Nordson Extrusion Dies Industries offers a process laboratory as a means for extrusion processors and web converters to carry out product development and process testing. This resource allows processors to explore all alternatives without the high raw material costs and lost output of trial runs on their own commercial-scale equipment.

Visit Nordson Extrusion Dies Industries at www.nordsonpolymerprocessing.com
At a time when outside trial run facilities are increasingly scarce, Nordson Extrusion Dies Industries offers fully equipped process laboratories that your company can rent for product development and test runs. You can even use them to “test-drive” certain new technologies. You can carry out your lab work in the strictest confidence and rest assured that your new developments will remain your new development. Put Nordson Extrusion Dies Industries’ vast 40-plus years of die and process knowledge to work for you… with real world solutions.

Six-Extruder Pilot Line & Cast Film/Sheet Line
Both our 32” pilot line and our 8” cast film/sheet line offer a multitude of tooling options from monolayer extrusion to coextrusion to multiplied structures containing up to 1,280 layers. Capable of producing products ranging from film to 100 mil sheet, these lines prove to be as versatile as they are economical.

Cast Film Extrusion Line
Our fully equipped 1.6 meter line can be used for monolayer and coextruded cast film.

Fluid Coating Line
Located at the Nordson Extrusion Dies Industries—Premier Coating Division, this line can be used to test alternative fluid formulations, coating/substrate combinations, and other parameters without tying up your own equipment or using large quantities of raw materials. Practitioners of roll coating can explore the advantages of slot die coating before investing in a commercial scale system.

Material Characterization
Nordson Extrusion Dies Industries’ rheology lab is available to characterize the viscosity of your resins for purposes of designing the internal flow channels of Nordson Extrusion Dies Industries built equipment. This service is included with the purchase of new die systems.
**Cast Film Extrusion Line**

**Line Capabilities:**

1. Coextrusion and mono layer film up to 1600mm (63") wide from 8 to 125 microns.

**Cast Film Extrusion Line Equipment:**

- 1600mm (63") Autoflex VI-R EPC Die
- 64" cast roll
- (2) 50mm Extruders
- Edge Trim Station
- Electrostatic & Pneumatic Edge Pinning Station
- Resin drying available
- Mark 3 Moisture Analyzer available
Cast Film/Sheet Line

Line Capabilities:

1. Mono-layer, coextrusion, and multiplied film or sheet.
2. Can produce 0.5 mil (.0005”) to 15 mil (.015”) thick film or sheet.
3. Layer multiplication capabilities of up to 1280 layers.
4. Approximately 6” as cast product width.

Cast Film/Sheet Line Equipment:

- 25.4mm (1”) 24/1 L/D Air Cooled Extruder
- 25.4mm (1”) 24/1 L/D Air Cooled Extruder
- 19.05mm (3/4”) 24/1 L/D Air Cooled Extruder
- 254mm (10”) Roll Stand
- (1) TCU Heat Exchangers
- 203.2mm (8”) Ultraflex Die
- 3-Layer Ultraflow I Feedblock
- 5-Layer Ultraflow I Feedblock
- (2) Layer Multiplier Units with up to (4) 4x Multiplying Cassettes
- Air Ionizer
- Edge Trim Station
- Electrostatic and Pneumatic Edge Pinning Station
- Resin Drying Available
- Mark 3 Moisture Analyzer Available
**Six-Extruder Pilot Line**

**Line Capabilities:**

1. Mono-layer, coextrusion, and multiplied film or sheet.
2. Can produce 1 mil (.001") to 100 mil (.100") thick film or sheet.
3. Layer multiplication capabilities of up to 1280 layers.
4. Approximately 30" as cast product width.

![Six-Extruder Pilot Line](image)

**Six-Extruder Cast Film/Sheet Line Equipment:**

- 38.1mm (1 1/2") 24:1 L/D Air Cooled
- 25.4mm (1") 24:1 L/D Air Cooled
- 25.4mm (1") 24:1 L/D Air Cooled
- 44.45mm (1 3/4") 30:1 L/D Air Cooled
- 44.45mm (1 3/4") 30:1 L/D Air Cooled
- 44.45mm (1 3/4") 30:1 L/D Air Cooled
- 914.4mm (36") wide XP Express Roll Stand System
- EPIC Control System
- Cantilever Turret Winder
- Gravimetric Feeder Assembly
- Air Ionizer

- 812.8mm (32") Ultraflex Single Manifold Die with co-ex entrance
- 3-Layer Ultraflow I Feedblock
- 5-Layer Ultraflow IV Feedblock
- 7-Layer Ultraflow I Feedblock
- 9 Layer Ultraflow I Feedblock
- (2) Layer Multiplier Units with up to (4) 4x Multiplying Cassettes
- Edge Trim Station
- Electrostatic and Pneumatic Edge Pinning Station
- Resin Drying Available
- Mark 3 Moisture Analyzer Available
Fluid Coating Line

Line Capabilities:

Typical wet coating thickness ranges are 1 micron to 125 microns, depending on coating fluid rheology.

Fluid Coating Line Equipment:

- Located in a clean, temperature-controlled room at Nordson Extrusion Dies Industries—Premier Coating Division in Chippewa Falls, Wisconsin.
- Working width: 19.69" (500mm)
- Roller width: 23.62" (600mm)
- Line speed: 1-200 ft/min (1-60 m/min)
- Web tension: 25-150N
- Dryer length: 120" (3m)
- Max. Drying Temp: 455°F (235°C)
- Infrared heater, embossing system, UV curing unit, delamination unit
- Fluid delivery & filtration systems
**Rheology Analysis Capabilities**

**Dual Capillary Rheometer:**

- Dual bore capabilities allow for efficient rheological testing with an emphasis on the application of the Bagley Correction, as well as other rheological testing methods.
- With the ability to test for extensional/elongational viscosity, we can account for unique flow behavior materials with similar shear viscosities.
- We are better able to account for wall slip for some applications, such as PVC, which may include a range of plasticizers, oils, lubricants, and other additives, potentially affecting flow distribution and back pressure.
- The inclusion of advanced analysis software allows for detailed review of the rheological data, which ensures the accuracy of results while allowing for common corrections and fitting equations to be applied.
- With each application, material is tested and rheology data is used to ensure a proper mechanical design.

*Dual Capillary Rheometer*

*Photo courtesy of Instron*
**Film Analysis Equipment**

- Leica Microtome to prepare sheet and film for cross-sectional analysis (samples ≥ 10 mil).
- Ram Optical Microscope with 576x magnifications.
- Ability to capture photos of cross-section.
- Ability to measure layer thickness (structure dependent).
- Sartorius balance with .1mg resolution to determine film density and coating weights.
- Olympus MagnaMike 8500 for thickness measurement.
Resin Dryers & Moisture Analysis

Resin Dryers:

Conair W100 Carousel Plus Dehumidifying Dryer
- Drying Temperature: 150°-375°F
- Capacity: Approximately 500 lbs.

Conair MDCW050 Carousel Plus Dryer
- Drying Temperature: 150°-375°F
- Capacity: Approximately 250 lbs.

Mark 3 Moisture Analyzer:
- Measures the levels of moisture in a sample by determining the amount lost through drying
- Features infrared quartz tubes to heat samples
- Weight before and during drying phase is monitored through use of an electronic scale