Anton Paar

Polymer Melt Rheometer

SmartMelt Series

The New Standard in Polymer Melt Rheology

The SmartMelt series empowers users to obtain full shear-rheological profiles including flow curves, oscillation, creep, and relaxation tests – way beyond one-point methods like Melt Flow Index (MFI). Compliant with ASTM D4440, SmartMelt delivers top-quality measurements that position you at the forefront of your industry.

What sets SmartMelt apart?

- ✓ Best-in-class temperature control – the most budget-friendly and best-performing electrical temperature oven on the market, with a temperature gradient of almost zero within the sample.
- ✓ Fast, user-friendly operation – automatic recognition of accessories and one-handed coupling ensure rapid setup in seconds, effortless measurement, and consistent results.
- ✓ Sustainable and efficient – benefit from low compressed gas and energy consumption, as well as quiet operation.

⊕ SmartMelt 102e
SmartMelt 102e is an advanced polymer melt rheometer with all the comfort and flexibility you're used to from the Anton Paar MCR Evolution series. It's also suitable for the measurement of thermoplastics with high viscosity and high filler content.

⊕ SmartMelt 92
SmartMelt 92 is a polymer melt rheometer for routine measurements. It offers the smallest footprint and the most sustainable, energy-efficient operation.

FIND OUT MORE

www.anton-paar.com/apb-smartmelt

Accelerate Your Analysis

A series of tools ensures that operators are trained in no time, optimizes time-to-measurement, and delivers reliable polymer melt rheology results.

1 Toolmaster
Automatic recognition of measuring geometry and cell.

2 QuickConnect
One-handed coupling of the measuring geometry in seconds.

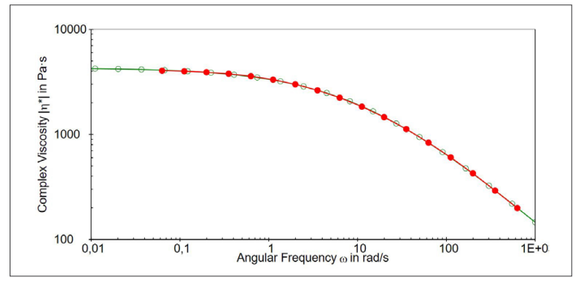
3 Gas purging of sample
Gas purge for samples requiring an inert environment.

4 RheoCompass templates
Pre-prepared measuring workflows.

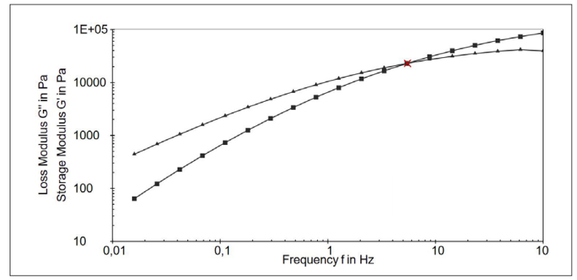
5 RheoCompass analysis
Various regression models, curve analysis, mastercurve based on time-temperature superposition (TTS), and much more.

6 Automatic data exchange
With a lab information management system (LIMS) and report export.

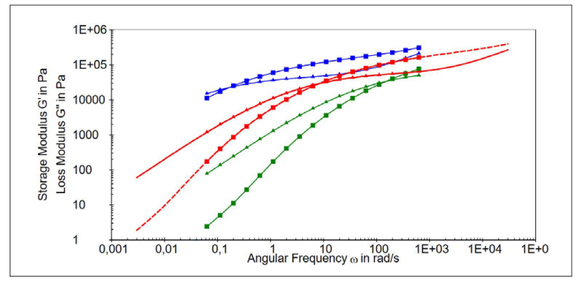
7 Sample preparation and cleaning tools



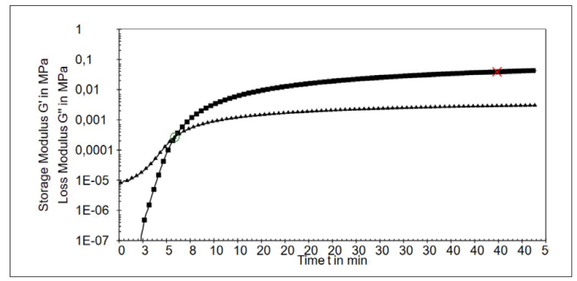
Complex viscosity: Complex viscosity of polystyrene at 230 °C. Automatic analysis of zero-shear viscosity based on the Carreau-Yasuda model. (green = regression; red = frequency sweep)



