

Thermo Scientific
HAAKE Viscotester iQ
Rheometer Series



Individual. Intuitive. Intelligent.
Discover the difference.

Thermo
SCIENTIFIC

Discover the individual, intuitive and intelligent rheometer series.

Development of the next generation Viscotester is driven by the demands of new rheological tasks in quality control. We combine decades of experience in rheology with solutions designed for highly dynamic working environments. Our goal is to enable fast, reliable and precise rheological measurements with maximum ease of operation.

The result is the Thermo Scientific™ HAAKE™ Viscotester™ iQ rheometer series with two models: HAAKE Viscotester iQ and HAAKE Viscotester iQ Air. THE rheological instruments for quality control.

This rheometer series sets new standards in modularity, ease of use and intelligent guidance to users.

The HAAKE Viscotester iQ rheometers are the instruments of choice for acquiring simple viscosity curves, as well as for more complex rheological investigations in rotation or oscillation. Used as a standalone unit, or controlled by software, its size and footprint make the Viscotester iQ rheometer a portable unit for mobile use, or as an important tool in the quality control laboratory.

What is your rheological challenge? The Viscotester iQ rheometer provides you with the intelligent solution.



Quick bayonet mountings for short pre- and post-handling time per measurement



One rheometer series, multiple rheological tasks: the HAAKE Viscotester iQ rheometers are ready for use in seconds in any configuration you need

HAAKE Viscotester iQ.

Intuitive. The rheometers that make QC more convenient for you.

- Breakthrough concept – self-explaining setup and handling
- Smart lift function for convenient, accurate and reproducible gap setting
- Measuring geometries designed for optimized handling and easy exchange
- Correct and precise sample filling for parallel plates as well as cone and plate geometries



USB memory stick for job and data transfer between instrument and PC



Individual. The rheometers that meet your demands in QC.

- Sophisticated design for easy exchange between different measuring configurations
- Highly dynamic, powerful EC motor for enhanced measuring flexibility
- Oscillation mode for HAAKE Viscotester iQ Air, optionally for HAAKE Viscotester iQ
- Exchangeable self-contained Peltier or liquid controlled temperature modules
- Broad scope of measuring geometries
- Multiple ways of operation as standalone unit, with Thermo Scientific™ HAAKE™ Viscotester™ iQ RheoApp™ or fully software controlled

Measuring geometry with "Connect Assist" technology



Intelligent. The rheometers that guide you through your measurement challenges.

- Touch screen display for visualization of numerical and graphical measurement results
- Intelligent user guidance for measuring and evaluation procedures, selection of suitable jobs with indication of available measuring range
- "Connect Assist" technology for quick coupling of measuring geometries and temperature modules with perfect alignment, automatic recognition and feedback for measuring optimization
- "Temperature Assist" function for rapid true sample temperature control based on a dynamic heat transfer model
- "Fill Assist" tool for measuring the sample volume during filling of coaxial cylinder geometries

Simple or advanced measurements?

Choose between standalone or software controlled operation.

The HAAKE Viscotester iQ rheometers are the instruments of choice for single-point measurements, standardized job routines and extensive rheological measurements in quality control.

Optimize operation to the individual requirements of each user from novice technicians to expert rheologists.



Standalone instrument with internal measurement routines

- Multilingual touch screen display
- Manual operation or predefined measurement routines
- Comprehensive data evaluation (e.g., interpolation, curve-fitting, thixotropy index)
- Graphical or numerical real-time display of measured data
- Integrated user management system
- Individual user interface settings
- Optional USB keyboard (wireless possible) or bar-code reader



HAAKE Viscotester iQ RheoApp PC software for advanced job and configuration editing

- Runs directly from the USB flash drive, no installation needed
- USB flash drive for transfer of jobs, configuration settings and measured data between rheometer and PC
- Convenient configuration of the HAAKE Viscotester iQ rheometer user interface settings and user management system
- Display and storage of measured data



