Brabender®
ViscoQuick

Compact, quick and accurate rotational viscometer

Brabender®

… where quality is measured.

Brabender ViscoQuick

The Brabender ViscoQuick measures the rheological properties of fluids, slurries, cremes, sauces and pastes at variable shear and temperature conditions for a wide range of applications. Additionally, the gelatinization and cooling behaviours of various kinds of starch and starch-containing products can be measured.

The sophisticated architecture with its worldwide unique shear geometry and with the fully integrated temperature control allow for high compactness, quick temperature profiles and high measuring accuracy. The typical areas of applications include quality assurance at incoming goods inspection and in the production. Moreover, the ViscoQuick is used for the development of new recipes and new characterization profiles in application and research laboratories.

The device is equipped as a standard with the universal paddle geometry and pre-installed methods for quality analysis of raw materials (starch, flour, etc.) and for the characterization of the temperature behavior in final products (pudding, extrudates etc.). Through the use of further paddle geometries and / or the creation of custom shear and temperature profiles the Brabender ViscoQuick can be optimally adapted to almost every application. Optimize the efficiency in your quality and production processes, decrease development cycles and finally increase the quality of your final product.

Highlights

Accurate

- High measurement accuracy ± 0.5 %
- High temperature profile accuracy ± 1 °C

Compact

- Worldwide unique shear architecture
- Fully integrated electrical heating and cooling – no external thermostat necessary
- Stand alone device
- Pre-installed software with all benefits of the MetaBridge Concept

Quick

- Cooling and heating rates of − 15 °C / min | + 20 °C / min
- Short measuring time – e.g. < 10 min for starch gelatinization

Flexible

- Wide viscosity range 0.01 – 50 Pas
- Rotating speed of up to 500 min^{-1}
- Temperature 10 – 110 °C*
- Custom shear and temperature profiles
- Dosing of additional ingredients during measurement

Ergonomic and efficient

- Integrated MetaBridge HMI with touch screen
- Interface to native or 3rd party LIMS or ERP systems

Sustainability

- One housing for three units (meter, computer, thermostat)
- Measuring pot and measuring paddle are designed for long durability
- No consumables

*only for non- boiling applications

Applications

Measurement of the pasting properties for pulses:

- Pea
- Chickpea
- Lentil
- Faba bean
- Etc.

Measurement of gelatinization properties of starch and modified starch:

- Corn starch
- Wheat starch
- Potato starch
- Millet starch
- Pea starch
- Rice starch
- Tapioca starch
- Sago starch
- Cassava starch
- Etc.

Measurement of gelling agent performance:

- Algae – extraction of hydrocolloids and measurement of gelation
- Marmelade – analysis of pectine performance
- Etc.

Measurement of enzyme activity and gelatinization properties of flour:

- Wheat flour
- Rye flour
- Etc.

Measurement of the degree of gelatinization of extruded products:

- Grinding of the products required as a pre-step

Measurement of the heating and cooling behavior in product development and quality control for starch-based formulations:

- Pudding
- Sauces
- Etc.

Other applications:

- Swelling curve (according to Drews)
- Consistency of cold swelling products (e.g. cold cream)
- Special stress test conditions by applying customer specific shear and temperature profiles
- Alkali treatment of starch
- Acid treatment of flour
- Dosing of reagents during the measuring process

Application – Corn Starch

Heating with
+ 20 °C / min

3 min holding time

Cooling with
− 15 °C / min

3-2

B-2

A   B   C   D

1   2   3   4

Torque [BU]

