changer you can analyze up to 71 samples in a row, fully automated. Depending on the accuracy you need, create your individual system from 1 out of 4 density meters + 1 out of 5 polarimeters + 1 out of 6 refractometers + 1 out of 7 sample changers. Add a module for turbidity, pH, or viscosity if needed. Modulyzer is operated via only one screen.



MEASURING RANGE CO₂:
0 g/L to 12 g/L (0 to 6 vol.) at 30 °C
0 g/L to 20 g/L (0 to 10 vol.) <15 °C

MEASURING RANGE O₂:
0 ppm to 4 ppm

CO₂ REPEATABILITY S.D.:
Lab: 0.01 g/L (0.005 vol.)
At-line: 0.04 g/L (0.02 vol.)

O₂ REPEATABILITY S.D.:
±2 ppb

MEASURING RANGE CO₂:
0 g/L to 12 g/L (0 to 6 vol.) at 30 °C
0 g/L to 20 g/L (0 to 10 vol.) <15 °C

CO₂ REPEATABILITY S.D.:
Lab: 0.01 g/L (0.005 vol.)
At-line: 0.04 g/L (0.02 vol.)

CO₂ REPRODUCIBILITY S.D.:
Lab: 0.05 g/L (0.025 vol.)
At-line: 0.1 g/L (0.05 vol.)

O₂ MEASURING RANGE:
0 ppm to 4 ppm or
0.015 ppm to 45 ppm

REPEATABILITY S.D.:
±2 ppb or ±20 ppb

REPRODUCIBILITY S.D.:
±4 ppb or ±50 ppb

O₂ RESPONSE TIME T₉₈%:
Less than 20 seconds at 25 °C from air to nitrogen

STANDARD METHODS:
ISO 1516, ISO 1523, ISO 13736, EN 924, DIN 51755-1, IP 170, IP 491, IP 492

APPLICATION RANGE:
With internal air cooling:
10 °C to 110 °C
With external liquid cooling:
-30 °C to 110 °C

OPTIONAL:
PC software FPPNet

STANDARD METHODS:
ASTM D56, ASTM D3934, ASTM D3941, ISO 1516, ISO 1523, EN 924, FTM 791-1101, IP 491, IP 492

APPLICATION RANGE:
With internal air cooling:
10 °C to 110 °C
With external liquid cooling:
-30 °C to 110 °C

OPTIONAL:
PC software FPPNet

STANDARD METHODS:
ASTM D93-A, ASTM D93-B, ASTM D93-C, ISO 2719-A, ISO 2719-B, ISO 2719-C, ISO 15267, JIS K 2265-3, IP 34-A, IP 34-B

APPLICATION RANGE:
Up to 405 °C

OPTIONAL:
PC software FPPNet

SPECIFICATIONS

SPECIFICATIONS

Lab and At-line Combined CO₂ and O₂ Meter: CboxQC/ CboxQC At-line

CboxQC combines the fast measurement of CO₂ and O₂ in one measuring cycle – available for portable use at-line as well as in a stand-alone version for the laboratory. Measurements typically take 90 seconds.

Lab and At-line CO₂ Meter: CarboQC/CarboQC At-line and CarboQC ME

Whether directly at the production line or in the laboratory, CarboQC measures the true amount of dissolved carbon dioxide in soft drinks, beer, wine, and sparkling water. The CarboQC ME measuring module is easily integrated into Anton Paar beverage analysis systems, such as PBA-S/SI/SD/SID, PBA-B and PBA-W.

Lab and At-line O₂ Meter: OxyQC/OxyQC Wide Range

The highly accurate determination of dissolved oxygen is based on the optochemical sensor's very fast response time and ideal temperature behavior. This leads to stable and precise results in less than 50 seconds. Durability and minimal maintenance are the prominent features that make this long-lasting optical sensor stand out.

Abel Flash Point Tester: ABA 4

The ABA 4 automatic closed-cup flash point tester with extended measuring range, Peltier cooling, and stirrer measures the flash point, the lowest temperature at which the vapors of a sample might ignite, and the ability to yield flammable vapors at an equilibrium temperature. ABA 4 is suitable for jet fuels, solvents, chemicals, and more.

Tag Flash Point Tester: TAG 4

The TAG 4 automatic closed-cup flash point tester with extended measuring range and Peltier cooling measures the flash point, the lowest temperature at which the vapors of a sample might ignite, and the ability to yield flammable vapors at an equilibrium temperature. TAG 4 is suitable for jet fuels, solvents, chemicals, and more.

Pensky-Martens Flash Point Tester: PMA 5

The PMA 5 automatic closed-cup flash point tester with integrated fire-extinguishing system measures the flash point, the lowest temperature at which the vapors of a sample ignite upon application of an ignition source. PMA 5 is suitable for biodiesel and biodiesel-blended fuels, distillate fuels like diesel heating oil, kerosene, and more.



STANDARD METHODS:
ASTM D92, ISO 2592,
JIS K 2265-4, AASHTO T48,
FTM 791-1103, IP 36, GOST 4333

APPLICATION RANGE:
Up to 400 °C

OPTIONAL:
PC software FPPNet
Bitumen accessories



STANDARD METHODS:
Pensky-Martens:
ASTM D93-A+B+C, ISO 2719-A+B,
JIS K 2265
Cleveland:
ASTM D92, ISO 2529, JIS K 2265
Abel:
ISO 1516, ISO 1523, ISO 13736
Tag:
ASTM D56, ASTM D3934,
ASTM D3941
User-defined programs:
Can differ from standard test
methods



STANDARD METHODS:
ASTM D86, ASTM D850,
ASTM D1078, ISO 918, ISO 3405,
DIN 51751, IP 123, IP 195, GOST 2177

VAPOR TEMPERATURE RANGE:
Up to 450 °C

BENEFITS:

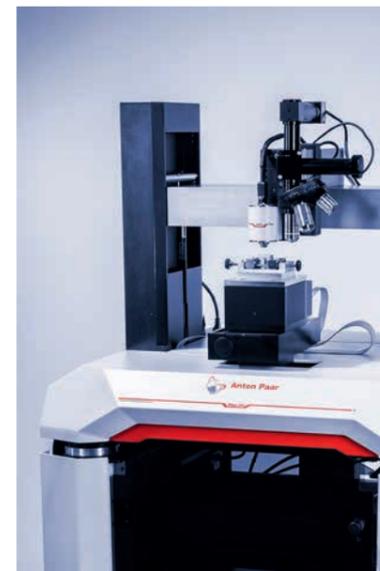
- Mobile temperature sensor for convenient handling
- Intelligent condition monitoring system to avoid incorrect setups
- Fast tempering saves time
- Guided mode trains the operator



FORCE:
Resolution: 3 nN
Max. force: 100 mN

DEPTH:
Resolution: 0.003 nm
Max. depth: 100 µm
Load frame stiffness: $>>10^8$ N/m

OPTIONS:
Temperature up to 800 °C
Vacuum down to 10^{-7} mbars
UNHT³ Bio for soft materials



FORCE:
Resolution: 0.02 µN
Max. force: 500 mN

DEPTH:
Resolution: 0.01 nm
Max. depth: 200 µm

LOAD FRAME STIFFNESS:
 10^7 N/m

INTERNATIONAL STANDARDS:
ISO 14577, ASTM E2546, etc.



APPLIED LOAD:
Resolution: 10 µN
Max. load: 30 N

FRICTION FORCE:
Resolution: 0.1 mN
Max. friction force: 30 N

DEPTH:
Resolution: 0.05 nm
Max. depth: 1000 µm

SPEED:
From 0.1 mm/min to 600 mm/min
ISO 20502, ASTM C1624,
ISO 14577, ASTM E2546

SPECIFICATIONS

SPECIFICATIONS

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.
CLA 5 is suitable for lubricants, residual fuels, or bituminous material.

Software for Automatic Flash Point Testers: FPPNet

The FPPNet software is the perfect solution for reading and evaluating data as well as controlling the automatic flash point testers PMA 5, CLA 5, ABA 4, TAG 4, and previous models (PMA 4 SC, PMA 4, CLA 4). Self-explanatory menus make FPPNet intuitive and easy to operate. Simply connect the flash point tester to the PC's RS232 interface using a null modem cable or the USB port.

Distillation Analyzer: Diana 700

Diana 700 is the most convenient solution for automatically determining the distillation range of petrochemical products, aromatic hydrocarbons, and other volatile organic liquids at atmospheric pressure. The range of application includes volatility determination, automatic dry point detection for solvents, calculation of cetane and driveability index, and the preparation of bottom residue according to EN ISO 10370.

Ultra Nanoindentation Tester: UNHT³

The UNHT³ ultra-high resolution nanoindenter is used to examine the mechanical properties of a material, such as hardness and elastic modulus, at the nanoscale. UNHT³ virtually eliminates the effect of thermal drift and compliance due to its unique patented active surface referencing system. It is ideally suited for long-term measurements on all types of materials, including polymers, very thin layers, and soft tissues.

Nanoindentation Tester: NHT³

NHT³ is designed to provide low loads with depth measurements in the nanometer scale for the measurement of hardness, elastic modulus, creep, etc. The system can be used to characterize organic, inorganic, hard and soft materials. Thanks to quick matrix modes and the unique top surface referencing technique, NHT³ provides high throughput. The measurement starts immediately, with no waiting time for thermal stabilization.

Micro Combi Tester: MCT³ Microindentation Tester: MHT³ Micro Scratch Tester: MST³

The MCT³ micro combi tester combines scratch and instrumented indentation (IIT) in one measurement head. The unique wide load range of this instrument allows for the characterization of adhesion, hardness and elastic modulus of thin films and/or bulk materials. MCT³ can be used in the analysis of organic and inorganic as well as soft and hard coatings.



APPLICATIONS:
Alcoholic beverages, soft drinks, syrup, diluted polymer solutions

FILLING VISCOSITY:
3,000 mPa.s

NUMBER OF SAMPLES:
1 position



APPLICATIONS:
Chemical samples, alcoholic beverages, inks

FILLING VISCOSITY:
3,000 mPa.s

NUMBER OF SAMPLES:
1 position



APPLICATIONS:
Petrochemical samples, chemical samples, pharmaceutical samples, food, flavors and fragrances, health care products

FILLING VISCOSITY:
36,000 mPa.s

NUMBER OF SAMPLES:
1 position



APPLICATIONS:
Alcoholic beverages, soft drinks, syrup, diluted polymer solutions

FILLING VISCOSITY:
3,000 mPa.s

NUMBER OF SAMPLES:
Up to 48 positions



APPLICATIONS:
Petrochemical samples, flavors and fragrances, chemical samples, pharmaceutical samples, food

FILLING VISCOSITY:
36,000 mPa.s

NUMBER OF SAMPLES:
Up to 71 positions (with bar code)



APPLICATIONS:
Petrochemical samples, waxes, food, flavors

MAXIMUM TEMPERATURE:
Up to 95 °C

NUMBER OF SAMPLES:
Up to 56 positions

SPECIFICATIONS

SPECIFICATIONS

**Single Samples:
Xsample 320**

User-independent filling and therefore reduction of handling errors can be achieved with this single-sample device. Operators are able to focus on more important tasks while filling and measurement is performed automatically. The simple and robust design using a peristaltic pump makes Xsample 320 maintenance-free. The flexible filling speed enables fast measurements and optimized sample treatment for perfect measuring results.

**Single Samples:
Xsample 330**

Enhancing the benefits of user-independent filling by adding automatic cleaning makes Xsample 330 perfectly suitable for measuring low-viscosity samples with significantly different properties in direct succession. Once measured, the sample is drained and the system is automatically cleaned with up to two rinsing agents. To perfectly prepare the measurement cell(s) for the next sample a drying step is performed as well.

**Single Samples:
Xsample 340**

Xsample 340 is a single-sample device for different types of syringes that automatically fills all Anton Paar master instruments. Perfect filling and excellent precision are facilitated by the system's adjustable filling speed. Many years of trouble-free operation are guaranteed due to the straightforward and robust design. Xsample 340 is automatically prepared with up to two cleaning agents, ensuring perfect measuring conditions regardless of the operator and sample.

**Multiple Samples:
Xsample 520**

With Xsample 520, user-independent filling of numerous Anton Paar master instruments is ensured by stepless adjustability in combination with a smart pump lock. Unattended filling and measurement are possible even during the night and at weekends. Equipped with a peristaltic pump, Xsample 520 fills sample into the measuring cell without rinsing and drying and saves valuable time when enough sample is available and sample recovery is not necessary.

