

Brabender® food extruders for laboratories and simulation

The application of measuring extruders in the food laboratory is a must for setting optimum production conditions and for ensuring a constant high product quality. Benefit from the flexibility and high performance of the Brabender® single and twin screw extrusion technology for optimally adapting your processing conditions to many different products and processing tasks:

- Quality control of raw materials
- Product development and recipe optimization
- Testing of the extrudability of different materials
- Investigation and optimization of processing conditions
- Development of pigments and temperature-stable flavorings
- Binding of active ingredients and flavors to a carrier material (pharmaceutical products, snacks)
- Measurement of the rheological properties of blends and compounds
- Extrusion of degradable products
- Small-scale production

Moreover, tests with measuring extruders offer numerous process-technical advantages as opposed to other methods:

- Small sample weights
- Quick change of test conditions
- Quick and easy cleaning
- Extrusion under realistic conditions on a laboratory scale
- Practice-oriented measurement of extrusion conditions
- Testing of raw materials and products
- Capillary die heads for rheological measurements

- Near to practice
- Continuous
- Efficient
- Versatile



Single screw laboratory extruders

Measuring extruder 19/20 DN / Stand-alone extruder KE 19

- Forming (noodles)
- Gelatinization (starch)
- Cooking and expansion (starch modification, snacks)
- Texturization (soy protein)
- Production of biodegradable starch products



Simulate production realistically on a laboratory scale

The material to be tested is extruded in a practice-oriented way. All measuring values like torque, melt temperature, melt pressure, etc. are recorded continuously and displayed in a numerical or graphical form. Easily spot irregularities in data and assess trends from clear color diagrams during the running test.



Single screw measuring extruder 19/20 DN



The single screw measuring extruder 19/20 DN with 19 mm screw diameter has a grooved barrel over the entire length of 20 D in order to obtain an improved shear ratio and optimum material flow in the barrel. The two-barrel zones are heated electrically with heating/cooling jackets and cooled with air.

Option: extruder with liquid heating/cooling for sensitive material is available upon request.

Stand-alone extruder KE 19 - the self-supporting solution



The Brabender® stand-alone extruder KE 19 is a sturdy, directly driven small-scale processing machine for laboratory and production. Data exchange between the control modules, sensors, and the PC is done through state-of-the-art fieldbus technology. Optionally, the KE 19 can be networked with local data transmission systems.

Equipped with a drive unit of its own, the KE 19 is completely independent. This makes it the perfect economic solution for laboratory and simulation applications.

Screws, die heads

Brabender® supplies a large program of compact screws with different compression ratios (1 : 1 up to 1 : 5) and various geometries for the 19/20 DN and KE 19 extruders.

There are multiple die heads to suit all sorts of material and applications, e.g.

- Round strand die heads
- Noodle die head
- Flat sheet die heads
- Tubing die head
- Rheometric capillary die heads

Compact or modular - the twin screw program

DSE 20
DSE 25
KDSE

- flexible screw and barrel configuration
- low-cost expansion whenever needed
- wide application range:
from material development up to small-scale production
- throughputs up to 20 kgs/h
- multiple additional and downstream equipment

**Twin screw extruder
DSE 20**



The co-rotating twin-screw extruder DSE 20 with its low output rates of 0.5 to 10 kg/h is specially designed for research and development applications. With a standard barrel length of 24 D (other lengths on request), metering and/or venting is possible every 10 D.

A special feature is the divided barrel, which can be tilted open completely to ensure easy access to the segmented screws. This permits quick and easy cleaning and allows observation of the individual processing steps.



**Twin screw extruder
DSE 25**



The co- or counter-rotating twin-screw extruder DSE 25 with a barrel diameter of 25 mm is a true multi-purpose Brabender® extruder.

With its variable processing length of 20 (standard) to 54 D, it can be used for multi-stage compounding tasks, as a pilot plant, for reactive extrusion, and for recipe development.

Downstream equipment is available to suit every need.

A special software makes it easy to build up screws and barrels from a construction kit comprising all necessary modules for optimally realizing your special processing tasks (feeding, conveying, plastification, dispersion, reaction, degassing, pressure build-up).



**Conical twin screw extruder
KDSE**



The counter-rotating, conical twin screw extruder KDSE stands out for perfect utilization of the screw core heat. This supplies additional heat to the raw material in the feed zone and ensures optimum preheating.

The conical screw design and the resulting compression guarantee optimum results. The increased channel volume in the feed zone is favorable for processing voluminous bulk goods.

The processing unit is mounted on a mobile support. For cleaning the screws, the processing unit can be drawn off the gear unit and rotated on the support.



Software / Specification

Software / Specification



User-friendly evaluation software

The user-optimized Windows software automatically evaluates your test results in compliance with the most recent standards. The software saves your data in MS Access database format to allow processing of the stored values with commercial Office programs and easy implementation of the data in your own texts or spreadsheets.

Benefit from the versatility of the data correlation program, and directly compare the results of different tests of one or several test series.

Extruder type	Extruder 19/20 DN	KE 19	DSE 20	DSE 25	KDSE
Screw diameter [mm]	19	19	20	25	42/28 ¹
Screw length L : D	20	25	24	standard: 20 option: up to 54	(350)
Flight depth [mm]	3.8	3.8	3.75	4	8
Drive power [kW]	3.3/12 ¹	1.5	3.3/12 ¹	12	12
Max. screw speed [min ⁻¹]	250/275 ¹	2 - 150	250/275 ¹	550	275
Max. screw torque [Nm]	150	150	2 * 40	2 * 90	2 * 100
Max. barrel temperature [°C]	450	450	450	400 (short 450)	350
Max. melt pressure [bar]	700	700	300	300	500
Output [kg/h] (dep. on material)	1 - 10	1 - 10	0.5 - 10	1 - 20	1 - 5
Segmented barrel/screw	no	no	no/yes	yes/yes	no
Screw rotation/special features	grooved barrel	grooved barrel	co-rotating, barrel divided horizontally	co-/counter- rotating	counter-rotating
Drive	Do-Corder/ Lab-Station	stand-alone	Do-Corder/ Lab-Station	Lab-Station	Lab-Station

¹ depending on drive unit

Subject to change of design and technical modification.

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