Frequency sweep: Frequency sweep of a polyethylene at 210 °C. Automatic analysis of the cross-over point.



Time-temperature superposition (TTS): Frequency sweeps of polystyrene at 160 °C (blue), 200 °C (red), 260 °C (green) and its appropriate master curve at the reference temperature 200 °C.



Curing: Curing reaction of a silicone at 90 °C. Automatic analysis of the cross-over time (o) and degree of cure (DOC) of 90 % (x).

	SmartMelt 92	SmartMelt 102e
	↓	↓
Specifications		
Bearing design	Air, fine-pored carbon	
Motor design	Electronically commutated (EC) – permanent magnet synchronous motor	
Displacement transducer	High-resolution optical encoder	
Minimum torque (rotation)	0.4 µNm	5 nNm
Minimum torque (oscillation)	0.4 µNm	2 nNm
Maximum torque	125 mNm	200 mNm
Minimum angular deflection (set value)	1 µrad	0.5 µrad
Maximum angular deflection (set value)	∞ µrad	
Maximum speed	1,500 rpm	3,000 rpm
Minimum angular frequency[1]	10^{-4} rad/s	10^{-7} rad/s
Maximum angular frequency	628 rad/s	628 rad/s
Normal force measurement design	×	360° capacitive sensor, non-contracting, fully integrated in bearing
Normal force range	×	-50 N to +50 N
Temperature device		
Temperature oven design	Electrical temperature oven	
Recommended measuring geometry	Plate-plate, disposables	Plate-plate, cone-plate, disposables
Temperature range	-150 °C to +400 °C	
Maximum heating rate	50 °C/min	
Maximum cooling rate	Up to 100 °C/min[2]	
Fully automatic temperature calibration	✓	✓
Features		
Ready for extensional, pressure and powder rheology, tribology, rheo-optics, and more	×	✓
TruStrain – sample adaptive controller	×	✓
QuickConnect	✓	✓
Toolmaster	✓	✓
Master curve software analysis module	✓	✓
Automatic gap control/setting, AGC/AGS	✓	✓
Dimensions of rheometer		
Dimensions (W x H x D)	380 mm x 660 mm x 530 mm	444 mm x 678 mm x 586 mm
Weight	33 kg	42 kg

Trademarks **Toolmaster (3623873), TruStrain (9176918), RheoCompass (9177015)**

1) Set frequencies below 10^{-4} rad/s are of no practical relevance due to the measuring point duration >1 day
2) Maximum cooling rate depends on the coolant media used: 100 °C/min with fluid, 70 °C/min with liquid N_2, 10 °C/min with air

The Rheology Academy

Sign up for our rheology courses and webinars
We regularly offer courses at our global subsidiaries and also organize online courses or exclusive group courses for customers on request.

Learn the basics of rheology, optimize your work with the RheoCompass software, and gain application-specific knowledge. You can also learn more about specialist subjects and meet our experts for discussions online by taking part in one of our free webinars.

Enjoy access to an extensive database of knowledge
As a customer, enjoy access to a large database of useful application reports, product documentation, and tutorial videos. Benefit from our comprehensive background knowledge on theory (e.g., from our wiki and the book “Applied Rheology” by the renowned rheology expert Thomas Mezger).

Get in touch with our experts
We provide excellent service and support. With Anton Paar subsidiaries and numerous partners worldwide, a rheological expert is close to you and happy to help. Call us for advice on test definitions or to discuss the rheological challenges you’re facing.

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Reliable. Compliant. **Qualified.**

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

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A global service network

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