**Multiple Samples:
Xsample 530**

The Xsample 530 sample changer handles a wide range of liquid viscosities. Its fully automated filling, rinsing, and drying routines ensure perfect results without any sample cross-contamination. With up to three cleaning liquids, Xsample 530 is ready to measure a great diversity of samples in one run. The robust mechanical components and a superior resistance to chemicals result in an increased uptime of the system and low maintenance costs.

**Heated Samples:
Xsample 610 / Xsample 630**

The improved heating performance of Xsample 610 and Xsample 630 leads to short heating periods and time savings. Temperatures up to 95 °C are achieved in the system. Even challenging samples can be measured according to ASTM standards. Xsample 630 features a removable magazine with dedicated non-heated positions and saves additional time by facilitating sample handling and acting as a two-in-one sample changer.



NUMBER OF VESSELS:
Up to 24

OPERATION PARAMETERS:
Up to 300 °C and 199 bar

REACTION CONTROL:
Temperature and pressure control of all vessels

COOLING SYSTEM:
Integrated water cooling

PQP AVAILABLE

NUMBER OF VESSELS:
Up to 64

OPERATION PARAMETERS:
Up to 300 °C @ 80 bar

REACTION CONTROL:
Temperature and pressure control in all positions (depending on rotor)

PQP AVAILABLE

NUMBER OF VESSELS:
1 to 12

SAMPLE AMOUNTS:
≤3 g/vessel

REACTION CONTROL:
Temperature control in all positions
Mechanical pressure control

SAFETY CERTIFICATES:
GS, ETL

PQP AVAILABLE

NUMBER OF VIALS:
Up to 48

VIAL VOLUME:
50 mL

OPERATING TEMPERATURE:
Up to 180 °C

POWER:
800 W

CONTROL UNIT:
External 5.4" capacitive touchscreen

NUMBER OF VESSELS:
Up to 21

OPERATING TEMPERATURE:
320 °C for an unlimited time

OPERATING PRESSURE:
130 bar

TIME:
5 s to 99 min

FREQUENCY:
3 Hz to 30 Hz

FEED SIZE OF SAMPLE:
nmt. 8 mm

MAX. VOLUME OF MILLING JARS:
2 x 50 mL

BALL SIZE:
Up to 25 mm

SPECIFICATIONS

SPECIFICATIONS

Microwave Digestion System: Multiwave 7000

Multiwave 7000 with its Pressurized Digestion Cavity (PDC) allows acid digestions at temperatures up to 300 °C. This ensures complete digestions of any sample type (e.g. food, environmental, polymer, cosmetic, pharmaceutical, geological, chemical, alloy, and petrochemical samples) even in the same run. Budget-friendly sample vials are available made of glass (disposable), quartz, or PTFE-TFM and are easily closed with plug-on caps.

Microwave Reaction Platform: Multiwave 5000

Multiwave 5000 is a microwave reaction system for the digestion of samples (varying in difficulty or volume), evaporation, acid leaching, and extractions. Thanks to the flexible platform concept you can configure Multiwave 5000 to be the best fit for your applications. Over 40 years of experience in sample preparation have been incorporated into the development of this device to meet the needs of today's lab chemists.

Microwave Digestion System: Multiwave GO Plus

Multiwave GO Plus, with its revolutionary Directed Multimode Cavity (DMC), perfectly combines the best of both monomode and multimode microwaves. Highly efficient heating provides economic digestion of more than one sample in a single run. With the TURBO cooling process, unique cooling times as short as 8 minutes for a fully loaded twelve-position rotor are possible (for EPA methods). With its SmartVent technology Multiwave GO Plus is the most convenient microwave digestion system on the market.

Hot Block Digestion System: Multicube 48

Multicube 48 is a robust laboratory hot block for open-vessel acid digestion, evaporation, and concentration of samples as well as other applications requiring elevated temperatures. The PFA-coated graphite block in its corrosion-resistant FEP-coated housing is designed for reliable, trouble-free preparation of large batches of a wide range of samples. Precise temperature control of ±1 °C guarantees the same high digestion quality in every single vessel.

High-pressure Digestion: HPA-S

The HPA-S performs acid digestion sample preparation and provides the highest decomposition quality for AAS, ICP-OES, ICP-MS, and voltammetry. The HPA-S acid digestion method is an internationally recognized reference procedure. HPA-S is in operation as a high-performance instrument in numerous laboratories where the highest temperatures and long digestion times are needed.

Laboratory Ball Mill: BM500

BM500 is a versatile and easy-to-operate laboratory mill which enables the quick processing of dry, wet, and even cryogenic milling applications. With a broad range of accessories to cover different applications and to avoid contamination BM500 enables you to mill almost any sample material to the desired fineness. Typical samples range from metals and rocks to food, biological, and environmental materials, whereby the shape of the sample does not matter.

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REACTION VOLUME:
2 mL to 6 mL

MAX. OPERATING TEMPERATURE:
250 °C

MAX. OPERATING PRESSURE:
20 bar



REACTION VOLUME:
0.5 mL to 20 mL

MAX. OPERATING TEMPERATURE:
300 °C

MAX. OPERATING PRESSURE:
30 bar

MICROWAVE OUTPUT POWER:
850 W



REACTION VOLUME:
250 mL to 750 mL

MAX. OPERATING TEMPERATURE:
250 °C

MAX. OPERATING PRESSURE:
30 bar

MICROWAVE OUTPUT POWER:
1700 W



BTS 150/500:
T: -10 °C to 150 °C (BTS 150)
T: 25 °C to 500 °C (BTS 500)

TTK 600:
T: -190 °C to 600 °C

DCS 500:
T: -180 °C to 500 °C



CHC PLUS*:
T: -180 °C to 400 °C
Rel. humidity: 5 % to 95 %

TS 600:
Mechanical load: up to 600 N



HPC 900:
T: 25 °C to 900 °C, p_{max}: 100 bar

XRK 900:
T: 25 °C to 900 °C, p_{max}: 10 bar

HTK 1200N:
T: 25 °C to 1200 °C

HTK 16N/HTK 2000N:
T: 25 °C to 1600 °C (HTK 16N)
T: 25 °C to 2300 °C (HTK 2000N)

SPECIFICATIONS

SPECIFICATIONS

Synthesis Reactor: Monowave 50

Simplify synthesis! Monowave 50 is your budget-friendly, easy-to-operate conventionally heated synthesis reactor. Employing a 10 mL glass vial with silicone cap, Monowave 50 is specially designed for primary research and education. Working under sealed-vessel conditions reaction times are shortened and your efficiency is increased.

Microwave Synthesis: Monowave 400/450

Monowave 400 is your choice for any kind of microwave synthesis in academic and industrial R&D. Enjoy its useful features like the on-screen images from the integrated camera, the ruby thermometer, and silicon carbide vessels. Equipped with a 24-position autosampler, 30 mL wide-neck vials, and integrated camera, Monowave 450 is the perfect solution for multigram synthesis and microwave-assisted extraction.

Microwave Synthesis in the Kilolab: Masterwave BTR

Masterwave BTR transfers microwave synthesis to the kilolab, enabling the processing of kilogram amounts per day. With its independent stirring regime and internal rising-sensor temperature measurement, Masterwave BTR features the temperature accuracy required for direct method transfer from any smaller microwave device.

Low- to Medium-temperature X-ray Attachments

Non-ambient X-ray diffraction (XRD) has become an indispensable technique for understanding different influences (e.g. temperature) on materials of any kind. BTS 150/500 (a heating attachment for benchtop instruments), TTK 600 (a versatile sample stage with different measurement geometries), and DCS 500 (a cooling attachment for 4-circle goniometers) belong to the class of low- to medium-temperature X-ray attachments.

Humidity and Mechanical Load X-ray Attachments

Relative humidity is an important parameter, for example in finding optimal storage conditions for pharmaceutical substances or food ingredients. CHC plus+ allows you to investigate the influence of this parameter in addition to temperature variations. TS 600 is designed for the investigation of mechanical load on fibers or thin foils.

High-temperature and High-pressure X-ray Attachments

These instruments allow you to extend the temperature range to temperatures up to 2300 °C and therefore open up a vast range of applications. In addition, HPC 900 and XRK 900 allow investigations of the influence of pressure (up to 100 bar) on the properties of the sample. This is crucial, for example, for the investigation of gas storage materials or catalysts.

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STANDARD METHODS:

ASTM D8206

APPLICATION RANGE:

Up to 180 °C

FILLING PRESSURE:

Up to 800 kPa (typically 700 kPa)

SAMPLE VOLUME:

Typically 5 mL/4 g

TEST CELL:

Stainless steel

STANDARD METHODS:

ASTM D7525, ASTM D7545,
EN 16091, IP 595

APPLICATION RANGE:

Up to 180 °C

FILLING PRESSURE:

Up to 800 kPa (typically 700 kPa)

SAMPLE VOLUME:

Typically 5 mL

TEST CELL:

Gold-plated

STANDARD METHODS:

ASTM D525, ISO 7536, JIS K 2287,
FTM 791-3352, IP 40,
ASTM D873, JIS K 2276,
FTM 791-3354, IP 138

APPLICATION RANGE:

Up to 200 °C

PRESSURE RANGE:

Up to 1400 kPa or 203 psi

TEST PLACES:

1 to 4

MEASURING RANGE:

PSA 990:

0.2 µm to 500 µm (liquid)
0.3 µm to 500 µm (dry)

PSA 1090:

0.04 µm to 500 µm (liquid)
0.1 µm to 500 µm (dry)

PSA 1190:

0.04 µm to 2500 µm (liquid)
0.1 µm to 2500 µm (dry)

FEATURES:

- Comes with both dry and wet modes
- Automatic pick-up and pouring of up to 30 samples
- Suitable for repeatable and high-rate cycle processes
- Time-saving
- Eliminates risk of manipulation
- Integrated rinsing cycles
- User-friendly operation integrated with the PSA software (no additional software required)

FEATURES:

- Integrated mechanical stirrer, peristaltic pump, and ultrasonic probe
- Solvent volume of 40 mL to 45 mL
- Sample quantities from 50 mg

SPECIFICATIONS

SPECIFICATIONS

Oxidation Stability Tester: RapidOxy 100

RapidOxy 100 is an automated Rapid Small Scale Oxidation Tester that provides oxidation stability analysis under artificial aging conditions for various products, including solid, semi-solid, and liquid samples. It is suitable for e.g. oxidation stability determination of vegetable oils and animal fats (e.g. edible oils, butter), food (products containing oil and fat), cosmetics (skin care products), and flavors and fragrances. The oxidation stability of lubricating greases can be determined according to ASTM 8206.

Oxidation Stability Tester: RapidOxy 100 Fuel

RapidOxy 100 Fuel, a patented Rapid Small Scale Oxidation Tester (RSSOT), initiates a very fast artificial aging process and delivers a complete oxidation stability analysis of fuel products automatically in a very short test time. It provides high precision and excellent reproducibility. RapidOxy 100 Fuel is suitable for the stability determination of liquid fuels (gasoline, diesel, biodiesel, FAME, and blends).

Oxidation Stability Tester: OBA 1

OBA 1 is used to determine the stability (induction period) under accelerated oxidation conditions. The semi-automatic test arrangement features programmable PA 5-OBA manometers on stainless steel oxidation vessels in combination with a liquid bath or a dry heat bath. OBA 1 is suitable for oxidation stability applications of gasoline and aviation fuel.

Particle Size Analyzers: PSA 990, PSA 1090, PSA 1190

The PSA instruments, based on laser diffraction technology, give information about the size distribution of dry powders and particles in dispersions. The PSA series stands out for its broad measuring range and ability to measure both liquid dispersions as well as dry powders with one single instrument. Switching between both modes requires just one mouse click. The unrivaled robust design guarantees alignment-free operation even in the harshest environments.

PSA Accessory: Autosampler

The autosampler for the PSA series is the only sampler on the market that can be used for both wet and dry dispersions, and is able to automate the sample measurement process. Available for all three models, the autosampler picks up and pours samples automatically into the particle size analyzer, enabling you to focus on other tasks. The autosampler is equally suitable for industrial as well as lab applications.

