

Small-scale continuous processing for research, development and production in the polymer industry. The PRISM TSE 24 TC twin-screw compounders are pre-wired with a manual control panel. Efficient cleaning is easy due to the clam-shell barrel which also enables simple screw removal.

## PRISM TSE 24 TC

Pilot-scale twin-screw extruders and ancillaries



### Applications:

- Polymer Compounds
- Masterbatches
- Nanocomposites
- Biodegradable polymers
- Adhesives
- Ceramics

### Materials:

- Polymers
- Chemical
- Food

### TSE 24 TC Twin-Screw Extruders

The PRISM TSE 24 TC extruders are designed for bench-top operation. The horizontally split barrels, up to 40:1 L/D, are quick to open, giving easy access to screws and process contact surfaces for cleaning or configuration changes.

The barrel has additional ports for feeding solids and liquids, or for venting.

A simple manual control panel houses controls and instruments to operate the extruder and feeders. A PLC-controlled version with touch screen operator interface is available for special testing requirements.

Low maintenance brush-less variable speed AC motors drive the screws at up to 500 rpm.

Available in different barrel lengths from 25:1 to 40:1, the PRISM TSE 24 TC can be used for research, development or small production.

Thermo Electron Corporation is a leading supplier of equipment and instruments to the Polymer industry, worldwide.

Thermo Electron (Stone) UK has a fully equipped Technology Centre for customer trials on PRISM equipment, and with worldwide representation, Thermo Electron Corporation supports customers globally.

## Specifications and Accessories

### PRISM TSE 24 TC

#### Ancillary equipment

Thermo Electron Corporation offers a full range of ancillary equipment to integrate with the PRISM TSE 24 TC twin-screw extruder, including pre-mixers, chill rolls, strand pelletising 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.

#### Change-bowl mixers

PRISM Pilot series change-bowl high-speed mixers, from 3 to 15 litres, are available to pre-blend materials.

#### Metering Feeders

Volumetric feeders can be integrated into the control system, and gravimetric feeders can be fitted.

#### Face-cut Pelletising

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 Pelletising Options

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

#### Specifications

##### PRISM TSE 24 TC

	L/D	25:1	30:1	40:1
Barrel length				
Barrel bore diameter	mm	24	24	24
Screw diameter	mm	23.6	23.6	23.6
Channel depth	mm	5.15	5.15	5.15
Centre-line spacing	mm	18.75	18.75	18.75
Centre-line to radius ratio		1.56	1.56	1.56
Maximum screw speed	rpm	500	500	500
Power at maximum screw speed	kW	4.0	4.0	4.0
Torque per shaft	Nm	38	43	38
Torque/(C-line <sup>3</sup> )	Nm/cm <sup>3</sup>	5.8	5.8	5.8
Barrel zones		4	5	6
Heater rating	W	24 x 350	24 x 350	36 x 350
Die heater rating	W	2 x 350	2 x 350	2 x 350
<b>Extruder dimensions</b> L x W x H	cm	1.7 x 0.6 x 1.75	1.9 x 0.6 x 1.75	2.4 x 0.6 x 1.75
<b>Scale-up data</b>				
Internal free volume	cm <sup>3</sup>	228	274	365
Peripheral surface area	cm <sup>2</sup>	711	853	1138
Surface area per unit free volume	m <sup>2</sup> /l	0.31	0.31	0.31
Typical output	kg/h	2 to 20	2 to 20	2 to 20
<b>Services</b>				
Electrical power	Volt/ph/Amp	400V/3ph/32A	400V/3ph/32A	400V/3ph/40A
Cooling water 20 °C	Litres/min	5	5	5

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