Anton Paar

Modular Compact Rheometer

MCR 72 | MCR 92

Enter the World of Rheometry

Monitor the change in your sample's viscosity – from one measuring point to the next. Instantly gain deeper insights into deformation, flow behavior, and structure. Use Anton Paar rheometers, to power ahead.

Start your rheological journey with plug-and-play MCR 72 and MCR 92 – streamlined for your daily lab routine. They're available at an accommodating price, and thanks to the unique modular design, they offer more testing possibilities than any other rheometer in the world.

Temperature range -10 °C to +400 °C

Inspired by 30+ years of experience in rheometry

Global service network with a guaranteed response within 24 h

FIND OUT MORE

Rheometers:
A Spectrum Revealed

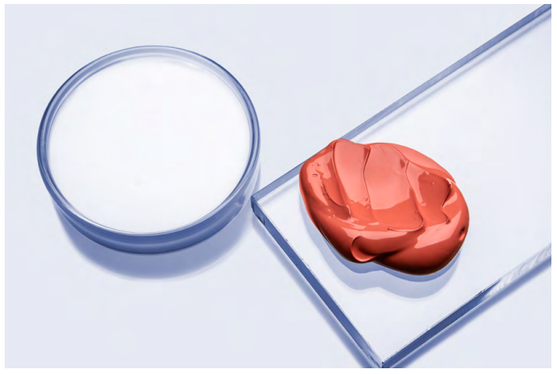
What is the difference between a viscometer and rheometer?

Viscometers are simple devices based on mechanical ball bearings or torsional spring bearings that rotate a measuring system (e.g., a bob or a spindle) in a single direction. They are good for simple tests.

Rheometers reveal the full spectrum of a sample under the conditions you define.

For example: Rheological measurements show you the structure of a sample by providing insight into the viscoelastic behavior.

Rheometers are built to be more sensitive than viscometers. They have two measurement modes: rotational and oscillatory. Accessories such as plates, bobs, cones, and heating and cooling chambers make it possible to study the sample's properties under a wider range of conditions. Rheometers are an excellent tool for research, processes, and product development, as well as for quality control.



Paint: A nice glossy finish or brush marks and drips?

One important quality factor of paint is the surface leveling and sagging behavior once it is applied, since a smooth, glossy, and homogenous surface with no droplets or splashes is generally required. The structural strength of the paint should not be too high or too low, to ensure that the internal structure recovers in exactly the right time period to create a good finish. These characteristics are often referred to as thixotropic behavior. When developing or improving paint, the material's time-dependent rheological behavior has to be balanced to obtain the required result.

A rheometer can simulate this behavior in rotational mode using a structural regeneration test (3 Interval Time Test/3ITT).

Single-point measurement: Sufficient to describe the flow behavior of my sample?

For quality control, a single-point check might be sufficient. But in general, a single-point measurement provides limited information about the flow behavior of materials.

To fully describe a sample's flow behavior, you need a rheometer. From just one measurement, rheometers provide a flow curve across a wide speed and torque range. This curve shows the behavior of a sample under varying conditions, such as different shear rates and temperatures.

Cream and ointment: How can I determine the feel and long-term stability?

Long-term stability and the 'feel' when a cream or ointment is applied on the skin are important quality criteria in the cosmetics and pharmaceutical industries. Using a rheometer, you can evaluate the elastic portion (G') and viscous portion (G") of a sample in an amplitude-sweep test. The relationship between these portions defines how strong the internal network of the sample is, which affects long-term stability and the way a cream feels on the skin when applied.

Test Methods

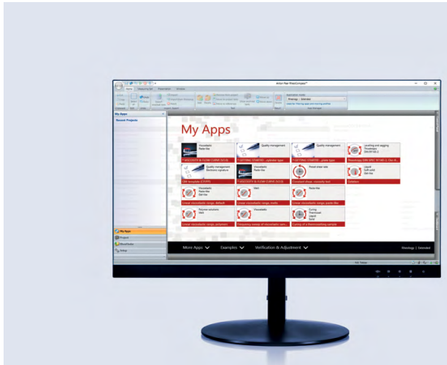
	Rotation	3ITT Rotation
	Oscillation	×

Test Methods

	Rotation	×
	×	Amplitude Sweep Oscillation

Toolmaster & Quick-Connect
QuickConnect simplifies changing between measuring systems, allowing one-handed connections and ensuring fast system changes without the need for a complicated mechanism. This quick-fitting coupling, combined with Toolmaster's automatic tool recognition, enhances ease-of-use and efficiency in your measurements.

TruRay Illumination
TruRay Illumination ensures a perfect view of your sample, regardless of lab lighting. Gradually adjustable for clear visibility, this feature allows accurate trimming, and reproducible results every time.



RheoCompass
RheoCompass has been the most powerful operating software for rheometers for years. It's now accessible for everyone, with an improved user interface. And it's ready for all challenges, from routine QC testing via SOPs to scientific applications.

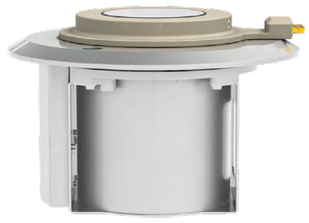
Stand-alone MCR 72
MCR 72's mechanical bearing, combined with air-cooled temperature devices, enables flexible use without the need for cooling liquids or pressurized air. It can be used directly on-site as a QC device to immediately assess product quality.