PSA Accessory: Small Volume Unit

The Small Volume Unit (SVU) is specially designed for users who need to reduce the measured sample volume. Only 40 mL of carrier liquid is necessary to measure accurate particle size distributions of often costly samples. The SVU is also suitable for aggressive solvents such as acetone or benzene.



SAMPLE SIZE RANGE:
Powder samples from 3 cm³ to 120 cm³

VIBRATOR BOWL MATERIAL:
Aluminum (standard)
Nickel-plated (optional)

NUMBER OF SAMPLE STATIONS:
Eight stations, each accommodates either 4 cm³ or 15 cm³ test tubes

STANDARD TEST METHODS:
ASTM B215, ASTM D2013



SAMPLE STATIONS:
1 or 2

GRADUATED CYLINDER SIZES ACCOMMODATED:
From 5 cm³ to 500 cm³ (standard)
1000 cm³ (optional)

DROP HEIGHT:
3 mm

TAPPING RATE:
260 per minute

STANDARD TEST METHODS:
ASTM B527, ASTM C110,
ASTM D4164, ASTM D4781,
USP 616, JIS K 5-12-2



SAMPLE STATIONS:
1 or 5

SAMPLE CELL SIZES:
From 0.25 cm³ to 135 cm³

TEMPERATURE CONTROL:
Optionally available for optimized performance

STANDARD TEST METHODS:
ASTM B923, ASTM C604,
ASTM D2638, ASTM D4892,
ASTM D5550, ASTM D5965,
ASTM D6093, ASTM D6226,
ISO 12154, USP 699, MPIF 63



BET RANGE:
0.1 m²/g to >3,000 m²/g
(1 m² to 150 m² in the cell)

ANALYSIS SPEED:
Single-point BET in <5 minutes
Multi-point BET in <15 minutes

NUMBER OF ANALYSIS STATIONS:
One, two, or three

NUMBER OF DEGAS STATIONS:
Three

STANDARD TEST METHODS:
ASTM B900, ASTM C1069,
ASTM C1274, ASTM D4567,
ASTM D1993, ISO 9277,
USP<846> Method I



SURFACE AREA RANGE:
0.01 m²/g to no known upper limit

PORE SIZE RANGE:
2 nm to 500 nm with nitrogen or argon
0.35 nm to 2 nm with CO₂ on carbon materials

STANDARD TEST METHODS:
ASTM B922, ASTM C1274,
ASTM D1993, ASTM D6556,
ASTM D4365, ISO 18757

NUMBER OF ANALYSIS STATIONS:
Two or four

NUMBER OF DEGAS STATIONS:
Four



SURFACE AREA RANGE:
0.0005 m²/g to no known upper limit (MP/Kr model)
0.01 m²/g to no known upper limit (all models)

PORE SIZE RANGE:
0.35 nm to 500 nm (MP/Kr model)
2 nm to 500 nm (all models)

NUMBER OF ANALYSIS STATIONS:
Four, fully independent

STANDARD TEST METHODS:
ASTM B922, ASTM C1274,
ASTM D1993, ASTM D3663,
ASTM D6556, ASTM D4365,
ASTM D4780, ISO 18757

SPECIFICATIONS

SPECIFICATIONS

Automated Representative Sampler: Micro Rotary Riffler

When splitting a large sample amount into smaller portions in order to analyze powders, the resulting sub-samples need to be representative of the initial batch to receive reproducible and valid analysis data. The Micro Rotary Riffler splits samples as large as 120 cm³ into eight representative portions for measurements in your particle size, gas sorption, or mercury intrusion analyzer. Thanks to its two separate control sets for delivery and rotation rate, any powder can be accurately divided, regardless of particle size or density.

Tap Density Analyzers: Autotap and Dual Autotap

The Autotap and Dual Autotap tapped density analyzers for powders are simple to use, automated devices which comply with a large number of internationally recognized standard methods. They provide a high level of test method control with a user-selectable, lockable number of taps. Tapping rate and drop height are fixed to provide consistent results from sample to sample. A large range of sample sizes can be accommodated with different graduated cylinders. Single- and dual-station models are available.

Solid Density Analyzers: UltraPyc and PentaPyc

Gas pycnometers measure the true density of solid samples using an inert gas to measure the volume by applying Archimedes' principle of displacement. They are easy to use and do not affect the surface chemistry or physical structure of the sample during measurement. UltraPyc 1200e and PentaPyc 5200e measure samples from 1 cm³ to 135 cm³ with the highest level of accuracy due to their multiple built-in expansion volume chambers. Micro UltraPyc 1200e achieves the same for samples between 0.025 cm³ and 4.5 cm³.

BET Surface Area Analyzer: AutoFlow BET+

The fully automated state-of-the-art dynamic flow system AutoFlow BET+ allows extremely rapid evaluation of the surface areas of solid samples. It performs single-point or multi-point determination of surface areas quickly and quietly on up to three samples simultaneously and independently. No vacuum pumps are required, reducing setup and maintenance costs while also eliminating time-consuming pump downtime and void volume measurements.

Surface Area and Mesopore Size Analyzers: NOVAtouch Series

NOVAtouch is the instrument of choice for hundreds of labs globally. These rapid, high-throughput vacuum volumetric gas sorption analyzers provide quality control and research labs with the surface area and pore size analysis capabilities they require at an affordable price. Either two or four analysis stations with four built-in vacuum or flow degassing stations reduce the overall bench space while maximizing performance.

Surface Area and Micro-/Mesopore Size Analyzers: QUADRASORB evo

QUADRASORB evo is a high-performance surface area and pore size analyzer with four 100 % independent analysis stations. It is designed to meet the throughput needs of any R&D or QA laboratory wanting reliable and accurate BET surface area and detailed pore size results. Essentially four units in one, with an optional micropore or krypton version, QUADRASORB evo is the most cost-effective and flexible solution for busy labs.

**PHYSIOSORPTION STATIONS:**

One, two, or three

VACUUM SYSTEM:

Turbo pump and roughing pump

DEGASSING STATIONS:

Four, with turbo pump & cold trap

RELATIVE PRESSURE RANGE:

1×10^{-9} to 0.9999 P/P₀

OPTIONS:

Self-contained vapor dosing system, CryoSync accessory

STANDARD METHODS:

ASTM D4365, ASTM D4780

As for autosorb iQ plus:

CHEMISORPTION CAPABILITY:

One station

CHEMISORPTION FURNACE:

Maximum temperature: 1100 °C
Rapid cooling with fan

OPTIONS:

TCD with or without injection loop
Twelve gas inputs
Mass flow controller
Integrated mass spectrometer
High chemical compatibility

STANDARD METHODS:

ASTM D3908, ASTM D4824

FURNACE MAXIMUM TEMPERATURE:

1100 °C

FURNACE RAMP RATES:

1 °C to 50 °C per minute

FURNACE COOLING:

Automated built-in fan

INJECTION/TITRATION LOOP:

Automated

PRIMARY DETECTOR:

Tungsten/rhenium 2-filament TCD

NUMBER OF STATIONS:

1 analysis and 1 degas

INPUT PORTS:

1 inert, 3 analysis, 1 titration

ANALYSIS STATIONS:

1 or 2

MAX. PRESSURE DATA:

100 bar or 200 bar absolute

MANIFOLD TEMPERATURE CONTROL:

30 °C to 50 °C

DEGASSING:

Automated in-situ up to 500 °C

OPTIONS:

Booster, recirculator, cryocooler, turbomolecular pump, large expansion volume

PRESSURE RANGE:

0.2 psia to 60,000 psia

PORE SIZE RANGE:

From 0.032 to 1,000 micrometers

NUMBER OF ANALYSIS STATIONS:

2 low-pressure and fill stations
1 or 2 high-pressure stations

STANDARD TEST METHODS:

ASTM D4404, ASTM D4284, USP 267

MEASUREMENT CAPABILITIES:

Through-pore size distribution (maximum, mean, and minimum pore diameter)
Gas and liquid permeability

PRESSURE RANGE:

0.001 bar to 35 bar

THROUGH-PORE SIZE RANGE:

From 0.013 to 500 micrometers

FLOW RATE RANGE:

0.01 L/min to 200 L/min

STANDARD TEST METHODS:

ASTM E128, ASTM F316, ISO 14003

SPECIFICATIONS

SPECIFICATIONS

High-resolution Physiosorption Analyzers: autosorb iQ

High-sensitivity gas sorption analyzers using proprietary small cold-zone technology for detailed micropore size distributions of up to three samples simultaneously. Autosorb iQ performs the most challenging measurements of zeolites, activated carbons, and MOFs, for novel materials research in environmental and industrial applications such as gas storage and supercapacitors. Internal vacuum pumps and dedicated sample preparation stations minimize bench space.

High-resolution Physiosorption and Chemisorption Analyzers: autosorb iQ-C

Autosorb iQ-C measures active metal area, dispersion, and even temperature-programmed analyses as well as surface area and pore size, for comprehensive catalyst characterization. The unique mass spectrometer option is remarkably cost-effective. This instrument is the only combined chemi-physiosorption manometric analyzer available with both built-in degassing stations and multiple micropore-capable physiosorption analysis stations.

Chemisorption Analyzer: ChemBET Pulsar

ChemBET Pulsar combines affordability and automation in a compact benchtop catalyst characterization unit. Programmable analysis sequences combined with an automatic loop injector, gas switching, and furnace temperature ramping enable easy pulse titration and temperature-programmed analyses with minimal user intervention. The instrument uses oxidation- and ammonia-resistant W/Re filaments. The advanced data reduction package with peak deconvolution is comparable to high-end catalyst characterization units.

High-pressure Gas Sorption Analyzers: iSorb HP

With an advanced design featuring high-precision transducers, precise manifold temperature control, and a built-in library of advanced equations of state, the iSorb HP series gives users access to high-quality gas adsorption and kinetic data to a maximum of either 100 bar or 200 bar absolute pressure. Optional temperature control accessories allow measurements over a temperature range of 75 K to 773 K. Available as one- or two-station instruments, the iSorb HP series is perfect for evaluating materials in gas storage, gas separation, or emission control applications.

Mercury Intrusion Porosimeters: PoreMaster Series

The PoreMaster series of mercury intrusion porosimeters determines the size distribution and volume of pores within macroporous materials. Four distinct models are available to fit the specific pore size and sample throughput requirements of users in a wide range of industries, such as oil and gas exploration, pharmaceuticals, ceramics, and building materials. PoreMaster significantly minimizes exposure to both liquid mercury and mercury vapor, ensuring maximum safety for operators.

Capillary Flow Porometers: Porometer 3G Series

The Porometer 3G series of capillary flow porometers delivers accurate and repeatable through-pore size distribution results, typically within only 30 minutes for any sample. As they do not require constant calibration of the pressure gradient within the flow path, multi-instrument alignment is much simpler. Sample throughput is greatly increased by their simplified operation and measurement speed. Three models are available to fit the specific air permeability and pore size characteristics of a wide range of membranes and filtration media.



SPECIFICATIONS

SIZE RANGE:
0.3 nm to 10 µm (diameter)

MIN. SAMPLE VOLUME:
12 µL

MAX. SAMPLE CONCENTRATION:
50 %w/v (sample-dependent)

MEASUREMENT ANGLES:
15°, 90°, 175°

SENSITIVITY:
0.1 mg/mL (lysozyme)

ZETA POTENTIAL RANGE:
>±1000 mV

MIN. SAMPLE VOLUME:
50 µL (dependent on sample viscosity)

MAX. SAMPLE CONCENTRATION:
70 %w/v (sample-dependent)

MAX. SAMPLE CONDUCTIVITY:
200 mS/cm

SENSITIVITY:
0.1 mg/mL (lysozyme)

SIZE RANGE:
0.3 nm to 10 µm (diameter)

MIN. SAMPLE VOLUME:
12 µL

MAX. SAMPLE CONCENTRATION:
50 %w/v (sample-dependent)

MEASUREMENT ANGLE:
175°

SENSITIVITY:
0.1 mg/mL (lysozyme)

MEASURING RANGE:
±89 °OR

RESOLUTION:
0.001 °OR

ACCURACY:
0.01 °OR (MCP 100)
0.005 °OR (MCP 150)

TEMPERATURE CONTROL:
20 °C/25 °C (MCP 100)
15 °C to 35 °C (MCP 150)

PQP/PQP-S AVAILABLE

MEASURING RANGE:
±89 °OR

RESOLUTION:
0.001 °OR to 0.0001 °OR

ACCURACY:
±0.0024 °OR (MCP 5100)
±0.0020 °OR (MCP 5300)
<0.0020 °OR (MCP 5500)

TEMPERATURE CONTROL:
10 °C to 45 °C (Peltier system)

PQP/PQP-S AVAILABLE

ENHANCED DATA INTEGRITY FOR MCP POLARIMETERS:

- No data storage on the instrument so no risk of data loss
- Data in proprietary file format so no changes possible
- Regeneration of raw data for verification purposes
- Data accessible for long retention periods

SPECIFICATIONS

Dynamic Light Scattering: Litesizer 500

Litesizer 500 determines the size, the zeta potential, and the molecular mass of particles dispersed in liquids by using light scattering technologies. In addition, it also measures the transmittance and refractive index of samples using an ingeniously simple software that gives you state-of-the-art particle analysis at the touch of a button. Litesizer 500 offers three different measurement angles including automatic angle selection, which gives you the optimal measurement conditions whether the sample is concentrated or dilute.

