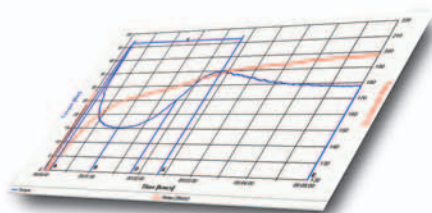
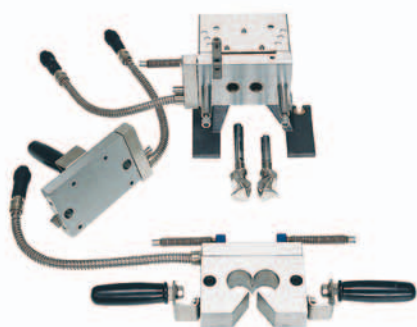


www.brabender.com



Original
Brabender® instruments
for laboratories and
production

Brabender®



The Brabender® group

Founded in 1923, Brabender® belongs to the leading manufacturers of instruments and systems for testing physical properties in all fields of research, development, and industrial production.

Today, the Brabender® group comprises four companies, each of which is responsible for its special range of development, production, and service. This allows versatility in each of the special lines.

To the benefit of our customers.



Brabender® GmbH & Co. KG and
Brabender® Technologie KG



Brabender® Messtechnik GmbH & Co. KG



C.W. Brabender® Instruments Inc.



The Brabender® support

A modern application laboratory is at the disposal of all customers and interested parties for trials with their own materials. All measuring systems of Brabender® can be tested under practice-oriented conditions. An experienced expert team will assist the tests and will stay at your disposal at any time for further questions.

Apart from that, numerous articles dealing with the application of the Brabender® instrument systems for manifold tests have been published all over the world during the past decades. We shall be pleased to send you a bibliography comprising about 1500 articles at present.

Together, we will find the optimum solutions for your special problems and prove their suitability.

The new generation

Drive units



The Lab-Station is the basic for applicational investigations or processing tasks in laboratories or simulation. The movable and self-centering docking stations like mixers and extruders are just coupled to this basic unit. The heart of the Lab-Station is the fully digital 16 kW motor which ensures full torque of 400 Nm over the entire speed range of 0.2 min⁻¹ to 350 min⁻¹. The inverter drive provides for precise and constant speed even under this load. Furthermore, a torque measurement is integrated.

Any control modules and sensors required for additional equipment are integrated in the docking stations and are recognized automatically after coupling. The allocation of the performance electronics to the individual docking stations permits preheating of a measuring head even without the basic unit or cleaning of the measuring head under temperature. The Lab-Station, too, can be operated both via a computer and manually. For manual operation, all important control displays are positioned on a control panel.

Plasti-Corder® Lab-Station

- Plug & Play
- self-validation
- modular configuration
- real multitasking
- state-of-the-art fieldbus technology
- 32-bit software for all current Windows® versions

Plastograph® EC plus

The Brabender® Plastograph® EC plus is the economical table-top version of the universal torque rheometer Plastograph® for applicational investigations or processing tasks in laboratories and simulation. With its digital 3.8 kW motor, a torque measuring range of 200 Nm, and a speed range from 0.2 to 150 min⁻¹, the Plastograph® EC plus is the perfect measuring drive for practice-oriented measurements with the Brabender® series of 30 and 50 mixers, measuring extruder type 19, and the conical twin screw extruder.



Measuring heads/ Docking stations

Nearly all Brabender® measuring mixers and single or twin screw measuring extruders are available in two versions:

- as measuring heads for Plastograph®
- as docking stations with movable support for the Lab-Station

Mixers

With Brabender® measuring mixers, the processibility of plastic and plastifiable substances can be tested. Apart from these measuring tasks, the mixers are also suited for producing sample material or for reactive processing.



Measuring mixer W 50

The measuring mixer W 50 with roller blades is applied for all thermoplastic materials. The Plastograms® (torque, melt temperature vs. time) provide information about the fusion behavior, heat and shear stability, and many more.

Brabender® measuring mixers stand out for:

- easy handling and cleaning
- liquid or electric heating
- precise and constant temperature conditioning up to 500 °C
- manifold additional equipment and software packages



Step-controlled measuring mixer

This mixer head was specially designed for recipe development. The software allows to define a sequencer control with up to 20 mixing steps, which can be switched as a function of registered units like

- time
- torque
- stock temperature
- energy input

These switching variables can be used in an and/or function. This makes this mixer the optimum tool for elastomer compounds.