Modularity To Suit Your Every Need

Peltier Temperature Device (PTD)
PTDs are compact temperature devices using Peltier elements for heating and cooling. They offer a range from -50 °C to +220 °C, and active cooling and air-cooled options mean there's no need for additional low-temperature fluids (-10 °C to +220 °C).

Electrically heated temperature device (ETD)
ETDs are fast temperature devices for temperatures up to 400 °C, using electrical heating and cooling of pressurized air or water for precise control. The optionally available hood minimizes temperature gradients

Pressure Cell 150
Pressure cells for 150 bar (up to 300 °C) operate in self- or gas-pressurization mode. Applications include studying polymer behavior with supercritical CO_2 and the impact of high pressure on motor oils.



Dielectric Rheological Device (DRD)
DRDs combine rheology with dielectric spectroscopy. They provide insights into internal structure via dielectric spectrum interpretation. Typical applications include battery slurries, adhesives, resins, and polar materials. Various LCR meters can be combined.

Starch Cell
A starch cell for analyzing starch gelatinization or pasting behavior simulates temperature and pressure conditions of food production processes, with a uniquely small sample volume of around 18 mL and an optional starch pressure cell up to 30 bar and 160 °C.

Building Material Cell (BMC)
With BMCs, you can measure the flow properties of samples with large particles (>1 mm), typically found in building materials, food products, or slurries. Resistant to abrasive materials, they prevent sample slippage and improve mix-up effects, to avoid separation.

We Make YOU the Expert

We give you access to a wealth of practical information on the Anton Paar Wiki website. Browse e-learning courses, download industry application reports, register for a free webinar, or read through the “tips and tricks” sections.

→ www.anton-paar.com/br-mcr7292-wiki

The MCR EDU Package is an excellent way to implement an MCR rheometer as part of your academic and educational mission. If you are teaching a course on rheology or are planning to do so in the future, make use of the substantial discount offered on MCR 72 and MCR 92 for educational purposes.

→ www.anton-paar.com/br-mcr7292-edu

Reliable.
Compliant.
Qualified.

Our well-trained and certified technicians are ready to keep your instrument running smoothly.

FIND OUT MORE

www.anton-paar.com/service

Maximum uptime

Warranty program

Short response times

A global service network

	MCR 72	MCR 92
	↓	↓
Bearing	Ball	Air
EC motor (brushless DC) with high-resolution optical encoder	✓	✓
Rotation mode	✓	✓
Oscillation mode	✓[1]	✓
Direct strain controller	✓	✓
Direct stress controller	✓	✓
Maximum torque	125 mNm	125 mNm
Minimum torque, rotation	200 µNm	0.4 µNm
Minimum torque, oscillation	200 µNm	0.4 µNm
Torque resolution	100 nNm	100 nNm
Angular deflection, set value	1 µrad to ∞ µrad	1 µrad to ∞ µrad
Angular deflection, resolution	614 nrad	614 nrad
Step rate, time constant	100 ms	100 ms
Step strain, time constant	100 ms	100 ms
Minimum angular velocity[2]	10^{-4} rad/s	10^{-4} rad/s
Maximum angular velocity	157 rad/s	157 rad/s
Minimum angular frequency[3]	10^{-3} rad/s	10^{-4} rad/s
Maximum angular frequency	628 rad/s	628 rad/s
Minimum speed (CSS/CSR)	10^{-3} rpm	10^{-3} rpm
Maximum speed	1,500 rpm	1,500 rpm
Maximum temperature range	-50 °C to +400 °C	-50 °C to +400 °C
SafeGap: normal force limiter during gap setting	✓	✓
TruRay: dimmable illumination of sample area	✓	✓
Connections	USB, Ethernet, RS232, analog interfaces, Pt100 port	
Dimensions	380 mm x 660 mm x 530 mm	380 mm x 660 mm x 530 mm
Weight	33 kg	33 kg
QuickConnect: for measuring systems, screwless	✓	✓
Toolmaster: measuring system and measuring cell	✓	✓
CoolPeltier: Peltier-controlled plate system with built-in cooling option that requires no additional accessories for counter-cooling	25 °C below ambient but not lower than -10 °C up to +220 °C[4]	
CoolPeltier: Peltier-controlled cylinder system with built-in cooling option that requires no additional accessories for counter-cooling	15 °C below ambient but not lower than +5 °C up to +150 °C[4]	
Actively Peltier-controlled hood: requires no additional accessories for counter-cooling	-5 °C to +200 °C[4]	
Virtually gradient-free temperature control	✓	✓
Electronic trim lock for the measuring system	✓	✓
Automatic gap control/setting, AGC/AGS	✓	✓
Pressure up to 150 bar	×	✓

Trademarks

RheoCompass (9177015), Toolmaster (3623873), CoolPeltier (9177056), SafeGap (AT 517074) and TruRay (EP3220127B1)

1) Depending on sample properties.
2) Depending on measuring point duration and sampling time, practically any value is achieved.
3) Set frequencies below 10^{-4} rad/s are of no practical relevance due to the measuring point duration >1 day.
4) System temperature, sample temperature may vary. For measurements at very high or low temperatures, a calibration in the sample gap is recommended.

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