Litesizer Accessories: Univette & Dosing System

The Univette is a high-quality reusable cuvette for zeta potential and particle size measurements with Litesizer 500. It enables measurement of particles suspended in organic as well as in aqueous solvents at low sample volumes. The versatile Univette is also extremely robust and allows measurement under critical conditions. The Dosing System enables automated pH-dependent measurements of the particle size and zeta potential, and is programmable via the Litesizer software.

Dynamic Light Scattering: Litesizer 100

With Litesizer 100 you can determine the particle size and transmittance on a wide variety of samples. It gives you rapid and accurate insight into your particle systems, and provides the tools for optimizing them by revealing how they change with time, pH, temperature, and concentration. Litesizer 100 also includes advanced algorithms that enable you to resolve several particle sizes in a single suspension.

Modular Circular Polarimeters: MCP 100/150

The MCP 100/150 polarimeters provide proven technology packaged into a compact polarimeter. They fit into every laboratory, are easy to operate, and provide full compliance with all relevant national and international standards. MCP 150 also comes with all necessary 21 CFR Part 11 features. It is the right choice for analysis in the pharmaceutical, cosmetics, food, and chemical industries as well as for R&D and medical applications.

Modular Circular Polarimeter Series: MCP 5X00

The new MCP 5X00 series combines cutting-edge technology, excellent usability, and modern design: The LED light source for all wavelengths makes the MCP polarimeters virtually maintenance-free. The built-in 21 CFR Part 11 features make MCP 5X00 ideal for measuring the concentration of optically active substances in the pharmaceutical, cosmetics, chemical, and medical industries.

MCP Data Integrity Solutions: Desktop Software and Raw Data Viewer

Software solutions for data management of MCP polarimeters guarantee a high level of data integrity and usability. The MCP desktop software is an all-in-one solution for data processing, administration, and instrument control. The Raw Data Viewer software regenerates all raw data that has ever been exported from the polarimeter. Files are transferred to a network or PC for automatic data archiving, collection, and administration, ensuring an enhanced storage capacity of the instrument.



SPECIFICATIONS

INDUSTRIES:

Beverage, chemistry, pharma, petro, ethanol

ACCURACY:

L-Dens 7400: 1×10^{-4} g/cm³
L-Dens 7500: 5×10^{-5} g/cm³

PROCESS TEMPERATURE:

-40 °C to 125 °C

PROCESS PRESSURE:

Max. 50 bar
(HP version max. 180 bar)

CIP/SIP:

145 °C for max. 30 min.

FLOW RATE:

≤80 L/h

ACCURACY:

1×10^{-3} g/cm³

PROCESS TEMPERATURE:

-10 °C to 60 °C (GLS)
10 °C to 80 °C (SST)

PROCESS PRESSURE:

Max. 6 bar (GLS); max. 16 bar (SST)

WETTED PARTS:

Borosilicate glass (GLS)
Stainless steel (SST)

DIMENSIONS (L X W X H):

166 mm x 155 mm x 91 mm

FLOW RATE:

≤80 L/h

ACCURACY:

1×10^{-3} g/cm³

PROCESS TEMPERATURE:

-10 °C to 60 °C (GLS, SST E)
10 °C to 80 °C (SST)

PROCESS PRESSURE:

Max. 6 bar (GLS); max. 16 bar (SST)

DIMENSIONS (L X W X H):

88 mm x 38 mm x 48 mm (GLS)
99 mm x 34 mm x 38 mm (SST)
134 mm x 64 mm x 64 mm (SST E)

MEASURING PRINCIPLE:

Absorption
Measuring range: 0 AU to 3 AU

WAVELENGTHS:

1 to 3 channels - all with LED
430 nm and optional 280 nm and/or 700 nm (other wavelengths on request)
Resolution: 0.001 AU

REPRODUCIBILITY:

±1 % transmission

LINEARITY:

Better than ±0.5 % transmission

RANGE:

1.3100 to 1.5400 (L-Rix 5000/5100)
1.3100 to 1.4600 (L-Rix 5200)

ACCURACY:

0.0002 nD (L-Rix 5000/5100)
0.0001 nD (L-Rix 5200)

BENEFITS:

Maintenance-free
Never requires adjustment
Various communication possibilities

MEASURING RANGE:

0 g/L to 12 g/L (0 vol. to 6 vol.)
Accuracy: ±0.05 g/L

REPRODUCIBILITY S.D.:

0.05 g/L (0.025 vol)

REPEATABILITY S.D.:

0.025 g/L (0.01 vol)
CIP: 95 °C, 4 hours
Interval: 4 seconds

SPECIFICATIONS

**Density Sensors:
L-Dens 7000 Series**

The L-Dens 7000 series combines the highest accuracy, compact design, and easy integration, which makes it best-in-class for precise density and concentration measurements. The highest accuracy in temperature and optional pressure measurement is the basis for compensating unstable process conditions. There are two types: 4-digit accuracy L-Dens 7400 and 5-digit accuracy L-Dens 7500.

**Density Sensor:
L-Dens 3300**

The L-Dens 3300 density sensor is a powerful, flexible, and budget-friendly instrument for online density measurement and concentration determination at 3-digit accuracy. It is designed as a stand-alone sensor; therefore, there are no additional expenses for integration. The sensor is best suited for lab reactors, pilot- or production plants, for example.

**Density Sensor:
L-Dens 2300**

L-Dens 2300 density sensors are flexible OEM modules which are integrated into instruments and systems. They monitor and control the density or concentration of liquids. These OEM modules are successfully applied in the production control of industrial inkjet printers, soldering machines, fuel measuring systems, measurement of sulfuric acid, and many more. L-Dens 2300 does not require any maintenance or consumables. This keeps your current and future investment costs low.

**Color Sensor for
Beverages: L-Col 6100**

The color of beverages is an important key property for guaranteeing the quality of all kinds of beverages. L-Col 6100 offers MEBAK®-compliant inline color measurement with optional turbidity compensation. The L-Col 6100 inline color sensor can be integrated into all Anton Paar beverage analyzers based on mPDS 5, new and existing systems alike.

**Inline Refractometers:
L-Rix 5000/5100/5200**

L-Rix 5000/5100/5200 are durable and maintenance-free inline refractometers for real-time concentration measurements and production control of raw, intermediate, and final products. They continuously display the refractive index or sugar concentration at the process temperature allowing 24-hour production control. As the sensor is not influenced by stray light it can be used in production lines with see-through windows.

**Process CO₂ Sensor:
Carbo 520 Optical**

Carbonation is a key element in the taste and perceived freshness of a beverage. Having the right concentration of dissolved CO₂ in the beverage is therefore essential. With Carbo 520 Optical you always know the CO₂ concentration of all beverages in your process. This optical measurement system provides drift-free results of unrivaled accuracy. The basis of this breakthrough: A cutting-edge optical measuring principle called ATR* (attenuated total reflection).

*based on patented technology by Anton Paar (AT512291B1, AT512375B1)



SPECIFICATIONS

EXAMPLE APPLICATIONS:

Beverages, chemicals, OCR, petroleum, pharmaceuticals, pickling baths

REPEATABILITY:

0.005 m/s (L-Sonic 5100)
0.01 m/s (L-Sonic 6100)

PROCESS TEMPERATURE:

-25 °C to 125 °C

CIP/SIP:

145 °C for max. 30 min.

PROCESS CONNECTIONS:

L-Sonic 5100: VARIVENT® N or G, DIN 11851, EN 1092-1, AN B16.5;
L-Sonic 6100: tube OD 12 mm

ACCURACY:

0.01 kg/m³ (1 x 10⁻⁵ g/cm³) (density)
0.01 m/s (sound velocity)

PROCESS PRESSURE:

Max. 50 bar

TEMPERATURE:

-25 °C to 125 °C

CIP/SIP: 145 °C for max. 30 min.

DIMENSIONS (L X W X H):

260 mm x 145 mm x 200 mm

DETERMINED PARAMETERS:

True density, temperature-compensated density, sound velocity, temperature-compensated sound velocity, concentration

MEASURING RANGE:

0 ppb to 2000 ppb (trace range)
0 ppm to 24 ppm (wide range)

ACCURACY:

≤±1 ppb or ±3 %
≤±0.048 ppm or ±3 %

REPEATABILITY S.D.:

≤0.5 ppb or 1 %
≤0.024 ppm or 1 %

INTERVAL:

1 to 60 seconds

MEASURING RANGE:

0 g/L to 20 g/L (0 vol. to 10 vol.)

ACCURACY:

±0.05 g/L

REPRODUCIBILITY S.D.:

0.05 g/L (0.025 vol.)

REPEATABILITY S.D.:

0.025 g/L (0.01 vol.)

CIP:

121 °C, 30 minutes

INTERVAL:

15 seconds

MEASURING RANGE:

0 g/L to 20 g/L (0 vol. to 10 vol.)

ACCURACY:

±0.05 g/L

REPRODUCIBILITY S.D.:

0.05 g/L (0.025 vol.)

REPEATABILITY S.D.:

0.025 g/L (0.01 vol.)

MEASURING RANGE:

1 mPa.s to 50,000 mPa.s

TYPICAL ACCURACY:

1 %

TYPICAL REPEATABILITY:

0.5 %

CONDITIONS:

Sample temperature range:
-5 °C to + 200 °C
Sample pressure range:
0 bar to 25 bar

SPECIFICATIONS

Sound Velocity Sensors: L-Sonic 5100/6100

The L-Sonic sound velocity sensors are easily installed and help you optimize the consumption of raw materials and energy, and maximize production. The sensors offer two types of sensing elements: a fork-type L-Sonic 5100 and a tube-type L-Sonic 6100. They are ready for various applications, such as inline concentration measurements, interface detection, or product identification. The sensors continuously monitor the product quality of liquids during production.

Combined Density and Sound Velocity Sensor: L-Com 5500

L-Com 5500 is Anton Paar's density and sound velocity sensor combination for measuring 3-component mixtures with one instrument. It provides the highest accuracy on the market and is ideal for monitoring and controlling chemicals such as formaldehyde-methanol-water mixtures or for the production control of beers (alcohol, extract, and water). L-Com 5000 Version Ex is the explosion-proof version and specially designed for the measurement of flammable liquids in hazardous environments.

Inline Oxygen Sensor: Oxy 510

Oxy 510 measures dissolved oxygen (DO) in both the trace and the wide range. Switching the measuring ranges is easily done by exchanging the sensor cap. The built-in Toolmaster™ automatically identifies the cap and all adjustment parameters. Oxy 510 is ready to measure right out of the box and is certified hygienic (EHEDG Type EL Class I). It can be used as a stand-alone with a (remote) operating terminal or with an mPDS 5 evaluation unit, both supporting communication via analog, PROFIBUS DP, PROFINET, Ethernet/IP, Modbus TCP, and DeviceNet.

Process CO₂ Sensor: Carbo 510

Carbo 510 provides a good balance between high accuracy, speed, and price. With a single volume expansion and a measurement cycle of 15 seconds Carbo 510 is fast enough to be used for closed-loop control of carbonators. Carbo 510 can be used as a stand-alone with operating terminal (OT), remote OT (ROT), or with an mPDS 5 evaluation unit. All of them support communication via analog, PROFIBUS DP, PROFINET, Ethernet/IP, Modbus TCP, and DeviceNet.