Thermo Scientific™ HAAKE™ RheoWin™ software for highest measuring flexibility

- Multilingual user interface
- Convenient creation of fully automated jobs including messages for user guidance, data analysis and documentation
- Export of data (ASCII, Microsoft® Excel®, XML, etc.)
- Data transfer to information and laboratory systems (ERP, LIMS, etc.)
- Reports, graphs and tables saved in a wide variety of formats (pdf, jpg, etc.)
- Numerous algorithms for data analysis
- Loop programming with break-up criteria
- FDA 21 CFR Part 11 compliance (optional software tool)

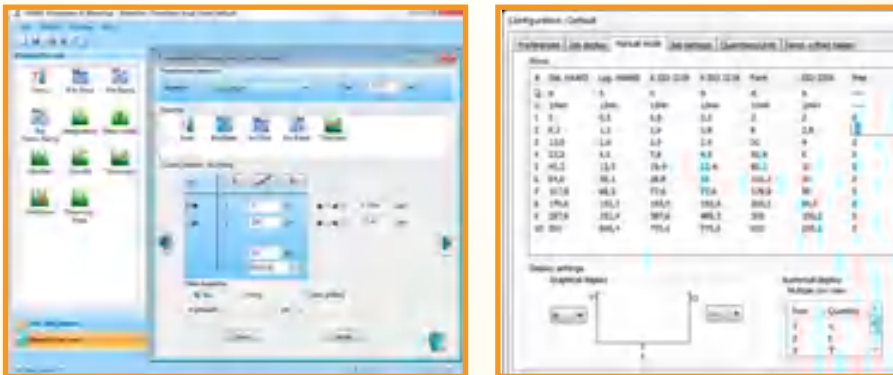
You have the choice!



Screenshots HAAKE Viscotester iQ rheometer touch screen display

For routine use

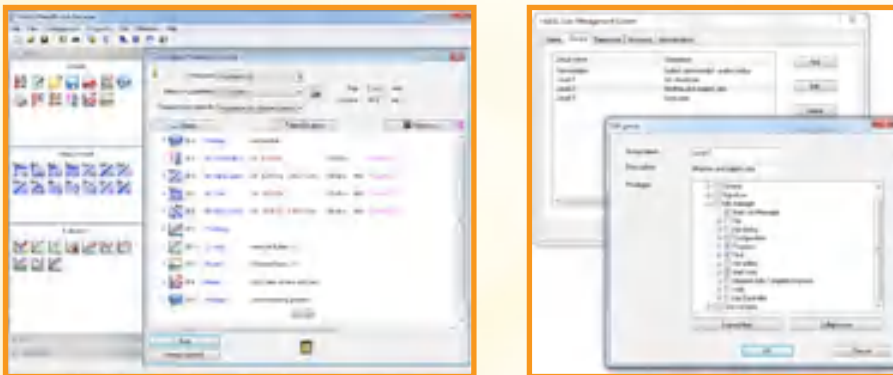
- Simple standalone control
- Standardized routines with QC criteria for fast batch release
- Small footprint – no need for PC, saving bench space



Screenshots HAAKE Viscotester iQ rheometer RheoApp

For individualized use

- Standalone control
- Individual routine job creation
- Data transfer to PC for further evaluation and storage



