

The PRISM TSE 24 HC is an ideal pilot plant twin-screw extruder for the manufacture of customer samples at outputs up to 50kg/h. Segmented screw configuration and modular opening barrel design allow flexibility for the full range of polymer processes. Individual heating and cooling for each zone results in accurate processing. PLC control with data logging and recipe storage ensures reliable and repeatable results.

PRISM TSE 24 HC

Modular twin-screw extruder



Applications:

- Compounding
- Masterbatch
- Blown film
- Sheet

Materials:

- Polymers
- Adhesives
- Ceramics
- Pharmaceutical
- Food

Pilot scale modular twin-screw extruder

The PRISM TSE 24 HC twin-screw extruder is ideal for making customer samples and for small-scale production.

A horizontally split barrel, up to 40:1 L/D, is hinged for easy access to the screws, and the screws themselves have a simple removal device for quick and easy cleaning or configuration changes.

The segmented barrel is constructed in 4:1 L/D modules that can be reconfigured to suit the customer's process. Barrel segments are available for feeding solids and liquids or for venting. Secondary feeders and vacuum pumps can form part of the system.

A simple bolt on barrel extension allows quick conversion from 28:1 to 40:1 L/D. Control software is programmed to recognize this extension and other plug-in ancillaries.

The large color touch screen interface incorporates on-screen data-logging as

standard, with an option to download to a remote computer for archiving and analysis. The controls include recipe storage to pre-set extruder parameters for repeatable process conditions.

Each barrel section has independent temperature control with PID logic to give precise temperatures and save energy. For scale-up calculations, a display on the touch-screen, shows the levels of heating or cooling applied to each zone.

A low maintenance brush-less 4kW motor drives the screws at 500 rpm. For higher outputs, a 9 kW servo drive gives up to 1000 rpm screw speeds.

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

PRISM TSE 24 HC Modular twin-screw extruder

Ancillary equipment

Thermo Electron offers a full range of ancillary equipment to integrate with the PRISM TSE 24 HC 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 has the ability and experience to design other non-standard ancillaries for special applications

Screen changers

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

Face-cut pelletizing

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

Strand pelletizing options

Products extruded from the PRISM TSE 24 HC can be converted using a traditional strand pelletizer with water or air-cooling. The PRISM VARICUT 24 pelletizer allows pellet length to be controlled between 1 and 3 mm.



Technical specifications

PRISM TSE 24 HC

	L/D	28:1	28:1	40:1	40:1
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	4.0	9.0	4.0	9.0
Torque per shaft	Nm	38	43	38	43
Torque/ (C-line ³)	Nm/cm ³	5.8	6.5	5.8	6.5
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	155 x 60 x 135	165 x 60 x 135	185 x 60 x 135	195 x 60 x 135
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/40A	400V/3ph/50A	400V/3ph/40A	400V/3ph/50A
Cooling Water 20 °C	Liters/min	20	20	20	20

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