Xplore® MC 15
Micro Compounder

15 ml table top Micro Compounder for R&D applications

Xplore®
Platform for formulation development
Platform for formulation development: 10 times faster, 10 times cheaper

This micro compounder, with a capacity of just a few grams of material, will brighten your R&D performance by its reliability, ease of use and robustness. It is a unique asset for you in the development of new material compound formulations: a fully fledged material processing machine on a laboratory bench or in a fume hood.

The micro compounder can process batch volumes up to 15 ml. As an option our compoudner houses the unique and proprietary Vari-Batch™ concept (see picture a), which gives you the opportunity to select your batch volume of 3, 7 or 15 ml, via multiple recirculation channels. In the past, testing and evaluating of new materials or formulations was very time consuming and costly due to large amounts of test material or too expensive additives needed.

Our micro compounder offers you a solution: reliable and reproducible, very fast results with less material and waste and less equipment and infrastructure costs. Even more so when the compoudner is used in combination with our laboratory injection molding machine, cast film or fiber line.

The core of this laboratory compoudner is formed by a divisible, fluid tight mixing compartment containing two detachable, conical mixing screws. Both the screws and the housing are specially treated to minimise wear and to make them very resistant against chemicals and which make them also easy cleanable. Chemical resistance and hardness of the barrel is essential to maintain its original geometry, which enables to generate reproducible data over the years.

With our forced feeding screws in combination with our water cooled top hopper feeding of sticky, fluffy or static materials is easy (see front page).

The main drive is continuously digitally variable. It allows for vertical force and rheological data measurement and controls constant die pressure for film and fiber applications, hence throughput control. The processing temperature can be controlled in 2x3 separate barrel heating zones, which also enables to process with a temperature gradient over the barrel, or directly via an additional melt thermocouple.

*) Xplore Instruments BV, proprietary technology

Xplore all your R&D challenges in formulation development of high viscous materials
Residence time (L/D in continuous extruders) can be varied via recirculation of the melt. No screw optimization is needed. Mixing and dispersion are superb, preventing agglomeration. The shear rate can be controlled by adjusting the gap between screw flank and barrel or by changing the RPM. Due to the vertical position of the barrel processing fluids is not an issue. Other standard features are air and water cooling, Nitrogen or Argon purge, integrated touch screen control and a cleaning cycle which guarantees a quick turn around time.

Our dedicated (rheological) software enables you to control the instrument parameters and to acquire data to fully analyse a processing run. The more sophisticated rheological software reveals screw torque in the melt, average shear rate and shear stress along the conical screw and melt viscosity. Upscaling of this process to continuous parallel twin screw extruders can be achieved.
Technical Specifications:

- Abrasion resistant barrel (hardness 60 HRC), coating hardness 2000 Vickers
- Barrel and screws chemically resistant between pH 0 – 14
- Batch volume: 15 ml (Vari-Batch™: 3, 7 and 15 ml)
- Vertical barrel, fluid-tight Air knife W 74 mm
- Heated by 8 thermo cartridges and controlled by 7 thermo couples (temperature gradient possible)
- Temperature control: in the melt and 2x3 barrel heating zones
- Detachable conical screws, fully intermeshing (hardness 54 HRC), coating hardness 1000 Vickers
- Maximum operating temperature 400 °C (optionally 450 °C)
- Heating time (from 80 to 240 °C) in less than 10 min
- Acquisition of rheological data (screw torque, melt viscosity, shear rate and shear stress)
- Maximum vertical force: 8 kN (optionally 9 kN)
- Cooling time (from 240 to 80 °C) with cooling water in less than 10 min, with air in less than 35 min
- Easy to clean with dedicated cleaning cycle
- Screw speed: continuously variable 1 - 250 RPM
- Supply voltage: 208 - 240 V AC, others on request
- Main drive: DC controlled, 900 Watt
- Operating control via integrated touch screen or computer control via: USB port
- Maximum torque: 10 Nm per screw
- Overall dimensions (h x b x d): 103 x 73 x 42 cm
- Weight 150 kg

Xplore Instruments BV
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