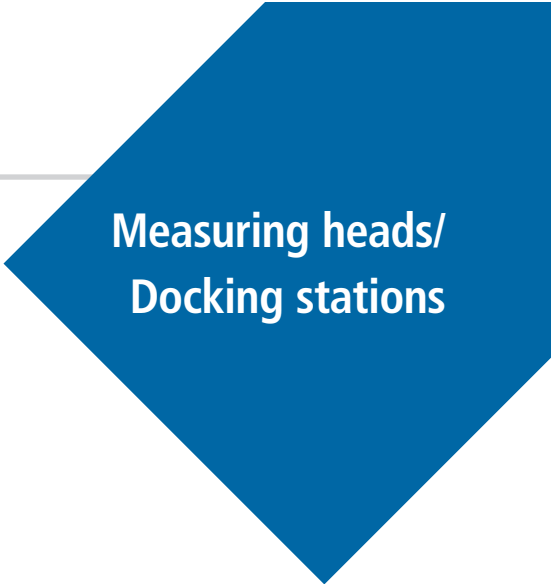


Special mixer 350 S

The special mixer type 350 S was developed above all for the rubber and caoutchouc industry. The middle section of the mixer bowl is divided horizontally in the middle to permit quick and easy opening of the mixer e.g. for taking material for subsequent or comparative tests.

The mixer is perfectly suited for the determination of the black incorporation time BIT, for measuring the breakdown index, or for compounding and mixing various components while measuring the material behavior at the same time. The large volume permits to process enough quantities of material.

Single screw extruders



Measuring heads/
Docking stations



Measuring extruder 19/25 D

Brabender® single screw extruders are available with barrel diameters of 19 and 30 mm. With processing lengths of 10 to 25 D and manifold screw geometries, throughputs range from 0.6 to 15 kgs/h. Extrusiographs® are mostly used for measuring tasks like recording of torque, melt pressure, and temperature development along the barrel and the die for a scale-up to production conditions, or for flow curve determination. A large variety of extrusion dies and downstream equipment enables the application of Brabender® single screw extruders also for processing tasks and profile production.

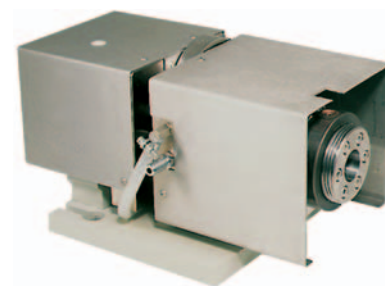


Grooved extruder 19/20 DN

The liquid heated extruder 19/20 DN as a docking station for the Lab-Station has a grooved barrel over the entire length. Together with the pneumatic feed unit, it is perfectly suited for pasty materials which have a strong tendency to heat formation due to internal friction. Therefore, this extruder is frequently applied with ceramic materials.

Measuring extruder 19/10 DW

The extruder 19/10 DW is also available as a docking station for the Lab-Station. With its feed roll and its short length of 10 D, it is specially used for elastomers. Frequently, it is used in combination with a pin barrel supplement and a Garvey die head.



Twin screw extruders

Twin screw extruder TSE 25

The co- or counter-rotating twin screw extruder TSE 25 with a barrel diameter of 25 mm is a true allrounder among the extruders. With its variable processing length of 22 to 48 D, the TSE 25 can be used for multistage compounding tasks, as pilot plant, for reactive extrusion, and for recipe development.

A special software helps to build up the screws from a construction kit so as to perfectly suit the respective application. Depending on the material, this extruder reaches throughputs of 0.6 to 50 kgs/h. Feed units and a large program of die heads and downstream equipment are available as additional equipment.



TSE 25

Twin screw extruder TSE 20/40

The TSE 20 is available with barrel length of 40 D. The barrel length can be reduced to 30 or 20 D by means of a distance sleeve in the screw configuration to easily adapt your extruder to the individual processing task. Metering and/or vent ports can be installed every 10 D. For this purpose, the barrel is equipped with 4 ports which can be closed.

Furthermore, side feeding is possible. The barrel of the TSE 20 is divided horizontally and can be tilted open on both sides. This allows visual assessment of individual processing steps and makes this extruder particularly suited for application in research and development. This extruder is also available as stand-alone version.



TSE 20/40

Stand-alone extruder



KE 19 / KE 30

Brabender® stand-alone extruders are multi-purpose machines for testing and processing a large variety of materials. Their compact design makes these machines the ideal solution for applications in laboratories and small-scale production.

The Brabender® stand-alone extruders are perfectly suited for

- the development of new products
- incoming and final inspection
- quality control during production in combination with the die heads
- small-scale production of hoses, tubes, films, and other profiles

Equipped with a grooved feed zone, and a barrier screw, throughputs comparable to high-performance extrusion can be reached.

A large program of downstream equipment is available to build up complete processing lines.

Mini-Compounder TSE 12/36



The Brabender® Mini-Compounder KETSE 12/36 is a co-rotating twin screw extruder miniature with application to the chemical as well as to the pharmaceutical industry to develop new products.

Almost each processing task and the easy handling of the system, distinguish the Mini-Compounder as an excellent laboratory apparatus. The Brabender® Mini-Compounder KETSE 12/36 has an integrated drive with an output of 2.4 kW and reaches speeds up to max. 600 U/min⁻¹. The modular screw conception offers all individual processing possibilities with minimum material requirements.

Downstream equipment



Pelletizer

The pelletizer can handle up to 4 strands with diameters of 1 to 4 mm. Further features are its low-noise operation and its perfected design, including e.g. an adjustable floor which permits secure fixing of various bag sizes or of rigid containers. Air showers are available for drying the strands after a water bath.



