

ME346310 Polylactic acid (PLA) granule

ME346310 (PLA) is a thermoplastic material derived from annually renewable resources and is specifically designed for use in fresh food packaging and food serviceware applications. It is a transparent general-purpose extrusion grade that is used naturally or as part of a formulated blend. It is a relatively high molecular weight biopolymer that processes easily on conventional extrusion equipment. Extruded film is readily thermoformable.

Applications include

- Food and dairy containers
- Food serviceware
- Hinged-ware
- Cold drink cups

Property	Test method	Value	Units
Density	ASTM D792	1.24	g/cm ³
Melt flow rate (MFR) 210°C, 2.16 kgs	ASTM D1238	6	g/10 min
Tensile strength at break	ASTM D882	53	MPa
Tensile strength at yield	ASTM D882	60	MPa
Tensile modulus	ASTM D882	3.5	GPa
Elongation at break	ASTM D882	6	%
Izod impact strength, Notched	ASTM D256	16	J/m
Heat distortion temperature	ASTM E2092	55	°C
Shrinkage (similar to PET)		~0.4	%

Processing Information

Easily processed on conventional extrusion equipment. The material is stable in the molten state, provided that the drying procedures are followed. More detailed recommendations and processing requirements can be found in the sheet extrusion processing guide, the purging technical data sheet, and the drying and crystallising processing guide.

Machine Configuration

PLA will process on conventional extrusion machinery with the following equipment: General purpose screw with L/D ratios from 24:1 to 32:1 and compression ratio of 2.5:1 to 3:1. Smooth barrels are recommended.

→ www.goodfellow.com

→ info@goodfellow.com



Processing temperature profile

Melt temperature	210°C
Feed throat	45°C
Feed temperature	180°C
Compression zone	190°C
Metering zone	200°C
Adapter	200°C
Die	190°C
Screw speed	20-100 rpm

Process Details Startup and Shutdown

As PLA is not compatible with a wide variety of commodity resins, special purging sequences should be followed:

1. Clean extruder and bring temperatures to steady state with low viscosity, general purpose polystyrene or polypropylene.
2. Vacuum out hopper system to avoid contamination.
3. Introduce PLA into the extruder at the operating conditions used in Step 1.
4. Once PLA has purged, reduce barrel temperatures to desired set points.
5. At shutdown, purge machine with high viscosity polystyrene or polypropylene.

Drying

In-line drying may be required. A moisture content of less than 0.025% (250 ppm) is recommended to prevent viscosity degradation. Typical drying conditions for crystallised granules are 2 hours at 90°C or to a dew point of -40°C, airflow rate of greater than 16 kgs/m³ per hour of resin throughput. The resin should not be exposed to atmospheric conditions after drying. Keep the package sealed until ready to use and promptly reseal any unused material. Pellets that have been exposed to the atmosphere for extended time periods will require additional drying time. Amorphous regrind must be crystallised prior to drying, to assure efficient and effective drying.

Properties shown are typical values, they are not absolute material properties, and should be used for guidance only. It is recommended that materials and components are tested for their suitability for a specific application. For more information and advice please discuss your application with our sales staff.

→ www.goodfellow.com

→ info@goodfellow.com



Goodfellow

Materials for Scientific and Industrial Research and Manufacturing



→ www.goodfellow.com

→ info@goodfellow.com

Goodfellow

Materials for Scientific and Industrial Research and Manufacturing

Goodfellow Cambridge Limited
Ermine Business Park
Huntingdon Cambridgeshire PE29 6WR UK

Tel: 0800 731 4653 (UK) or +44 (0) 1480 424 800
Fax: 0800 328 7689 (UK) or +44 (0) 1480 424 900