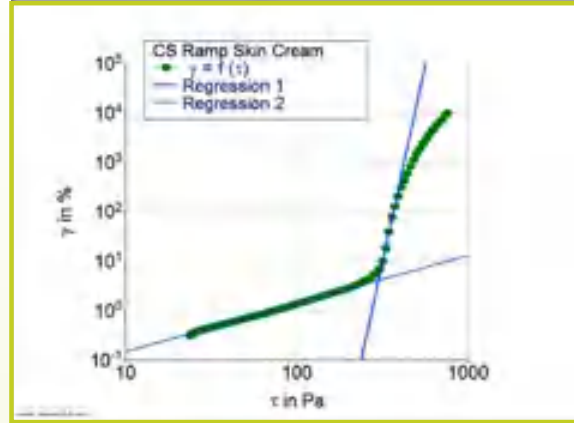
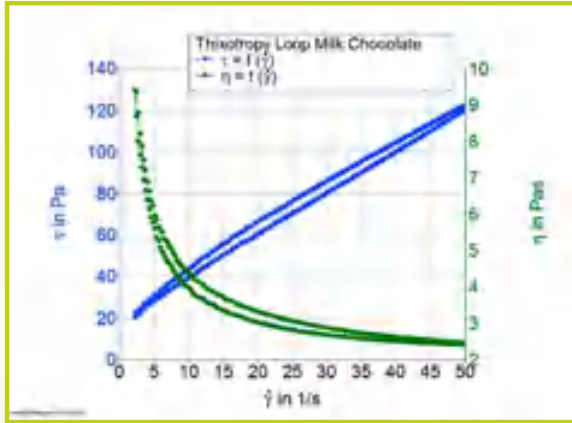
Screenshots HAAKE RheoWin software

For expert use

- Full PC software control
- Job and data file compatibility with all other HAAKE rheometers
- User management system
- Comprehensive data analysis
- Individual report layouts

Viscosity measurements or extended material characterization?

Determine the relevant rheological parameter...



Investigation of Viscosity and Thixotropy

Viscosity determination and investigation of shear rate dependent behavior for low viscous fluids up to pastes, at constant temperature or over a wide temperature range

HAAKE Viscotester iQ Air:

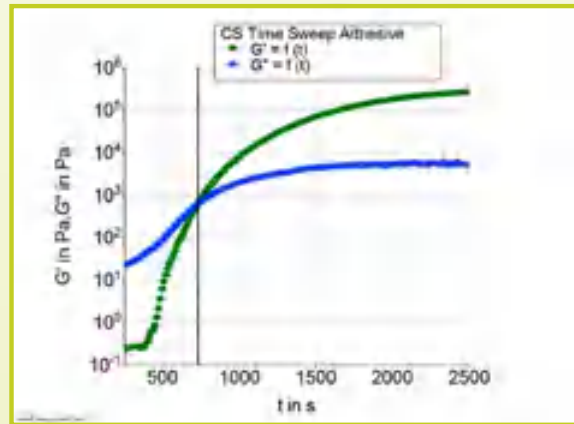
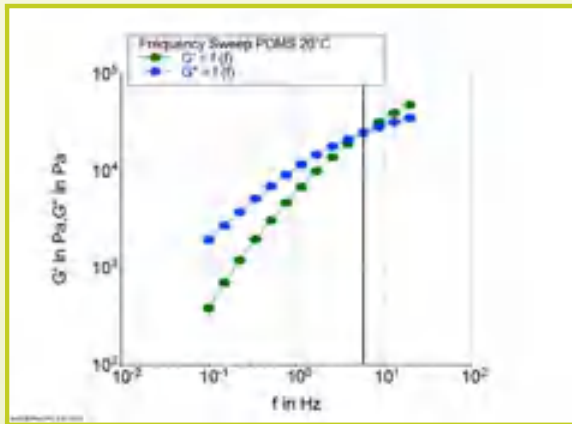
- Go to lower shear rates
- Measure even water like sample

Determination of Yield Stresses

Precise yield stress determination in Controlled Stress (CS) mode even for delicate samples with a yield stress starting from 10 Pa, e.g. cosmetic lotion

HAAKE Viscotester iQ Air:

- Test more delicate structures
- Measure lower yield stresses



Measuring visco-elastic Properties

Investigation of the visco-elastic behavior for structured fluids as simple QC method:

- Performing non-destructive measurements,
- Determination of the linear visco-elastic range (LVR),
- Automatic calculation of the crossover-point ($G' = G''$)

HAAKE Viscotester iQ Air:

- Investigate softer viscoelastic structures

Tracing Phase Transitions

Investigation of time- or temperature dependent structural changes like cross-linking, curing or crystallization for certain materials and applications