Online CO₂ Measurement in Samples Containing Other Gases: Carbo 2100 MVE

This is the right choice for nitrogenized beers or other carbonated drinks with additional nitrogen. The Carbo 2100 MVE online sensor uses the 'multiple volume expansion' (MVE) method which measures the temperature and pressure equilibrium at two different volume expansions. It calculates the correct CO₂ and N₂ content from these values.

Inline Viscometers: L-Vis 510/520 Ex

Immersed directly in the production liquid, L-Vis 510/520 inline viscometers continuously display the viscosity at the process temperature and reference temperature, allowing 24-hour monitoring of process liquids. Anton Paar's inline viscometers have an integrated display and evaluation unit with standard industrial interfaces. They fulfill the NAMUR recommendation NE107 (self-monitoring and diagnosis).



THREE MEASUREMENT TECHNOLOGIES TO FIT YOUR REQUIREMENTS:

- L-Dens 7500: with the highest accuracy; suitable for fiscal measurements
- L-Sonic 5100: the best sensor for applications requiring modest accuracy
- L-Rix 5100/5200: for pulpy and viscous samples

BEER MONITOR 5500/5600:

Alcohol:
0.02 %w/w / 0.01 %w/w
Real/original extract:
0.02 °Plato / 0.04 °Plato
CO₂:
0.05 g/L / 0.01 g/L
0.025 vol. / 0.005 vol.

THREE MEASUREMENT TECHNOLOGIES TO FIT YOUR REQUIREMENTS:

L-DENS 7400/7500
The highest accuracy
Suitable for fiscal measurements
Digital signal processing

L-SONIC 5100
The best value for applications requiring modest accuracy
EHEDG-certified

L-RIX 5100/5200
For pulpy and viscous samples
EHEDG-certified

ACCURACY:
<0.02 °Brix
(range: 0 °Brix to 50 °Brix)
<1 %Diet
(range: 0 %Diet to 150 %Diet)
0.025 vol. (0.05 g/L) CO₂
(range: 0 vol. CO₂ to 6 vol. CO₂)
0.04 %w/w alcohol
(range: 0 %w/w to 16 %w/w alcohol)

- FEATURES:**
- User-friendly calibration
 - Adjustment function
 - Remote control and remote diagnosis
 - SQL database technology

- BENEFITS:**
- Enhanced usability with intuitive human-machine interface and several choices of main screen layout via 8.4" color touchscreen
 - Alerts to prevent out-of-spec production (screen color and via digital outputs)
 - Numerous user programs preinstalled
 - Flexible connectivity with USB, Ethernet (LAN), analog, and various fieldbus outputs

SPECIFICATIONS

SPECIFICATIONS

Alcohol Monitor

The Alcohol Monitor determines the alcohol content of binary mixtures for various beverages using density, sound velocity, or refractive index. Depending on the integration and legal requirements, the most appropriate configuration can be chosen. All Alcohol Monitor versions are maintenance-free and can be installed directly in the main line, which saves time and minimizes operating costs.

Beer Monitor

Beer Monitor 5500/5600 continuously monitors the alcohol content, apparent and real extract, original extract, degree of fermentation, density, CO₂, and temperature. The system accommodates a wide range of beer styles, as well as non-alcoholic beers, FMBs/FABs, ciders, and shandies.

Brix Monitor

The Brix Monitor enables highly accurate inline sugar concentration measurements. It continuously determines the °Brix value of soft drinks, fruit juice, and syrup using density, sound velocity, or refractive index. Maintenance-free operation and direct installation in the line with integrated HMI result in cost-optimized monitoring and control.

Inline Beverage Analyzers: Cobrix 5500/5600

Cobrix 5500 and Cobrix 5600 are ideal for the beverage analysis of soft drinks, beer, wine, cider, FABs, juice, diet drinks, tea, and other beverages. You can count on the continuous, accurate, and safe measurement of essential quality parameters such as °Brix, %Diet concentration, CO₂, alcohol, sugar inversion, extract, and more throughout your production process.

PC Software: Davis 5

Davis 5 is Anton Paar's comprehensive data acquisition and visualization software. It can be connected via Ethernet to any personal computer throughout your organization to analyze the production key performance indicators in real-time. As Davis 5 connects your lab analyzing systems directly to Anton Paar's inline beverage analyzers, calibration and adjustments are automated and manual operator interaction is no longer required. Calculation of mean values, standard deviations, production times and stops, and Cp and Cpk values.

Evaluation Unit: mPDS 5

The mPDS 5 evaluation unit with graphical color touchscreen interface continuously converts the raw values from the process sensors into application-specific concentration results. Numerous user programs are preconfigured, and creating new concentration polynomials and special programs is easy. Available fieldbus interfaces include PROFIBUS DP, PROFINET IO, EtherNet/IP, Modbus TCP, and DeviceNet.



ACCURACY:
 0.025 °Plato
 (based on density)
 0.06 °Plato
 (based on sound velocity)
 0.05 °Plato
 (based on refractive index)

PARAMETERS:
 Original extract [°Plato]
 Apparent extract density [°Plato]
 Alcohol [%w/w]
 Alcohol 20 °C [%v/v]
 Real extract [°Plato]
 Real degree of fermentation [%]
 Fermentation speed [alcohol 20 °C increase in %v/v/h]
 Values match the reference values by typically better than <0.1 °Plato and <0.2 %v/v alcohol

WINE MONITOR 5500/5600:
 Alcohol:
 0.04 %w/w / 0.02 %w/w
 Extract:
 0.4 g/L / 0.2 g/L
 CO₂:
 0.05 g/L / 0.01 g/L
 0.025 vol. / 0.005 vol.

BENEFITS:

- Modular reference systems form the basis for easy and cost-efficient customization
- Fully integrated via an inline adapter, bypass, or pump
- Your specifications define the used materials, components, and design of the sampling and measuring system

ALCOHOL:
 0 %w/w to 12 %w/w,
 0 %v/v to 15 %v/v

REAL (ORIGINAL) EXTRACT:
 0 °Plato to 12 °Plato
 (0 °Plato to 35 °Plato)

DISSOLVED CO₂ CONCENTRATION:
 0 vol. to 6 vol.,
 0 g/L to 12 g/L

DISSOLVED O₂ CONCENTRATION:
 0 ppb to 2000 ppb

BENEFITS:

- Ready-to-go measuring solutions
- Minimum implementation effort
- Flexible and open solutions for all environments
- One-stop shop for systems and services

SPECIFICATIONS

SPECIFICATIONS

Extract/Original Extract/Plato Monitor

Monitor the extract concentration in hot and cold wort (monitor versions based on density, sound velocity, or refractive index available) and determine the original extract of your beer (monitor versions based on sound velocity).

Fermentation Monitor 5100

The Fermentation Monitor continuously monitors the alcoholic fermentation during the production of beer, wine, or spirits based on an inline refractive index measurement.

Wine Monitor

Both Wine Monitor 5500 and Wine Monitor 5600 are highly accurate instruments for the continuous monitoring of the alcohol content, extract, density, and CO₂ concentration of all wines – from red, white, and rosé wines to wine mix drinks.

Sampling Systems for the L-Dens 7000 Series

The sampling systems for the L-Dens 7000 density sensor are a full one-stop-shop solution for density and concentration measurement. The properties of the media to be measured define the used materials and components. The layout of the facility and the operating modes build the framework conditions for the design of the sampling and measuring system.

Beer Analysis by Integrated Module: Animo 5100

Animo 5100 is a modular measuring system which delivers all critical quality control parameters from the beer filling line. It integrates the high-quality online sensors, analyzers, and mechanical components needed for precise and safe operation.

Expertise in Process and Plant Engineering

We combine our leading measuring technologies and process- and application-specific know-how with process engineering services. A complete set of project services ensures that systems/solutions are integrated into customers' environments and infrastructures. The benefits are best-in-class measuring and process solutions and highly efficient implementation projects.



WAVELENGTH:
785 nm

SPECTRAL RANGE:
400 cm⁻¹ to 2300 cm⁻¹

RESOLUTION:
10 cm⁻¹

SINGLE-BAND INSTRUMENT WAVELENGTHS:
532 nm
785 nm
1064 nm

DUAL-BAND INSTRUMENT WAVELENGTHS:
532 nm + 785 nm
532 nm + 1064 nm
785 nm + 1064 nm

WAVELENGTHS:
532 nm
785 nm
1064 nm

SPECTRAL RANGE:
100 cm⁻¹ to 3200 cm⁻¹

RESOLUTION:
Up to 4 cm⁻¹

REFRACTIVE INDEX:
Range: 1.3 nD to 1.66 nD (Abbemat 3000 & Abbemat 3100)
Range: 1.3 nD to 1.72 nD (Abbemat 3200)
Accuracy: ±0.0001 nD
Resolution: ±0.0001 nD

°BRIX:
Range: 0 % to 100 %
Accuracy: ±0.05 %
Resolution: ±0.01 %

PQP-S AVAILABLE

REFRACTIVE INDEX:

ABBEMAT 300:
Range: 1.26 nD to 1.72 nD
Accuracy: ±0.0001 nD
Resolution: ±0.00001 nD

ABBEMAT 500:
Range: 1.26 nD to 1.72 nD
Accuracy: ±0.00002 nD
Resolution: ±0.000001 nD

PQP/PQP-S AVAILABLE

REFRACTIVE INDEX:

ABBEMAT 350:
Range: 1.26 nD to 1.72 nD
Accuracy: ±0.0001 nD
Resolution: ±0.00001 nD

ABBEMAT 550:
Range: 1.26 nD to 1.72 nD
Accuracy: ±0.00002 nD
Resolution: ±0.000001 nD

PQP/PQP-S AVAILABLE

SPECIFICATIONS

SPECIFICATIONS

Handheld Raman Spectrometer: Cora 100

The Cora 100 handheld Raman analyzer is the ruggedized, straightforward solution for the identification of unknown substances within seconds. Cora 100 helps authorities (e.g. CBRN experts or hazmat teams) to assess potentially hazardous materials and provides on-the-spot identification of narcotics, listed substances, explosives, or chemicals. Additionally, the instrument is ideal for verification measurements on incoming goods in industrial applications.

Benchtop Raman Spectrometers: Cora 5X00

The Cora 5X00 series combines a small footprint with the performance and high repeatability of a benchtop instrument. The transportable single- or dual-wavelength Raman spectrometers achieve maximum Raman signal and minimum fluorescence background.

TE-Cooled Benchtop Raman Spectrometers: Cora 7X00

The Cora 7X00 series of high-performance Raman spectrometers has been developed for academic and industrial research. To achieve a high signal-to-noise ratio for low-scattering or low-concentration samples, the instruments are equipped with cooled or deep-cooled detectors. With the fiber probe, the Cora 7X00 Raman spectrometers can be easily attached to experimental setups.

Compact Refractometers: Abbemat 3X00

Reliability, precision, and convenience: Abbemat 3X00 refractometers offer an exceptional combination of technical expertise and user-friendly operation for refractive index and concentration measurements. The premium technology and compactness of the Abbemat 3X00 series transform time-consuming measurements into highly efficient quality control.

Performance Line Refractometers: Abbemat 300/500

The robust and easy-to-operate Abbemat 300/500 refractometers are ideal solutions for routine analysis and quality control. The display gives a clear pass/fail result for analysis of large numbers of samples when time is short. The refractometers are successfully combined with Anton Paar's DMA M density meters, MCP polarimeters, and SVM viscometers.

Performance Plus Line Refractometers: Abbemat 350/550

The versatile, high-end Abbemat 350/550 refractometers are designed for research and development and demanding quality control applications. The large and intuitive touchscreen display simplifies navigation. These refractometers are easily expanded by numerous accessories and can be combined with Anton Paar's DMA M density meters, MCP polarimeters, and SVM viscometers.

