



## POLYMER FILM CENTER OF EXCELLENCE (COE)

### OVERVIEW:

Polymer processing facilities at the Natick Soldier RD&E Center (NSRDEC) focus on the research and development of novel polymers, formulations and films without the need for production-size equipment and large quantities of materials. Capabilities include micro-compounding/film extrusion/injection molding, polymer compounding, monolayer blown and cast film extrusion, hot melt coating and lamination, moisture analysis, resin drying ovens and a full range of polymer characterization equipment, including oxygen and moisture barrier testing equipment.

### PROCESSING EQUIPMENT:

#### DSM Xplore™ 15 cm<sup>3</sup> Twin-Screw Micro-Compounder

- Micro-compounding capability utilizing gram-level samples
- Controllable residence time in mixing chamber
- Co-rotating and counter rotating conical screw capability
- Injection molding accessory for producing tensile bars and molded test samples
- Film roll system for producing 12 mm width film in both a continuous and non-continuous mode

#### Thermoprism TSE-16 Twin Screw Extruder

- 16 mm bore twin-screw extruder has programmable screw elements for low to high shear-rate processing
- Strand die with adjustable pellet size pelletizing line
- 30 mm diameter spiral flow blown-film die
- 30 mm and 130 mm cast film dies
- 2 Controlled output volumetric feeders
- Max speed: 500 rpm
- Temperature range: 0°C-400°C

#### ThermoHaake Polylab Extrusion System

- 3 extruders with single-screw and conical twin screw extrusion capability
- Layer die multiplier elements
- Cast film dies of 100 mm and 130 mm wide
- 30 mm diameter spiral flow blown film die with maximum lay-flat width of 200 mm
- 3-strand pelletizing line with adjustable length pelletizer
- Temperature range: 0°C-450°C

#### Collin Teach Line Multilayer Extruder

- 5 layer blown film or 9 layer cast film
- Max output of 4.2 kg/hour
- 20 mm screw diameter, 25:1 L/D ratio
- Max screw speed of 180 rpm
- 250 mm adjustable thickness slit die for film thicknesses of 20 µm-300 µm
- Chill Roll with slitting feature and film winder

#### Collin High Temperature Blown Film Extruder with Counter Rotating Die

### POINT OF CONTACT:

#### Combat Feeding Directorate

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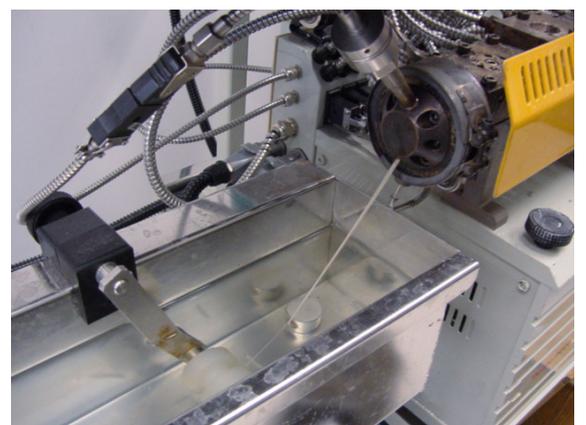
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Collin Multilayer System



Twin Screw Extruder