Temperature °C

Time [mm:ss]
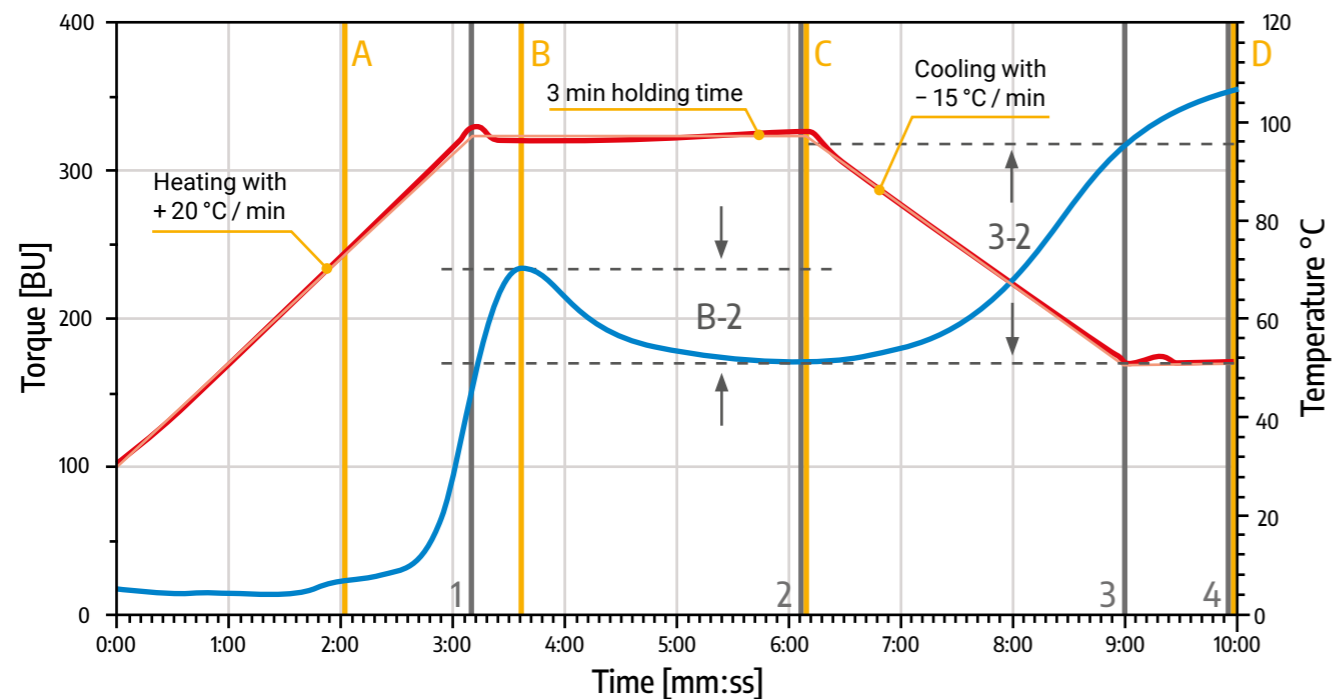
■ Torque   ■ Temperature   — Actual Curve   — Target Curve

A – Beginning of gelatinization

Swelling of the starch granules caused by accumulating water leads to increasing viscosity.

B – Maximum hot viscosity

The water accumulation reaches its maximum and the starch granules begin to burst at the first maximum viscosity.

C – Minimum cold viscosity

The starch is gelatinized as a gel or paste and the amylose and amylopectin molecules are completely separated in the minimum viscosity.

D – Maximum cold viscosity

A 3-dimensional crystal structure is formed by the amylose and amylopectin molecules which leads to a second viscosity maximum in the cold phase.

The calculated breakdown (B-2) and the setback (3-2) values represent further starch quality parameters.

1 – Start of holding period

2 – Start of cooling period

3 – End of cooling period

4 – End of measurement

Technical Data

- Viscosity range: 0.01 − 50 Pas

- Speed: 0 − 500 min^{-1}

- Temperature range: 10 − 110 °C*

- Heating rate: up to 20.0 °C / min

- Cooling rate: up to 15.0 °C / min

- Sample volume: 5 − 15 g

- Destilled water: 100 - 115 ml

- Touch screen: 10.4 Inches
  (1024 × 768 px), fixed

- Connectivity
  - MetaBridge Connect
  - WebAPI (generic 3rd party data interface)
  - Labfolder (LIMS)

- Safety devices
  - Emergency motor stop button
  - Non-contact magnetic safety switch
    on the cover of the measuring system

- Power supply: 100 − 230 V,
  50 / 60 Hz

- Dimensions (W × H × D):
  approx. 350 mm × 640mm × 430 mm
  approx. 13.78 × 25.20 × 16.93 inch