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SPECIFICATIONS

ABBEMAT JUICE STATION 300:

Range: 0 °Brix to 100 °Brix
Accuracy: 0.05 °Brix
Resolution: 0.01 °Brix

ABBEMAT JUICE STATION 550:

Range: 0 °Brix to 100 °Brix
Accuracy: 0.015 °Brix
Resolution: 0.001 °Brix

REFRACTIVE INDEX:

ABBEMAT 450:

Range: 1.26 nD to 1.72 nD
Accuracy: ±0.0001 nD
Resolution: ±0.00001 nD

ABBEMAT 650:

Range: 1.26 nD to 1.72 nD
Accuracy: ±0.00002 nD
Resolution: ±0.000001 nD

PQP/PQP-S AVAILABLE

REFRACTIVE INDEX:

Range: 1.30 nD to 1.72 nD
Accuracy: ±0.00004 nD
Resolution: ±0.000001 nD
Up to 8 optional wavelengths in the range from 436 nm to 656 nm

SPEED RANGE:

0.01 1/min to 1200 1/min

TORQUE RANGE:

0.20 mNm to 75 mNm

VISCOSITY RANGE:

1 mPa.s to 10⁹ mPa.s

TEMPERATURE RANGE:

-20 °C to 180 °C

PQP AVAILABLE

SPEED RANGE:

10⁻³ rpm to 1500 rpm

ANGULAR VELOCITY RANGE:

10⁻⁴ rad/s to 157 rad/s

TORQUE RANGE:

1 µNm to 125 mNm

ANGULAR FREQUENCY RANGE:

10⁻⁴ rad/s to 628 rad/s

TEMPERATURE RANGE:

-5 °C to 200 °C

PQP/PQP-S AVAILABLE

ANGULAR VELOCITY RANGE:

10⁻⁹ rad/s to 314 rad/s

TORQUE RANGE:

0.5 nNm to 300 mNm

ANGULAR FREQUENCY RANGE:

10⁻⁷ rad/s to 628 rad/s

NORMAL FORCE RANGE:

0.005 N to 70 N

TEMPERATURE RANGE:

-160 °C to 1000 °C

PQP/PQP-S AVAILABLE

SPECIFICATIONS

**Abbemat Juice Station:
Based on Abbemat 300/550**

The Abbemat Juice Station refractometers are used for fast and easy Brix measurements. They are the ideal solution for measuring fruit juices. The vertical setup avoids sedimentation of particles like pulp on the measuring prism and ensures reliable and stable measuring results.

**Heavy Duty Refractometers:
Abbemat 450/650**

The Abbemat 450 and Abbemat 650 Heavy Duty refractometers combine robustness with high precision. Via remote operation the instruments can be used at-line, in fume hoods, or in glove boxes. The durable measuring unit is waterproof (IP68) and withstands hosing off the production plant. A vertical positioning enables reliable results for samples containing particles or pulp. These refractometers offer a temperature control range from 4 °C to 125 °C.

**Multi-Wavelength
Refractometer: Abbemat MW**

The Abbemat MW enables measurements of the refractive index at different measuring wavelengths, e.g. for dispersion and Abbe number determination. For these measurements Abbemat MW can be equipped with up to 8 different wavelengths. This makes the Abbemat MW digital refractometer a versatile instrument for investigating liquids, polymer bonds, and glasses.

**Rotational Rheometer:
RheolabQC**

RheolabQC is a rotational rheometer featuring a highly dynamic EC motor for fast and convenient viscosity measurement and routine rheological checks. It is used for investigations of the flow behavior of paints and coatings, food, cosmetics, pharmaceuticals, adhesives, oils, asphalt, and many more. RheolabQC can be operated as a stand-alone or software-controlled rheometer. Numerous measuring geometries and accessories, including a Peltier temperature device, are available.

**Modular Compact
Rheometers: MCR 72
and MCR 92**

The two wisest choices for quick and easy rheological measurements, streamlined for the daily lab routine. Special features like a step-by-step software, TruRay (integrated light), QuickConnect (fast and easy mounting of the measuring system), Toolmaster™ (automatic tool recognition and configuration), and several patented air-cooled Peltier temperature units (H-PTD, C-PTD, or P-PTD) guarantee excellent ease of use.

**Modular Compact
Rheometers: MCR 102,
MCR 302, MCR 502**

The MCR rheometer series provides any type or combination of rheological tests (rotational or oscillatory) based on the low-friction, air-bearing-supported synchronous EC motor technology. The modularity of the system allows the integration of a wide range of temperature devices and application-specific accessories to solve all kinds of measurement tasks.



TORQUE RANGE:
0.5 nNm to 230 mNm (CMT)

ANGULAR VELOCITY RANGE:
 10^{-9} rad/s to 2×314 rad/s

ANGULAR FREQUENCY RANGE:
 10^{-7} rad/s to 628 rad/s

NORMAL FORCE RANGE:
0.001 N to 50 N

TEMPERATURE RANGE:
-160 °C to 1000 °C

TEMPERATURE RANGE:
300 °C to 1800 °C (1600°C)

TORQUE RANGE:
10 nNm to 230 mNm

NORMAL FORCE RANGE:
0.005 N to 50 N

MAXIMUM SPEED:
300 rpm

TEST MODES:
Rotation and oscillation

STANDARD METHODS:
AASHTO T315, AASHTO T350,
AASHTO TP101-UL,
ASTM D7175, ASTM D7405,
DIN EN 14770, AASHTO T316,
ASTM D4402, DIN EN 13302,
FGSV AL 720, 721, 722, 723

TEMPERATURE RANGE:
-30 °C to 120 °C

TORQUE RANGE:
5.0 nNm to 200 mNm

ANGULAR FREQUENCY:
 10^{-7} rad/s to 628 rad/s

ADDITIONAL PARAMETERS:
Magneto- and Electrorheology,
Dielectric Spectroscopy, Pressure,
Humidity

STRUCTURE ANALYSIS AND OPTICS:
Rheo-SALS/SAXS/SANS,
Particle Image Velocimetry, UV,
Microscopy, Polarized Imaging,
Raman

MATERIAL CHARACTERIZATION:
Building Material Cell, Starch
Cell, DMA, Extensional Rheology,
Powder Cell, Tribology

APPLICATIONS:
Any powder in any state - from
high loads to low loads and even
aerated or fluidized powders

TEMPERATURE AND HUMIDITY:
Precise temperature and humidity
control by combining the powder
shear cell with a convection oven
and a humidity option

PATENTED DUST PROTECTION:
The unique protection system
keeps your work environment safe
and clean, even when fluidizing
powders in the powder flow cell

TYPICAL COMBINATIONS:

- Confocal microscopy (CLSM/CSDM)
- Spectroscopy
- X-ray scattering (SAXS, WAXS)
- Neutron scattering (SANS)
- Customized accessories

SPECIFICATIONS

SPECIFICATIONS

Modular Compact Rheometer: MCR 702 MultiDrive

The MCR 702 MultiDrive can perform rheological tests with two torque transducers and drive units at once. Due to the modular setup, MCR 702 MultiDrive is able to work in combined motor transducer (CMT) mode using one EC motor and also in counter-rotation, counter-oscillation, and separate motor transducer (SMT) mode using two EC motors. This means it covers all possible rheological applications.

Furnace Rheometer System: FRS 1800 (1600)

Viscosity measurements up to the highest temperatures: The FRS 1800 (1600) furnace rheometer systems combine a DSR 502 rheometer head and a lab furnace. Designed for viscosity measurements between 1 mPa.s and 10^7 Pa.s and at temperatures up to 1800 °C (1600 °C), these systems characterize the rheological behavior of all kinds of melts in rotation and oscillation. The result is reliable data of high quality for R&D, QC, and process development.

Dynamic Shear Rheometer: SmartPave

SmartPave is based on the latest technology used by MCR rheometers with the well-established EC motor system. 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, comfort, and ease of use.

Modular Compact Rheometers: Accessories

A wide range of application-specific accessories is available for easy integration into MCR rheometers, enabling additional parameter setting, optical and dielectric sample structure analysis combined with rheology as well as the transfer of MCR rheometers' capabilities into other material characterization applications.

Modular Compact Rheometers: True Powder Rheology

An MCR rheometer combined with the powder shear cell and the powder flow cell gives you all the possibilities you need for comprehensive powder characterization. This unique system guarantees the determination of powder behavior with the highest precision. Due to its high versatility the powder cells can be used for in-depth powder characterization or as an easy-to-use quality control tool.

Customized Solutions: MCR 502 WESP

Anton Paar is able to develop customized measuring setups with the renowned accuracy and modularity of the MCR rheometers. The extensive range of accessories for MCR can also be installed in these setups. MCR WESP is ideal for combinations with optical analysis instruments. This flexible instrument offers plenty of space and a good view of the sample and is therefore open for all measuring tasks.

**SAMPLES:**

Liquids, solids, powders, pastes, foils, polymers

PARTICLE SIZE, Q-RANGE:

Up to 100 nm (d-spacing: 200 nm)
q-range 0.03 nm⁻¹ to 40.7 nm⁻¹

TEMPERATURE RANGE:

-150 °C to 600 °C

SMARTSAXS FEATURE:

Line- and/or point collimation for all SWAXS applications

**SAMPLES:**

Solids, liquids, nanostructured surfaces, powders, polymers, foils, fibers, pastes

Q-RANGE:

q = 0.012 nm⁻¹ to 46.4 nm⁻¹
(2D Eiger2 R)

TEMPERATURE RANGE:

-150 °C to 600 °C

**SAMPLE HOLDERS FOR TCSTAGE:**

PasteCell, μ-Cell, RotorCell, FlowCell, TubeCell, PressureCell, capillary holders

AUTOSAMPLERS:

High-throughput screening of multiple solid and liquid samples

GISAXS STAGE 2.0:

Precision stage for GISAXS studies of nanostructured surfaces

TENSILE AND HUMIDITY STAGE:

SWAXS studies under controlled humidity or tensile stress

RHEOSAXS MODULE:

Combination with the DSR 502 dynamic shear rheometer

**APPLIED LOAD:**

Resolution: 0.01 μN
Max. load: 1000 mN

FRICTION FORCE:

Resolution: 1 μN
Max. friction force: 1000 mN

DEPTH:

Resolution: 0.1 nm
Max. depth: 600 μm

SPEED:

From 0.1 mm/min to 600 mm/min

**APPLIED LOAD:**

Resolution: 100 μN
Max. load: 200 N

FRICTION FORCE:

Resolution: 100 μN
Max. friction force: 200 N

DEPTH:

Resolution: 0.05 nm
Max. depth: 1000 μm

SPEED:

From 0.4 mm/min to 600 mm/min

**SHAFT SPEED:**

10 rpm to 3000 rpm

ABRASION TIME RANGE:

1 s to 10000 s

STANDARD BALL DIAMETERS:

10 mm, 15 mm, 20 mm, 25.4 mm, 30 mm

INTERNATIONAL STANDARDS:

ISO 26423, ISO EN 1071-2, VDI 3198

SPECIFICATIONS

SPECIFICATIONS

High-throughput Nanostructure Analysis: SAXSpace

SAXSpace is a modular small- and wide-angle X-ray scattering (SWAXS) system for characterizing your nanostructured materials and samples. It offers a variety of precise sample stages and provides easy handling for smooth operation. SAXSpace is especially suited for high-throughput analysis of isotropic colloidal and biological samples (Bio-SAXS).

The Laboratory SAXS/WAXS/GISAXS/RheoSAXS System: SAXSpoint 2.0

The new SAXSpoint 2.0 system provides an innovative solution for SAXS, WAXS, GISAXS and RheoSAXS studies in the home laboratory. SAXSpoint 2.0 employs scatterless collimation, a moving detector feature with the latest detector technology, and brilliant X-ray sources providing outstanding flux, such as the Primux 100 micro X-ray source, a new high-performance microfocus sealed-tube X-ray source from Anton Paar which provides premium X-ray beam brilliance at low power.

Versatile Sample Stages: Full Experimental Flexibility

Dedicated sample stages and holders for SAXSpoint 2.0 and SAXSpace give users limitless possibilities. The TCStages provide precise temperature control from -150 °C to 600 °C. The autosamplers enable automatic measurements of up to 192 liquid samples. Users can perform GISAXS studies of nanostructured surfaces, SWAXS studies under controlled tensile stress or controlled atmosphere (e.g. humidity, air, inert gas), and RheoSAXS studies correlating structural changes with macroscopic properties.

Nano Scratch Tester: NST³

The NST³ nano scratch tester is particularly suited for the characterization of adhesion failure and scratch resistance of thin films and coatings with a typical thickness below 1000 nm. It can be used for the analysis of organic and inorganic coatings, for soft and hard materials.

Revetest[®] Scratch Tester: RST³

The Revetest[®] scratch tester is widely used for characterizing the adhesion and scratch resistance of hard-coated materials with a typical coating thickness exceeding 1 μm. Anton Paar is the world leader in scratch testing, having sold more than 1500 Revetests worldwide.