HAAKE Viscotester iQ Air:

- Measure phase transitions from water like to solid

...for your application

Food

Typical samples

- Chocolate
- Dairy products
- Spreads
- Dips and sauces

Recommended measuring routines

- Viscosity curve
- Yield stress and thixotropy measurements
- Structural breakdown and recovery test
- Measurements in oscillation mode

Material properties

- Flow behavior
- Processability
- Pumpability
- Mixing behavior
- Mouthfeeling
- Stability (shelf life)
- Spreadability



Cosmetics & Pharmaceuticals

Typical samples

- Creams and lotions
- Shampoos
- Shower gels
- Ointments
- Hair colorants

Recommended measuring routines

- Viscosity curve
- Yield stress and thixotropy measurements
- Structural breakdown and recovery test
- Temperature-dependent tests

Material properties

- Flow behavior
- Processability
- Pumpability
- Mixing behavior
- Applicability
- Stability (shelf life)
- Spreadability



Paints, Inks & Coatings

Typical samples

- Wall paint
- Automotive coatings
- Printing inks and pastes

Recommended measuring routines

- Viscosity curve
- Yield stress and thixotropy measurements
- Structural breakdown and recovery test

Material properties

- Flow behavior
- Processability
- Pumpability
- Printability
- Sprayability
- Levelling behavior
- Sedimentation



Mining & Construction

Typical samples

- Mineral slurries
- Ceramic suspensions
- Construction materials
- Mortars and grouts

Recommended measuring routines

- Relative viscosity determination
- Yield stress measurements
- Time depending hardening / drying

Material properties

- Flow behavior
- Processability and processing time
- Pumpability



Petrochemicals

Typical samples

- Crude oils
- Greases and lubricants

Recommended measuring routines

- Viscosity curve
- Yield stress and thixotropy measurements
- Temperature depending tests

Material properties

- Temperature-dependent flow behavior
- Pumpability



Polymers

Typical samples

- Polymer solutions
- Stabilizer and thickening agents
- Glues and adhesives
- Resins

Recommended measuring routines

- Viscosity curve
- Yield stress and thixotropy measurements
- Measurements in oscillation mode

Material properties

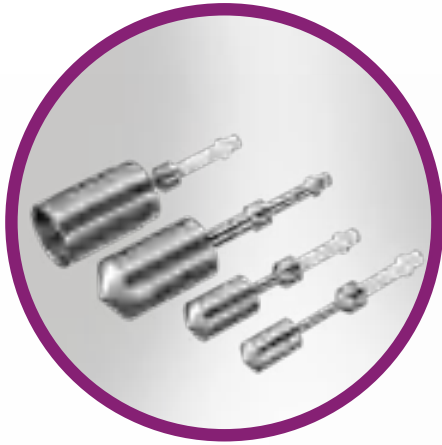
- Flow behavior
- Processability and processing time
- Cure and pot time



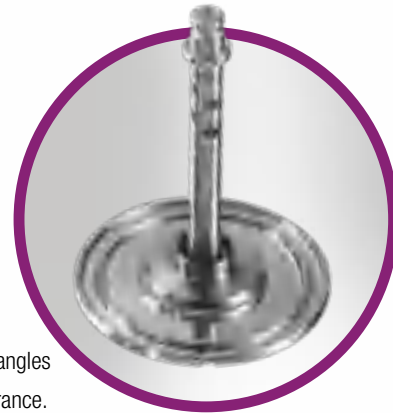
Diverse measuring demands?

