Xplore
Xcelerate your polymer innovation

Elastocon®

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MC 40

High-Volume | Continuous Compounding

High-Throughput R&D Solution

The MC 40 is a **high-torque laboratory micro-compounder designed for larger-volume material development in both batch and continuous processing.** It combines robust construction, reliable operation, and precise process control in a compact system that fits on a laboratory bench or inside a fume hood. Its larger batch capacity enables greater flexibility for screening and sample preparation, while supporting continuous operation and process-oriented R&D.

Precision & Control

- **High-Throughput Performance:** Designed for stable processing of demanding materials, supporting consistent mixing and reliable results during batch and continuous operation.
- **Advanced Drive System:** Delivers precise shear rate control with continuous torque monitoring for stable, data-driven continuous processing at any given screw speed.
- **Superior Mixing:** Engineered for effective dispersion and uniform distribution, enabled with specially designed screws that extend residence time during continuous operation.

Flexible Workflow

- **Processing Modes:** Batch compounding and continuous extrusion/compounding.
- **Integrated Feeding:** Optional continuous pellet and powder feeders ensure precise dosing for compounding and downstream processing, with consistent flow.
- **Material Feeding Flexibility:** Enables feeding of a wide range of materials.
- **Direct Post-Processing & Shaping:** Compatible with Xplore's post-die add-ons, such as injection moulding, cast film extrusion, fiber spinning, impregnation, or pelletizing.

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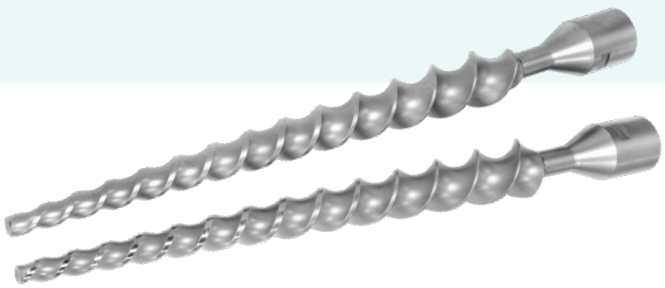
System Capabilities

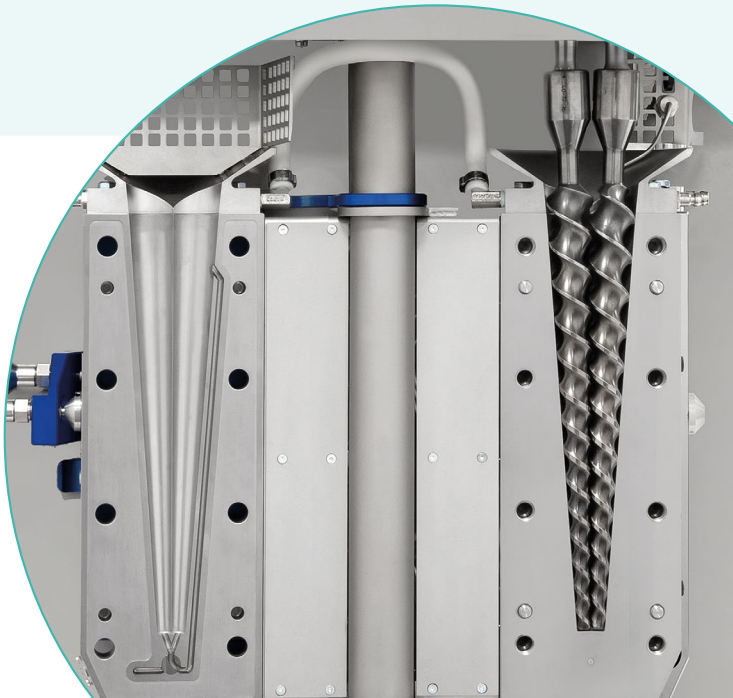
- **Stable Feeding & Residence Time:** Equipped with a water-cooled feeding hopper, precisely controlled melt temperature and barrel temperature zones to prevent premature melting and ensure stable residence time from gram-scale to kilogram-scale continuous processing.
- **Durability:** Features abrasion-resistant barrel with robust housing for long-term reliability. Suitable for processing commodity to high-performance polymers such as PEEK and PPS.
- **Smart Upscaling:** Incorporates proprietary rheological software capable of producing in-line rheological data, providing enhanced understanding of structure evolution during compounding and facilitating reliable scale-up to industrial/pilot extrusion systems.
- **Minimized Cleaning Downtime:** The integrated, automatically controlled cooling jackets enable rapid barrel cooling as part of Xplore's cleaning cycle.
- **Atmosphere Control:** Integrated inert gas supply prevents thermo-oxidative degradation and preserves material integrity during high-temperature processing.

Double feeders

Technical Specifications

- Batch volume: 40 ml
- Recirculation channel volume: 4.9 ml
- Continuous or batch operation
- Mixing screws: Fully intermeshing, detachable, nitrated coating with a hardness of 1100 ± 100 HV
- Barrel: Abrasion-resistant, hardness 53 ± 1 HRC, coating hardness 2000 ± 100 HV
- Maximum melt torque: 40 Nm (20 Nm per shaft)
- Maximum pressure: 600 bar
- Gear-box: Co- and counter-rotation standard
- Screw speed: 0.1–500 RPM, continuously variable. Between 0.1–10 RPM with 0.1 RPM incremental steps; between 10–500 RPM, 1 RPM incremental steps
- Maximum operating temperature: 425°C
- Temperature control and heating: Front and rear barrel with 3 heating zones, 12 heating cartridges, 8 thermocouples, plus a melt thermocouple
- Heating time (80°C → 240°C): <20 min
- Cooling time (240°C → 80°C): <20 min with water; <40 min with air
- Operation control: Integrated 12-inch touchscreen or USB interface
- Software: Data acquisition and instrument control
- Optional inline-process monitoring:
  - Melt pressure transducers
  - Melt-tension sensor for fiber application
- Main drive power: 1350 W
- Power supply:
  - 380–415 Vac / 50–60 Hz, 3 phase, 16 A
  - 190–208 Vac / 50–60 Hz, 3 phase, 20 A
- Utility connections:
  - Cooling water inlet/outlet: Min. 5 l/min, 0–6 bars (chiller connectivity is also possible)
  - Cooling air inlet: Min. 150 l/min, 0–6 bar
  - Purge inert gas: N_2, Ar, etc., with 0–6 bar inlet pressure
  - Fume extraction: Min. 20 m^3/h from the top
- Dimensions (H × W × D): 97 cm × 60 cm × 45 cm
- Weight: 150 kg





Contact us at
xplore-together.com