Calotest: CAT²

CAT² is the ideal instrument for a quick and precise determination of coating thickness. Measurements can be performed in a very short time (1 to 10 minutes). CAT² is widely used for analyzing coatings with a thickness between 0.1 μm and 50 μm. Typical examples are CVD, PVD, plasma spray, anodic oxidation layers, chemical-galvanic deposits, polymers, paints, and lacquers.



MEASURING RANGE:
0 °Brix to 80 °Brix
0 % to 100 % degree of inversion

REPEATABILITY:
Concentration, sugar actual:
0.01 °Brix
Fresh/inverted: 0.02 °Brix
Degree of inversion: 1 %

MEASURING TIME PER SAMPLE:
5 minutes incl. filling



REPEATABILITY:
Concentration, sugar actual:
0.01 °Brix
Fresh/inverted: 0.02 °Brix
Degree of inversion: 1 %
CO₂: 0.005 vol. (0.01 g/L)

MEASURING TIME PER SAMPLE:
3 to 5 minutes incl. filling



PARAMETERS:
%Diet, phosphate, or total acid

MEASURING RANGE:
0 % to 200 % or
0 mL NaOH to 100 mL NaOH or
0 g/L TA to 100 g/L TA

REPEATABILITY:
Colored: 0.2 %
Colorless or turbid: 0.4 %



MEASURING RANGE:
±259 °Z

RESOLUTION:
0.001 °Z

ACCURACY:
±0.01 °Z (MCP 5300 Sucromat)
±0.006 °Z (MCP 5500 Sucromat)

TEMPERATURE CONTROL:
20 °C and 25 °C (Peltier system)

PQP/PQP-S AVAILABLE



TO MEASURE POLARIZATION (°Z):
MCP 5300/5500 Sucromat

TO MEASURE DRY SUBSTANCE (°BRIX):
Abbemat 300/500
Abbemat 350/550



ANALYZED SUGAR BEET PARAMETERS:

- Sugar content (polarization, °Z)
- Potassium (K)
- Sodium (Na)
- α-amino nitrogen (α-N)

CALCULATION OF RELEVANT DATA:

- Sugar yield
- Molasses sugar content
- Lead- and alternatively clarified samples can be measured at a sample rate of 120/h

SPECIFICATIONS

SPECIFICATIONS

Soft Drink Analyzer System M

Soft Drink Analyzer M determines the fresh, actual, and fully inverted sugar concentration and degree of inversion in soft drinks and syrups. Manually forced inversion is no longer required. Upgrade Soft Drink Analyzer M with Xsample 520 sample changer and additional modules such as DietQC ME or pH ME and create the comprehensive Soft Drink Analyzing System.

Packaged Beverage Analyzer for Soft Drinks: PBA-S/SI

PBA-S M systems allow you to downscale the analysis time of soft drinks of all kinds to 3 to 5 minutes by parallel analysis from a single package. QC parameters such as °Brix actual, °Brix before and after the sugar inversion in regular soft drinks, as well as the CO₂ content are determined automatically without the need for sample preparation. Additional modules for pH or O₂ can be integrated as well. By extending the system with DietQC ME, the %Diet concentration can be measured.

Diet Soft Drink Analysis with DietQC ME with Option for Uncolored Drinks

DietQC ME and DietQC ME with the option for uncolored drinks allow the precise concentration measurement of diet soft drinks. The instrument employs a drift-stabilized precision colorimeter equipped with a Peltier thermostat. This powerful colorimetric method (430 nm and 280 nm) is independent of fluctuations in process water composition. This module can be integrated in a Soft Drink Analyzing System M or a PBA-S/SI system.

Saccharimeters: MCP 5300/5500 Sucromat

The MCP Sucromat saccharimeter series precisely determines the sugar content (Pol, °Z) and measures at 589 nm (equal to Sodium D line) according to ICUMSA. The optional 880 nm NIR wavelength is ideal for the analysis of lead-free clarified solutions. All wavelengths are generated by virtually maintenance-free LEDs.

Apparent Purity, Polarization, and Dry Substance: MCP Sucromat and Abbemat Series

MCP Sucromat polarimeters and Abbemat refractometers are combined into an efficient team for enhancing sugar factories' performance. The raw, intermediate, and final products of sugar manufacturing are subjected to fast, automated analyses to determine sugar content (°Z), dry substance (°Brix), and apparent purity.

Quality Analysis of Sugar Beet: Betalyser

The Betalyser laboratory system analyzes sugar beet quality according to official ICUMSA methods. Using this solution, a payment system for sugar beet can be established based on technical quality and not just on tonnage or polarization. By optimizing fertilization and cultivation, a higher beet quality is achieved in a short period of time. Better sugar beet varieties with high sucrose content and a genetically improved white sugar yield can be developed.



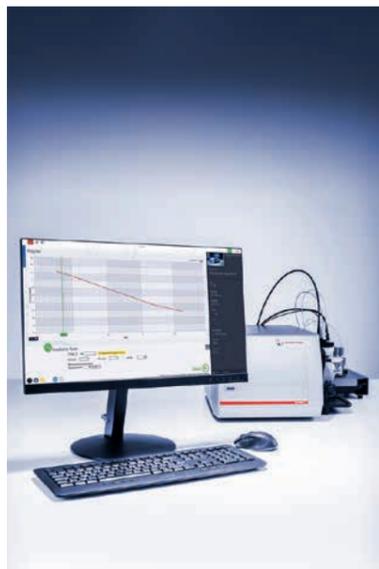
APPLICATIONS:

- Membranes and filters
- Biomaterials
- Semiconductors
- Textiles
- Cosmetics and detergents
- Minerals and rocks



SAMPLES:

- Films, foils, and plates
- Fibers, fabrics, and nonwovens
- Granular media
- Capillaries and tubes



ZETA POTENTIAL DEPENDENCIES:

- pH
- Time
- Ionic strength
- Surfactant concentration
- Protein concentration



REFRACTIVE INDEX:

- Range: 1.3 nD to 1.72 nD
- Accuracy: ± 0.00002 nD
- Resolution: ± 0.000001 nD

TEMPERATURE:

- Range: 4 °C to 125 °C
- Accuracy: ± 0.003 °C
- Resolution: ± 0.001 °C



FORCE RANGE:

- 0.0005 N to 40 N

DISPLACEMENT RANGE:

- 0.01 μ m to 9400 μ m

FREQUENCY RANGE:

- 0.001 Hz to 100 Hz

TEMPERATURE RANGE:

- 160 °C to 600 °C



MEASURING SYSTEMS:

- Three-point-bending, dual cantilever, single cantilever, solid rectangular fixture, compression system

FURTHER OPTIONS:

- Low-temperature system based on liquid nitrogen, humidity option, gas chiller

SPECIFICATIONS

SPECIFICATIONS

Electrokinetic Analyzer for Solid Surface Analysis: SurPASS 3

The SurPASS 3 electrokinetic analyzer is used in surface analysis to investigate the zeta potential of macroscopic solids based on a streaming potential and streaming current measurement. The zeta potential provides information on the charging behavior of a surface in contact with a liquid. Besides the high-end model, SurPASS 3 Eco is available for routine solid surface analysis.

For Solids of Various Shape

SurPASS 3 provides information on surface charge and related properties, and detects the smallest changes in the outermost material surface. A variety of different measuring cells accommodates natural and technical fibers, porous ceramics, coarse particles, and samples with a planar surface. Furthermore, surface charge analysis can be performed on contact lenses, hollow fiber membranes, and flexible tubings.

Straightforward Analysis with the SurPASS 3 Software

With SurPASS 3 there is no need for elaborate preparation of sample and measurement. The SurPASS 3 software provides an intuitive interface with features such as the automated analysis of the isoelectric point with a single click. It also allows for the recording of the adsorption and desorption kinetics of additives on surfaces.

Thermo-optical Oscillating Refraction Characterization: TORC 5000

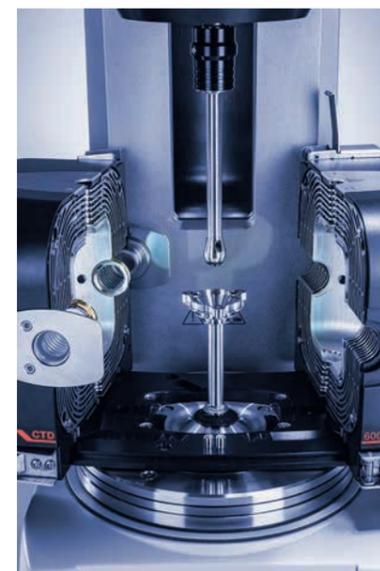
TORC 5000 is a powerful and innovative solution for thermal analysis, e.g. for monitoring curing and polymer reactions as well as the temperature- and time-dependent behavior of samples. The unique Thermo-optical Oscillating Refraction Characterization (TORC) technique enables determination of thermal expansion and monitoring of phase and glass transitions.

Dynamic Mechanical Analyzer: MCR 702 MultiDrive

The unique concept enables you to perform dynamic mechanical analysis in bending, tension, compression, and torsion as well as thermomechanical analysis (TMA), standard and highly sophisticated rheological measurements with one instrument. The modularity of the system allows the integration of a wide range of temperature devices as well as application-specific accessories and measuring systems to cover all requirements of the greatest variety of different applications.

MCR 702 MultiDrive Accessories

Specialized measuring systems cover the demands of DMA in bending, tension, torsion, and compression and guarantee precise results and easy handling. All accessories employ the QuickConnect functionality that allows one-handed connection and Toolmaster™, the completely contact-free automatic tool recognition and configuration system. Included temperature sensors ensure the highest reproducibility over the entire temperature range without manual positioning of the sensor.



MEASURING RANGE:
Temperature: 0 °C to 100 °C

MEASUREMENT UNCERTAINTY, TEMPERATURE:
10 mK (Pt 100)

MEASURING SENSOR:
Pt 100
(DIN EN 60751)

MEASURING RANGE:
Temperature: -260 °C to 962 °C

MEASUREMENT UNCERTAINTY, TEMPERATURE:
<1 mK (Pt 100)

MEASURING SENSOR:
Pt 100 or Pt 25.5 (DIN EN 60751 or ITS-90 or ASTM E1137)

DENSITY AND TEMPERATURE CALIBRATION OF DENSITY METERS:
Range:
650 kg/m³ to 1550 kg/m³
15 °C to 50 °C
Smallest achievable uncertainty:
0.02 kg/m³ | 15 mK

TEMPERATURE CALIBRATION OF RESISTANCE THERMOMETERS:
Range:
0 °C to 200 °C
Smallest achievable uncertainty:
10 mK

NORMAL FORCE RANGE:
Max.: 1000 mN
Min.: 5 µN

ROTATING CONFIGURATION:
Speed: 1 rpm to 200 rpm
Recipr. angle: ±10° to ±150°

LINEAR CONFIGURATION:
Frequency: 0.01 Hz to 10 Hz
Stroke length: up to 5 mm

NORMAL FORCE RANGE:
Up to 60 N

ROTATING CONFIGURATION:
Rotation speed: 0.2 rpm to 2000 rpm
Radius: up to 40 mm

LINEAR CONFIGURATION:
Frequency: 0.01 Hz to 10 Hz
Linear speed: up to 370 mm/s

OPTIONS:
Temperature up to 1000 °C
Vacuum down to 10⁻⁷ mbar
Top view for in-situ wear observation

SLIDING VELOCITY:
10⁻⁸ m/s to 3.3 m/s

NORMAL FORCE:
0.1 N to 70 N

TEMPERATURE RANGE:
-160 °C to 600 °C

RELATIVE HUMIDITY:
5 % to 95 %

SPECIFICATIONS

SPECIFICATIONS

Millikelvin Thermometer: MKT 10

MKT 10 is a small, very lightweight, and easily portable handheld thermometer. It comes with one sensor and a carrying case for safe transport. With its measuring accuracy of 0.01 °C, it is ideal for at-line measurements and quick measurements on-site in several industries.

Millikelvin Thermometer: MKT 50

The MKT 50 Millikelvin thermometer is designed for the most accurate temperature measurements, comparison calibrations, and fixed-point calibrations. In combination with standard and industrial platinum resistance thermometers, MKT 50 achieves a measuring uncertainty of 10 mK.