- Weight (net): approx. 35 kg

- Ports
  - 2 × USB 2.0
  - HDMI
  - Ethernet

*only for non- boiling applications
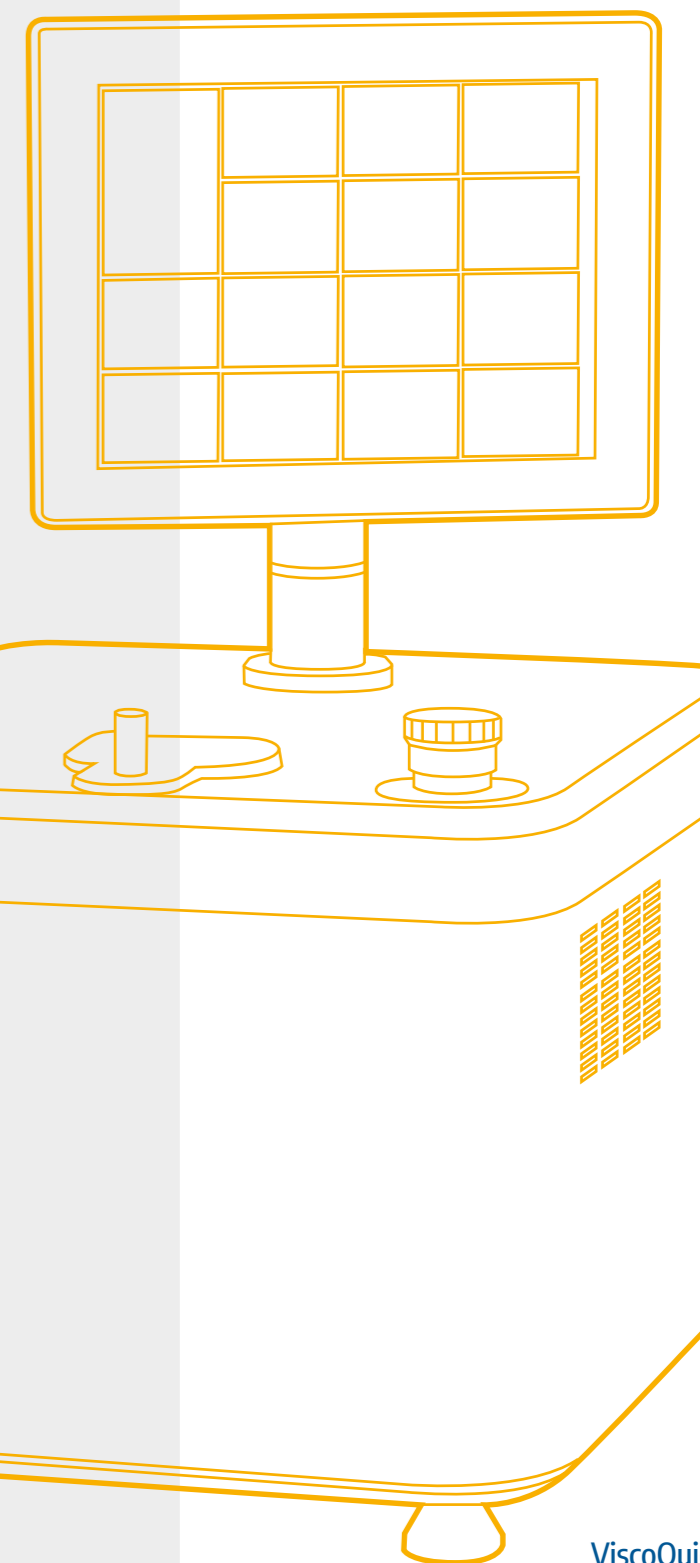
Accessories

Beaker 115 ml

Stainless steel universal beaker for samples up to 115 ml

Universal paddle

Stainless steel universal paddle for a wide range of applications. Other paddle geometries and customized paddles are available on request.