Select from a broad accessory

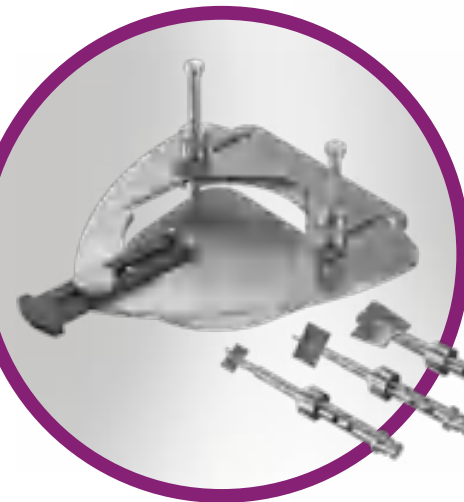
A broad range of measuring geometries guarantees a high level of flexibility in a wide viscosity range



- **Different types of coaxial cylinders** of various materials, in multiple sizes and with different surfaces
- **Double-gap cylinder geometry** for measuring low-viscosity fluids



- **Parallel plates** in different diameters and with different surfaces
- **Cone and plate geometries** in multiple diameters and with different cone angles
- **Lower plates** matching the upper geometry in diameter and surface appearance. For precise sample filling and ideal measuring conditions



- **Vane rotors** for relative measurements on highly filled or inhomogeneous samples with large particles as well as for measurements in original containers

- **Disposable geometries** for hardening materials



- **Immersion tube with coaxial cylinders** ideal for *in situ* measurements (e.g., in-field production testing)

- **Cylinders and parallel plates with serrated or sandblasted surface** to avoid wall slip effects
- **Universal adapters for individual rotors**, e.g. for ISO 2555 spindles
- **Customized measuring geometries** available on request



portfolio.

Universal plug-and-play temperature modules are available as Peltier or liquid controlled units.

A compact and robust design enables a fast, reliable and accurate temperature control.

- Variety of temperature modules dedicated for plates and cones or as universal versions for coaxial cylinders as well as plates and cones
- Small dimensioned coaxial cylinders reduce sample volume, allowing shorter temperature times to minimize cost per measurement
- Large dimensioned coaxial cylinders accommodate water-like materials and inhomogeneous samples
- Switching between coaxial cylinders and parallel plates or cone and plate geometries occurs in seconds
- Ideal materials for high heat transfer guarantee fast temperature equilibration and enables rapid temperature changes
- Sample hoods prevent heat loss and solvent evaporation as well as minimizing the temperature gradient within the sample
- Automatic temperature calibration tool ensures correct sample temperature



High temperature / high pressure tests

- Dedicated HAAKE Viscotester iQ configuration for pressure cells
- Comprehensive pressure cell portfolio for tests up to 600 bar and 300 °C. Made of Titanium or Hastelloy®. Coaxial cylinder, double gap and vane rotors can be used

Stay mobile and flexible!

- **Measure in large original containers** with the HAAKE Viscotester iQ Lab Stand
- **Easily customize** measurement setups using single measuring head
- **Conduct in-field testing** by transporting a complete rheometer setup in a convenient, roll-away carrying case



Choose the optimal configuration for your needs.

