

When developing new products, shortening time-to-market and reducing raw material waste and overall development costs provide a distinct competitive advantage. Thus, quick and early assessment of a new material is key. The Thermo Scientific HAAKE MiniCTW allows researchers to extrude as little as five grams of material, helping to accelerate product development.

Thermo Scientific HAAKE MiniCTW

Micro-compounder for industrial research and development



Industrial Markets:

- Automotive
- Aerospace
- Electronics
- Polymer Processing
- Polymer Screening
- Colorants
- Specialty inks / Toners
- Building and Construction
- Consumer Products
- Pulp & Paper

The challenge

Customers in industrial research and development need to assess and optimize hybrid materials to keep production costs low: They focus on improving relative performance of supplied polymers concerning temperature stability, weight, rigidity profiles by introducing additives, fillers or fibers. Often basic compounding can be enough to validate materials science requirements. Therefore, a partner who specializes in polymer optimization with a broad product portfolio is appreciated. The portfolio must support compounding needs and only requires small sample volumes or enables further mechanical testing or color matching, i.e. tensile, modulus, impact, DMA or melt rheology.

The solution

When compounding expensive or small scale materials such as nano-composites or engineered polymers, you need a fast, dependable, cost efficient method to obtain tangible results.

Priced right, the Thermo Scientific HAAKE MiniCTW micro-conical twin screw compounder is the answer. The HAAKE MiniCTW requires as little as five grams or seven milliliters (ml) of material for compounding, which is especially beneficial for industries that compound expensive or small-scale materials such as nano-composites, bio-polymers or pharmaceuticals. By using the optional force feeder, customers can continuously extrude very small material volumes.

The instrument is based on proven, conical twin-screw technology with co- and counter-rotating screws, and it works as a standalone unit with data export. Due to the channel and a bypass valve, the residence time is well-defined.

The Thermo Scientific HAAKE MiniCTW is ideal for the precisely controlled reactive extrusion of high-viscous melts that is being done via an MS-Windows® based software that offers several test set-ups. By running the instrument in circulation mode, the required reaction time for the reactive mixture can be controlled easily. At the end of the test, the bypass valve can be opened and the sample is extruded as a strand. By measuring the torque of the drive motor, the reaction process can be monitored effectively. Test results are stored in the software.

Features and benefits:

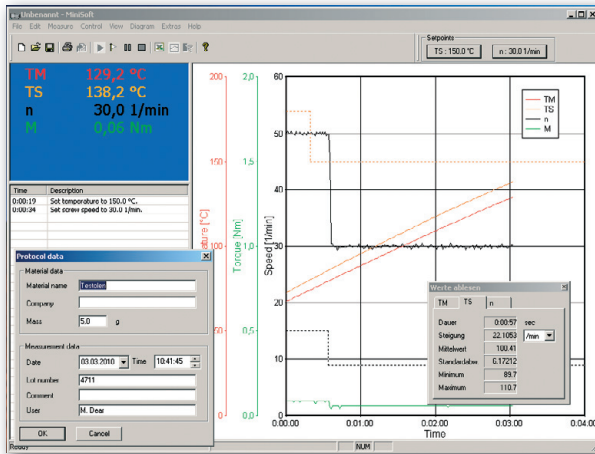
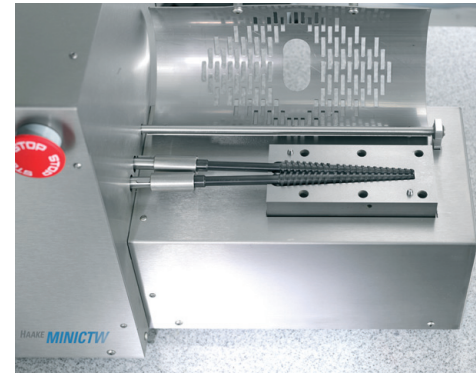
- Requires only seven ml of material for compounding
- Removable top barrel for easy and quick cleaning
- New software for user-friendly process monitoring
- MS-Windows based
- Storage of test set-up and results
- Recorded data: torque, temperatures, speed
- Complementary workflow solution when coupled with the HAAKE MiniJet mini-injection molder

The HAAKE MiniCTW is one model within our suite of micro-conical twin screw compounders that serves a variety of markets, including polymer, bioscience, nanotechnology and pharmaceutical. The instrument differs from the well-established Thermo Scientific HAAKE MiniLab micro-compounder in that it is designed specifically for industrial research and development whereas the HAAKE MiniLab is focused on polymer development applications.

To complete our comprehensive solutions, our international team of material characterization experts provides proven answers for small sample compounding.

Key Factors for New Product Conception

- High Heat Performance
- Chemical Resistance
- Heat and Light Stability of Colors/Tints
- Wear Resistance
- Moisture Resistance
- Electrostatic Dissipation
- EMI and RFI Shielding
- Energy Consumption
- Reduction of Material Costs



A complementary workflow solution is available when coupling the micro-compounder with the mini-injection moulder Thermo Scientific HAAKE MiniJet. Various test specimens can be easily produced from the compounded material in the HAAKE MiniJet and measured in the Thermo Scientific rheometers HAAKE MARS or HAAKE RheoStress 6000 afterwards.

Technical Specifications

Drive	
Motor power	400 W
Speed range	1 ... 360 min ⁻¹
Max. torque	5 Nm per screw
Control mode	Constant Speed Constant Torque
Power supply	230 V ± 10 %, 50/60 Hz 115 V ± 10 %, 60 Hz

HAAKE Force Feeder

Max. Speed	30 min ⁻¹
Material	Stainless steel 1.4122 Cr coated
Power supply	230 V ± 10 %, 50/60 Hz 115 V ± 10 %, 60 Hz

Extruder

Design	Conical co-/counter rotating
Temperature	300 °C
Heating time (80°-240°C)	< 10 Minutes
Barrel & Screws	High performance plastic mold steel (M340)
Cooling	Forced Convection
Pressure	up to 200 bar
Volume	7 ml
Bypass	Manual valve
Feeding	Manual feeding Force feeder (optional)

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