Film blowing unit

The film blowing unit serves for simultaneous blowing, cooling, taking off, and winding up of extruded blown films and for exactly adjusting the hose diameter and the film thickness. Depending on the material, common blowing ratios are 1 : 2 up to 1 : 4. An additional Film Quality Analyzer mounted into the film blowing tower enables simultaneous purity tests.



Univex

The Univex can take off, cool, and wind up flat films up to a max. film speed of 30 m/min. Liquid temperature conditioning of the nip rolls positively influences e.g. crystallization processes. For simple applications with a max. take-off speed of 5 m/min, the conveyor belt has proven successful many times. Of course, there is also a wire take-off and winding unit for cable production applications.

Auto-Grader®: MFR, MVR

On-line
production control

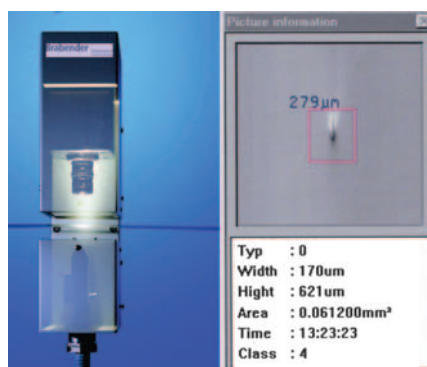
- objective
- continuous
- real-time testing
- integration into process control system

The Auto-Grader® continuously determines the melt index, film purity, and transparency - within seconds online with polymer production.

Self-optimizing and automatic operation ensures optimum adaptation to the polymer to be tested. All relevant data are stored in a database and can be transmitted to a process control system. When production changes over to a new charge, the Auto-Grader® allows to exactly determine the time when the product meets the specification. This minimizes the portion of "out-of-specification" material. The system is open to expansion for running further on-line measurements, e.g. of color, haze, etc.



Film Test Line / FQA: Transparency, film purity



Film Test Line

The Film Test Line is a compact unit for fully automatic optical control of extruded films.

The integrated Film Quality Analyzer detects all common faults such as gels, black specks, fisheyes etc. - quickly, precisely, continuously.

The Film Test Line stands out for:

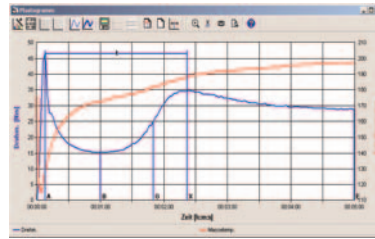
- fully automatic operation
- measurement and evaluation without blanks
- on-line display of particle information
- parallel display of camera video and particle pictures
- automatic film assessment through film grade determination
- optional marking of faults on the film
- optionally with hazemeter and/or NIR density measurement
- multitasking through Windows® NT

Film Quality Analyzer

The Film Quality Analyzer tests the purity of transparent films. Apart from transparency, the content of gels, impurities, black specks, and fisheyes is tested. All particles detected are sized and allocated to size classes. As a result, you get the size distribution and the impurity development over time. Extrapolations to the material area, weight, and volume are possible as well. The standard version permits to determine particles with a minimum diameter of 35 µm. In special cases, resolutions down to 5 µm have been realized. The minimum film transparency may go down to 20 %.

Brabender® Software

The user-optimized Windows® software allows recording of process data and evaluation of the test results according to the state of the art. On-line diagrams give a quick survey of the test data and evaluation results already during the running test.

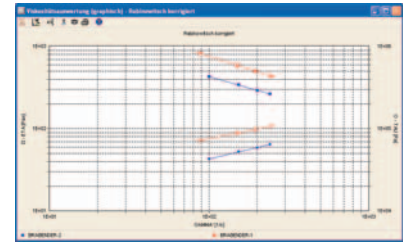


Plastogram®

The users of Brabender® instruments have a high degree of system-technical intelligence on hand. Special data correlation programs permit a direct comparison of the result of different test series with each other. Memorization of the measuring values in MS Access® database format and a real 32-bit software ensure quickness, safety, and a high flexibility combined with easy handling of the system.

With program modules like

- WINMIX (mixer applications)
- WINEXT (extruder applications incl. capillary rheometry)
- WINAG (on-line testing of melt index and film purity), etc.



Correlation of flow curves from round and slot capillary tests

Viscosity Density Oil number



Absorptometer C

The standard instrument for automatic determination of the oil number and structure of carbon blacks and fillers in the rubber, carbon black, and pigment industries.

- reliable
- precise
- reproducible



Elatest®

Determination of the density of unvulcanized elastomer compounds:

- fully automatically
- with minimum time requirement
- with a reproducible accuracy of 0.03 % (0.0008 g/cm³ absolute)



TSSR

Measuring the thermo-mechanical properties of elastomers and polymers subjected to a constant elongation at a constantly rising temperature. The stress relaxation is measured as a function of time, is recorded and evaluated.

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