**Cone & plate and
parallel plates**



**Small coaxial cylinder with
32 mm inner diameter**



**Large coaxial cylinder with
48 mm inner diameter**



**Vane rotor with
universal container holder**



**Stand setup with
vane rotor**



**Stand setup with
immersion tube**



**Stand setup with cell
for building materials**



**Configuration
for pressure cell**



**Individual colors
upon request**



| Technical data | HAAKE Viscotester iQ | HAAKE Viscotester iQ Air |
|---|---|--------------------------|
| Bearing type: | Ball Bearing | Air-Bearing |
| Measuring modes: | | |
| In rotation | Controlled Rate (CR), Controlled Stress (CS) | |
| In oscillation ^a | Controlled Deformation (CD), Controlled Stress (CS) | |
| Angular velocity range | | |
| | 0.001 rad/s – 157 rad/s | |
| | 0.01 rpm – 1500 rpm | |
| Angular resolution | 1.25 µrad | |
| Torque range | 0.2 mNm – 100 mNm | 0.01 mNm – 100 mNm |
| Torque resolution | 0.01 mNm | 0.001 mNm |
| Shear stress range ^b | 0.7 Pa – 63660 Pa | 0.04 Pa – 63660 Pa |
| Shear rate range ^b | 0.004 s ⁻¹ – 11415 s ⁻¹ | |
| Frequency range | 0.1 Hz – 20 Hz ^a | 0.1 Hz – 50 Hz |
| Minimum deflection angle ^a | 10 µrad | |
| Viscosity range: | | |
| In rotation ^b | 0.001 Pa s – 600000 Pa s | |
| In oscillation | 5 Pa s and higher ^a | 0.03 Pa s and higher |
| Measuring geometries | Coaxial cylinders, double-gap cylinders, parallel plates, cones, vane rotors | |
| Temperature range: | | |
| Universal Peltier controlled Module (TM-PE-C) | Coaxial cylinders: -5 °C ^c up to 160 °C Plates and cones: 0 °C ^c up to 140 °C | |
| Universal Liquid controlled Module (TM-LI-C32 / – C48) | Coaxial cylinders: -20 °C up to 180 °C ^d Plates and cones: -10 °C up to 160 °C ^d | |
| Peltier controlled Plate (TM-PE-P) | 0 °C ^c up to 160 °C | |
| Liquid controlled Plate (TM-LI-P) | -20 °C up to 180 °C ^d | |
| Electrically controlled Cylinder (TM-EL-C) ^e | up to 300 °C | |
| Interfaces: | | |
| TCP/IP-Ethernet | for communication with PC | |
| USB | 1 port for HAAKE Viscotester iQ Rheo flash drive 1 port for keyboard, barcode reader or fill assist | |
| Dimensions (W x D x H) ^f | 270 mm x 500 mm x 500 mm | |
| Weight ^f | 18 kg | |
| Autoswitch power supply | 100 – 240 VAC, 50 / 60 Hz | |
| Patents: | | |
| Quick coupling | DE102012018592 | |
| Design | Europe 001320964 Japan 1471355 China ZL201230476257.6 US 07066585 | |



reddot design award
winner 2015

^a HAAKE Viscotester iQ: option. HAAKE Viscotester iQ Air: standard content of delivery.

^b Depending on the measuring geometry used. Calculated theoretical values.

^c Depending on ambient temperature.

^d Depending on the circulator model and the bath liquid.

^e Available for pressure cell configuration.

^f HAAKE Viscotester iQ rheometer incl. Peltier temperature module, heat exchanger and measuring geometry.



Customer Services

We are committed to exceptional customer support with short response times, customer-specific solutions and a comprehensive range of services. Our friendly customer service specialists will guide you through a variety of rheology resources that we have to offer.

Application Laboratories and Support

Our fully equipped laboratories reflect our application expertise and commitment to innovation. Our laboratories are in constant demand for testing customer samples and developing pioneering applications that help build your understanding of different materials. We also provide a broad range of rheology solutions to meet your application needs. Consult our application scientists to answer your specific questions and be more confident in the data you generate.

Trainings Courses, Seminars and Webinars

We offer our customers a comprehensive training program and selected courses available through our international training center located in Karlsruhe, Germany. Basic and advanced rheology seminars with training on special applications are continuously held worldwide. Request an on-site seminar, attend a live online webinar or watch a recorded webinar at your convenience. Contact your local distributor or Thermo Fisher sales representative for training schedule details.

Comprehensive Knowledgebase

We offer a wide range of literature to enhance your knowledge on Rheology including applications solutions that help streamline your daily workflow.

Selected product information and application notes:

- V 274 Determining the Thixotropic Behaviour of Paints and Coatings
- V 275 Correlating Yield Stress with Squeezing Power used to Extract Tooth Paste
- V 276 Temperature Dependent Flow Properties of Crude Oil
- V 277 Correlating Yield Stress with Pumpability of Mailing Tailings
- V 278 Steady Shear Tests on Low Viscosity Fluids for Quality Control
- V 279 Oscillatory Rheology for Quality Control

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