

With sample outputs up to 50 kg/h, the PRISM TSE 24 MC floor-mounted twin-screw extruder from Thermo Electron is ideal for test sample and small-scale manufacturing. This flexible extruder is easy to operate, simple to clean, and can be configured for the most aggressive applications.

PRISM TSE 24 MC

Pilot-scale, modular twin-screw extruder



Applications:

- Compounding
- Masterbatch
- Nanocomposites
- Blown film
- Sheet extrusion

Materials:

- Polymers
- Adhesives
- Ceramics
- Pharmaceuticals
- Food

Highly configurable

The horizontally split barrel, up to 40:1 L/D, is hinged for easy access to the screws. A simple screw removal device promotes quick and easy cleaning and configuration changes. The barrel is constructed in segmented modules that can be reconfigured to suit a variety of polymer processes. Replaceable barrel liners can be made from special materials for aggressive applications. Barrel segments are available for feeding solids and liquids or for venting. Secondary feeders and vacuum pumps can also be incorporated into the system.

Powerful controls

Control software is programmed to recognize plug-in ancillaries. The large color touch screen interface incorporates on-screen, real-time trend display. An option is available to download data to a remote computer

for archiving and analysis. The controls include recipe storage to pre-set extruder temperature profiles for repeatable process conditions. Each barrel section has independent temperature control with PID logic to enable precise processing. To assist with scale-up, the touch-screen displays heat input to each zone.

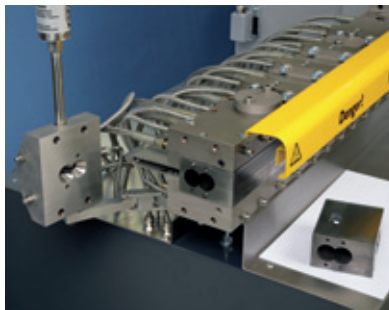
Flexible operation

A low maintenance, brush-less 5.5 kW motor drives the screws at 500 rpm. If higher output is needed, an 11 kW drive can double the screw speed.

Global support

With fully equipped Technology Centers for customer trials and worldwide representation, Thermo Electron supports customers globally.

PRISM TSE 24 MC



Technical Specifications

Barrel length	L/D	28:1	28:1	40:1	40:1
Barrel bore diameter	mm	24	24	24	24
Screw diameter	mm	23.6	23.6	23.6	23.6
Channel depth	mm	5.15	5.15	5.15	5.15
Center-line spacing	mm	18.75	18.75	18.75	18.75
Center-line to radius ratio		1.56	1.56	1.56	1.56
Maximum screw speed	rpm	500	1000	500	1000
Power at maximum screw speed	kW	5.5	11	5.5	11
Torque per shaft	Nm	52.5	52.5	52.5	52.5
Torque/ (C-line ³)	Nm/cm ³	8	8	8	8
Barrel zones		7	7	10	10
Heater rating	W	24 x 375	24 x 375	36 x 375	36 x 375
Die heater rating	W	2 x 375	2 x 375	2 x 375	2 x 375

Extruder Dimensions

L x W x H	cm	185 x 70 x 135	210 x 70 x 135	215 x 70 x 135	240 x 70 x 135
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Scale-up data

Internal free volume	cm ³	255	255	365	365
Peripheral surface area	cm ²	796	796	1138	1138
Surface area per unit free volume	m ² /l	0.31	0.31	0.31	0.31
Typical output	kg/h	2 to 20	2 to 50	2 to 20	2 to 50

Services

Electrical power	Volt/ph/Amp	400V/3ph+N/50A	400V/3ph+N/63A	400V/3ph+N/50A	400V/3ph+N/63A
Cooling water 20 °C	liters/min	20	20	20	20

Ancillary equipment

Thermo Electron offers a full range of ancillary equipment to integrate with the PRISM TSE 24 MC twin-screw extruder, including pre-mixers, screen changers, chill rolls, strand pelletizing lines, an air-cooled face-cut system, and cast sheet or blown film lines. Thermo can also design non-standard ancillaries for special applications.

Face-cut pelletizing

For water-sensitive products or highly filled compounds, the PRISM FCP 24 air-cooled face-cut pelletizer is available complete with blower and collecting cyclone.

Strand pelletizing options

Using either water or air cooling, the PRISM VARICUT 24 pelletizer can be used to convert the extruded product to pellets between 1 and 3 mm in length.



Screen changers

A fixed-screen pack or simple manual screen changer can be fitted behind the strand die for direct filtration of products compounded in the extruder.

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