ISO 17025 Calibration of Density Meters and Thermometers

Anton Paar offers traceable calibrations of density meters and thermometers according to ISO 17025. With the traceability according to the International SI units and to the International Temperature Scale 1990, the calibrated instrument provides absolutely accurate and internationally comparable results.

Nano Tribometer: NTR³

NTR³ is designed to investigate surface interaction such as friction coefficient and wear at low contact pressure. This instrument is especially suitable where soft layers or lubricants are of interest. NTR³ combines the resolution of an Atomic Force Microscope (AFM) with the stability, robustness, and ease-of-use of a standard pin-on-disk tribometer.

Pin-on-disk Tribometer: TRB³

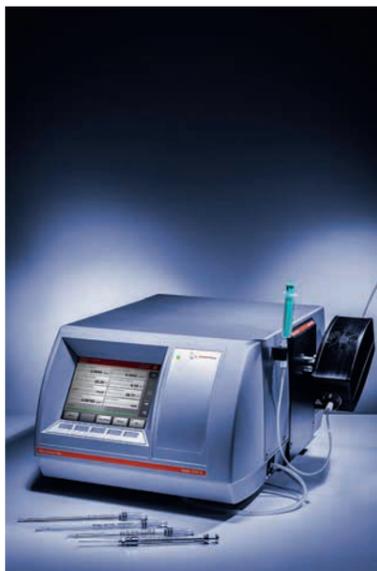
TRB³ is the industry standard for measurement of friction and wear in sliding contacts. A wide range of test parameters, contact geometries, and environmental conditions allows the user to simulate real in-service conditions. Anton Paar tribometers have proven their reliability worldwide in over 1000 laboratories, studying all classes of materials.

MCR Tribometer

The MCR tribometer is a flexible and modular platform which allows you to change quickly between numerous setups. The standard portfolio supports several geometries, such as pin-on-disk, ball-on-three-plates, and rolling bearing setups. You can combine these setups with environmental control over a wide temperature and humidity range. Customized solutions are available for special geometries, specimens, and conditions.

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**MEASURING RANGE:**

0.3 mPa.s to 10,000 mPa.s
Temperature: -20 °C to 100 °C

ACCURACY:

0.5 %*

REPEATABILITY S.D.:

0.1 %*

USP 913; PHARM.EUR.2.2.49

PQP/PQP-S AVAILABLE

*refer to brochure

MEASURING RANGE:

0.2 mm²/s to 30,000 mm²/s

DENSITY RANGE:

0.6 g/cm³ to 3 g/cm³

TEMPERATURE RANGE:

+15 °C to +100 °C (SVM 2001)
-60 °C to +135 °C (SVM 3001)
+15 °C to +100 °C (SVM 4001)

OPTIONAL COMBINATION WITH:

Xsample 340, Xsample 520,
Xsample 530, Xsample 630

PQP/PQP-S AVAILABLE

SPEED RANGE:

0.1 1/min to 200 1/min (ViscoQC 100);
0.01 1/min to 250 1/min
(ViscoQC 300)

MAX. SPRING TORQUE PER MODEL:

L: 0.0673 mNm; R: 0.7187 mNm;
H: 5.7496 mNm

**VISCOSITY RANGE PER MODEL
(M = MILLION):**

L: 1 mPa.s to 6M mPa.s
R: 10 mPa.s to 40M mPa.s
H: 60 mPa.s to 320M mPa.s

ACCURACY/REPEATABILITY:

±1.0 %/±0.2 % full scale range

SPECIFICATIONS

**Microviscometer:
Lovis 2000 M/ME**

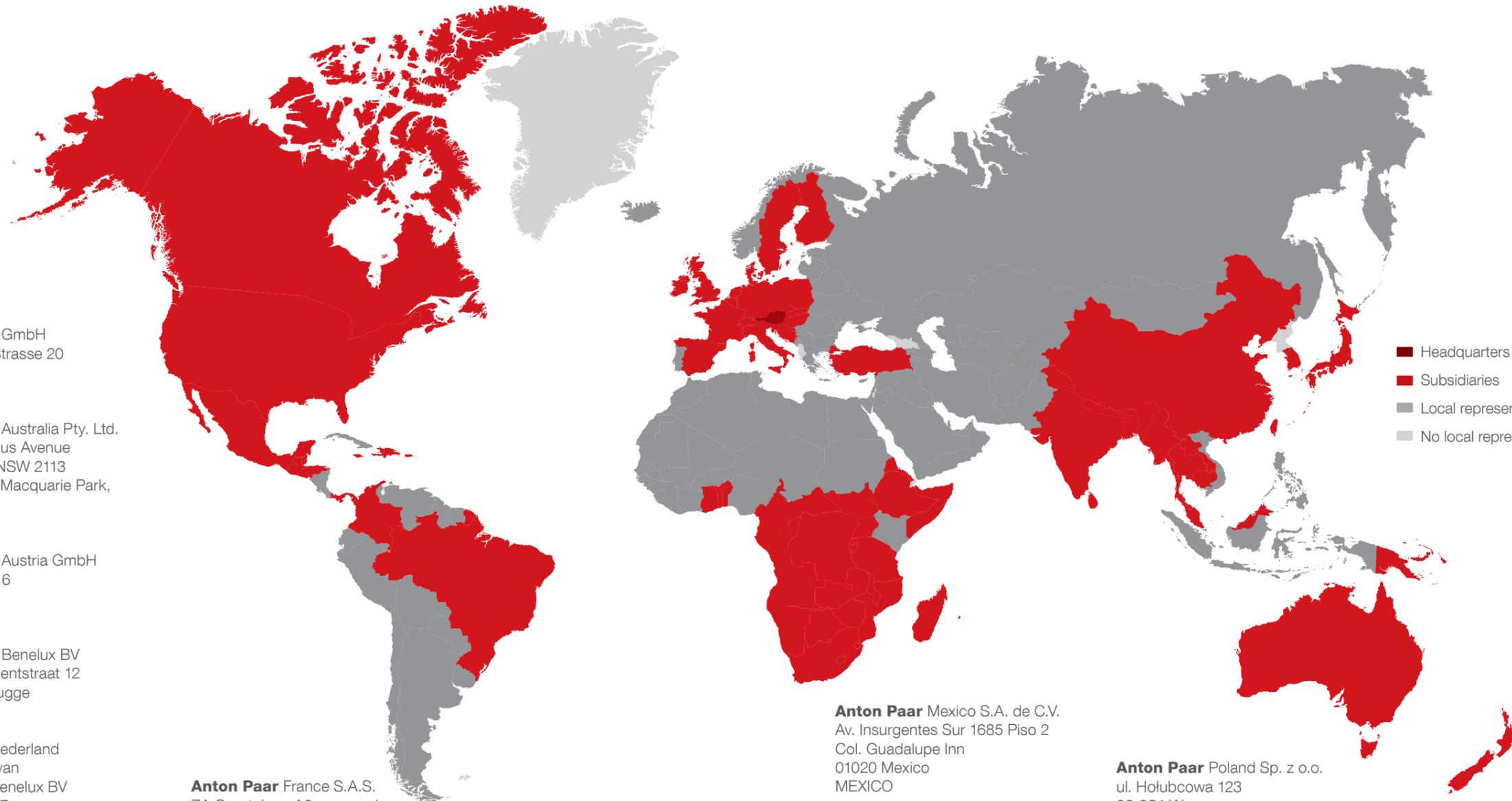
The Lovis 2000 M/ME rolling-ball microviscometer determines the dynamic, kinematic, relative, and intrinsic viscosity of liquids with high precision. It allows testing of small sample volumes starting from 100 µL. Borosilicate glass or break-proof PCTFE capillaries ensure high chemical resistance. Flow-through filling enables easy handling, high sample throughput, and combination with Anton Paar density meters and other instruments, such as Xsample 520 or Abbemat refractometers.

**Kinematic Viscometers:
SVM Series**

The SVM series gives you more parameters than any other kinematic viscometer on the market: kinematic viscosity, density, dynamic viscosity, viscosity index, and more - all from one syringe. The highly precise SVM viscometers are based on the Couette measuring principle and have an integrated density measuring cell. There is an SVM for every application: ranging from lubricating oils, used oils, crude oils, heavy fuels, jet and diesel fuels to vegetable oils and fats.

**Rotational Viscometers:
ViscoQC 100, ViscoQC 300**

ViscoQC 100 is Anton Paar's entry-level rotational viscometer for single-point dynamic viscosity checks. ViscoQC 300 performs multi-point measurements and is upgradeable with compliance (21 CFR Part 11) and/or additional analysis software. Unbeatable ease of use makes ViscoQC the new standard for traceable viscosity checks with a Peltier device for the most precise sample temperature control. Unique features include automatic spindle detection, magnetic spindle coupling for easy one-handed exchange of spindles, the special TruMode™, and many more.



- Headquarters
- Subsidiaries
- Local representatives
- No local representatives

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ASTM

ASTM D6371	11,8
ASTM D1321	11,8
ASTM D1403	11,8
ASTM D217	11,8
ASTM D5	11,8
ASTM D7342	11,8
ASTM D937	11,8
ASTM D36	11,8
ASTM D381	12,9
ASTM D1401	12,9
ASTM D4052	17,14,18,15
ASTM D5002	17,14,18,15
ASTM D8188	18,15
ASTM D3934	21,18,22,19
ASTM D3941	21,18,22,19
ASTM D56	21,18,22,19
ASTM D93-A	21,18,22,19
ASTM D93-B	21,18
ASTM D93-C	21,18
ASTM D92	22,19
ASTM D1078	19
ASTM D850	19
ASTM D86	19
ASTM E2546	23,20
ASTM C1624	23,20
ASTM 8206	30,27
ASTM D8206	30,27
ASTM D7525	30,27
ASTM D7545	30,27
ASTM D525	30,27
ASTM D873	30,27
ASTM D4402	50,47
ASTM D7175	50,47
ASTM D7405	50,47
ASTM E1137	58,55

EN

EN 116	11,8
EN 16329	11,8
EN 13179-2	11,8
EN 1426	11,8
EN 1427	11,8
EN 6246	9
EN 12593	12,9
EN 924	21,18
EN ISO 10370	22,19
EN 16091	30,27
EN 1092-1	40,37

IP

IP 309	11,8
IP 179	11,8
IP 310	11,8
IP 376	11,8
IP 50	11,8
IP 58	11,8
IP 131	12,9
IP 540	9
IP 80	12,9
IP 170	21,18
IP 491	21,18
IP 492	21,18
IP 34-A	21,18
IP 34-B	21,18
IP 36	22,19
IP 123	19
IP 195	19
IP 595	30,27
IP 138	30,27
IP 40	30,27

JIS

JIS K 2288	11,8
JIS K 2207	11,8,12,9
JIS K 2235	11,8
JIS K 2261	12,9
JIS K 2265-3	21,18
JIS K 2265-4	22,19
JIS K 2276	30,27
JIS K 2287	30,27

DIN

DIN 51579	11,8
DIN 51784	12,9
DIN 51755-1	21,18
DIN 51751	19
DIN 11851	40,37
DIN EN 13302	50,47
DIN EN 14770	50,47
DIN EN 60751	58,55

ISO

ISO 2137	11,8
ISO 6873	11,8
ISO 6246	12,9
ISO 6614	12,9
ISO 12185	17,14,18,15
ISO 13736	21,18,22,19
ISO 1523	21,18,22,19
ISO 1516	21,18,22,19
ISO 15267	21,18
ISO 2719-A	21,18,22,19
ISO 2719-B	21,18
ISO 2719-C	21,18
ISO 2592	22,19
ISO 3405	19
ISO 918	19
ISO 14577	23,20
ISO 20502	23,20
ISO 7536	30,27
ISO 26423	53,50
ISO EN 1071-2	53,50
ISO 17025	58,55

OTHER STANDARDS

AASHTO T53	11,8
AASHTO T48	22,19
GOST 4333	22,19
GOST 2177	19
AN B16.5	40,37
AASHTO T315	50,47
AASHTO T316	50,47
AASHTO T350	50,47
AASHTO TP101	50,47
AASHTO TP101-UL	50,47
FGSV AL 720	50,47
VDI 3198	53,50
USP 913	60,57

FTM

FTM 791-3302	12,9
FTM 791-1101	21,18
FTM 791-1103	22,19
FTM 791-3352	30,27
FTM 791-3354	30,27