Static mixer insert

Stainless steel static mixer insert body for optimal flow conditions and homogenization during measurement.
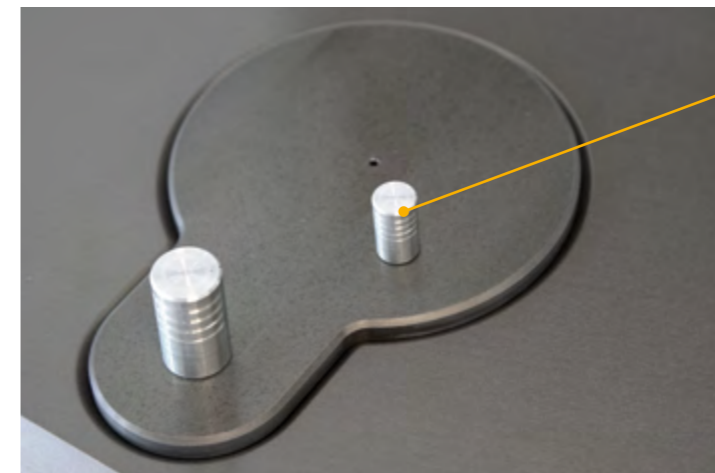
Filling cone

Stainless steel filling aid which is placed in the beaker during the sample filling procedure in order to avoid contamination of the feedthrough for the measuring axes.

Flow body gripper

Stainless steel tweezers for removal of flow body from the beaker.
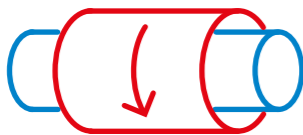
Lid with dosing opening

The dosing opening can be used for the dosing of ingredients during the measurement.

MetaBridge Correlation

Optional software package for conducting correlation studies on multiple data sets.

Technologies

DirectTorque

Brabender's DirectTorque technology directly measures the mechanical force on the drive axle. This enables a precise determination of the torque in a wide measuring range. Moreover, the measurement devices equipped with this technology support easy recalibration which can be carried out on-site without any component exchange.

DirectTemp

The DirectTemp technology is the key factor for precise temperature control. In order to achieve high accuracies and low latencies by measuring the temperature in the sample, Brabender uses specifically designed temperature probes with high thermal conductivity directly attached to the removable measuring container in the measuring mode or places temperature probes directly in the sample.
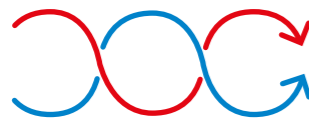
FlowOpt

The viscosity of a sample is heavily depending on the temperature. The accuracy of the viscosity measurement is therefore heavily depending on the temperature distribution in the measuring container. With Brabender's FlowOpt technology and specifically designed and flow optimized components, temperature gradients in the sample are avoided and a high degree of homogenization is achieved during the measurement.

EmbeddedHC

The Brabender's EmbeddedHC technology fully integrates a high performance heating and cooling architecture into the measurement device. Consequently, the need for additional external components like circulators is avoided allowing for high compactness of the complete measurement setup. Furthermore, it provides high heating and cooling rates which typically lead to short measurement times.

Ready2Use

Brabender devices with this function have a built-in computer and a touch display. This allows our customers to directly and easily start operating our devices without any IT experience. Combined with other Brabender technologies such as EmbeddedHC, this results in a very compact device setup.

MetaBridge

Brabender's cross-device software solution provides a consistent user experience between all Brabender units. The MetaBridge comes with various data evaluation functionality, pre-implemented standards and customizable measurement methods in order to meet application specific requirements. Regular updates improve and expand your device and let you automatically benefit from the latest trends and developments.

MetaBridge Connect

The MetaBridge Connect technology provides various data exchange interfaces and flexible connectivity features. Data sharing between all Brabender MetaBridge devices in one network allows for smart workflows and process efficiency. Moreover, the integrated web-based software interface (WebAPI) connects and automatically exchanges data with natively connected database systems and / or 3rd party laboratory information and management systems (LIMS) or ERP solutions.

MetaBridge Correlation

MetaBridge Correlation is an optional software package for performing correlation studies across multiple data sets. It allows for comparison of multiple measurements and parameters in a tabular and in an interactive graphical view. Particularly for quality control purposes, the compliance with a pre-defined tolerance is automatically evaluated and highlighted.

MetaBridge Database

The MetaBrigde Database represents a local data center in the customer network and a basic laboratory information and management systems (LIMS) for Brabender devices. Connected Brabender devices transfer measurement results automatically into the central MetaBridge database. Besides of the backup functionality, statistical analysis and crossdevice correlations between multiple data sets can be performed.

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Brabender®
… where quality is measured.