

Thermo Scientific Pharma 16 Twin-Screw Extruder

Pharmaceutical twin-screw extruder for commercial manufacturing, formulation and process development in hot-melt extrusion and twin-screw granulation

Streamline formulation and 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 twin-screw 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. 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
- Wet and melt granulation
- Wet extrusion

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.



Thermo Scientific Pharma 16
Twin-Screw Extruder

The compact housing with IP54 protection class is designed absolutely crevice-free for meeting GMP compliance. The fully-ported, split barrel with 8 individual heating and cooling zones, and up to 150 bars operational pressure ensures maximum flexibility in process design.

A comprehensive 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 utilization of the investment, since extruder configurations can quickly be reconfigured to accommodate process changes of the full-production line.

Flexibe processing options

The Pharma 16 twin-screw extruder can be equipped for HME or TSG operation in minutes and offers a wide range of accessories to complete your processing requirements.

For TSG operation the extruder can be connected to a continuous drying system and be the center of a full continuous manufacturing line setup. Different die designs available for HME create shapes such as rods, films and even co-extrudates. Those extrudates are optimally handled with downstream equipment including chill roll, air cooled conveyor belt and pelletizer.



Thermo Scientific Pharma 16 Twin-Screw Extruder set-up for HME (left) and TSG (right) operation

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

Find out more about our Twin-Screw Extruder portfolio featuring micro-compounders, small-scale units and production extruders.



Example of a commercial HME manufacturing set-up

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 (1st 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	3 x 400 V / N / PE, 50/60 Hz @32 A
Dimensions (L × W × H)	1760 x 760 x 1260 mm (extruder only) 1760 x 760 x 2100 mm (with Display)
Center line height	1050 mm
Weight	430 kg
Protection rating	IP 54

Find out more at thermofisher.com/drugformulation