

Thermo Scientific Pharma 16 Twin-Screw Extruder

Pharmaceutical twin-screw extruder
for optimization of drug process development
in Hot Melt Extrusion and Twin-Screw Granulation

Streamline Drug Process Development

Formulation scientists in pharmaceutical companies can benefit from a robust hybrid, twin-screw extruder that quickly switches between hot melt extrusion (HME) and continuous granulation (TSG) operation, providing a comprehensive formulation development platform for drug delivery and continuous processing projects.

The Thermo Scientific™ Pharma 16 Twin-Screw Extruder is very compact and designed specifically for the pharmaceutical industry where both lab and production space is at a premium. Formulation processes developed on the Pharma 16 extruder can also be easily scaled-up across all pharmaceutical extruders in the Thermo Scientific product family.

This flexible instrument is designed for a wide range of applications:

- Controlled release formulations
- Solubility enhancement
- Co-extrusion and implants
- Abuse deterrent formulations
- Wet and melt granulation



Pharma 16 Twin-Screw Extruder

Based on the experience from successful pharmaceutical extrusion projects in R&D and production, the Pharma 16 extruder was designed from the ground up to adapt to the changing needs of a highly regulated industry.

The compact housing with optional IP65 protection class is designed absolutely crevice-free for meeting optimal GMP compliance. The fully-ported, split twin-screw barrel with 8 individual heating and cooling zones, and up to 150 bars operational pressure ensures maximum flexibility in process design.

A newly designed, industry-standard control and operation software allows plug-and-play functionality with upstream and downstream process equipment (e.g., feeders, chill rolls, pelletizers, dryers, etc). This maximizes the process investment, since extruder configurations can quickly be reconfigured to accommodate process changes of the full-production line.

Smart Process Accessories

The handling of hot and formable extruded material is a crucial part of the manufacturing process. Therefore, Thermo Fisher offers a choice of downstream options. As an example, the chill roll accessory helps to cool the extruded melt rapidly for high-throughput processing. The die design can produce a wide range of final shapes (e.g. films and co-extrudates). The specially designed co-extrusion die allows diameters of 2–10 mm, allowing fine control of the thickness of the inner and outer layers.



Co-extrudate of API core with Soluplus® Pharma Polymer (BASF) outer layer formed using a hot melt extrusion process with Pharma 16 and Pharma 11 Twin-Screw Extruders.

In nearly every phase of your drug discovery and development process, we help you make data-driven decisions that can enhance process efficiency and shorten your time to market.

Find out more about our Thermo Scientific twin-screw extruder portfolio featuring micro-compounders, small-scale units and production extruders.



Pharma 16 extruder complete strand line.

Technical Data

Screw length	HME L/D = 40 (40 × 16 mm = 640 mm); TSG L/D = 40.75 (40.75 × 16 mm = 652 mm)
Barrel zoning	7 barrel zones (1 st zone permanent cooled) + 1 die heater
Temperature	up to 300 °C
Pressure, max.	100/150 bar (option)
Screw speed	10–1000 rpm
Throughput	HME: 0.5–5 kg/h; TSG: 1–15 kg/h (rate depends on formulation)
Torque	36 Nm (2 screws, 18 Nm each)
Main supply	400 V 3 Ph + N + PE (+/- 10%)
Dimensions (L × W × H)	1750 × 610 × 1220 mm
Center line height	1050 mm
Weight	350 kg
Protection rating	IP 54 (IP 65 optional)

thermofisher.com/extruders

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Material Characterization

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