

Technical Data Sheet
TYPE: Polycaprolactone Copolyester Thermoplastic Polyurethane (TPU)

Special Feature: Low Melting Point with Excellent Transparency, Elasticity and Ease of Processing, Improved Adhesion to Polar Surfaces

Processes: Extrusion, Solution Cast Films; Compounding with PVC

CHARACTERISTICS

| Property | Typical Values* | Test Method |
|--------------------------------|-------------------------|---------------------------|
| Density @ 20°C | 1.16 g/cm ³ | ISO 2781 (ASTM D-792) |
| Appearance | Translucent | Visual |
| Shore Hardness | 70A | ISO 868 (ASTM D-2240) |
| Tensile Strength | 20 MPa (2900 psi) | ISO 527 (ASTM D-412) |
| Elongation @ Break | 750% | ISO 527 (ASTM D-412) |
| Modulus @ 100% Elongation | 3 MPa (435 psi) | ISO 527 (ASTM D-412) |
| Modulus @ 300% Elongation | 4 MPa (580 psi) | ISO 527 (ASTM D-412) |
| Tear Strength | 6.84 kg/mm (286 lb./in) | Graves ASTM D-624 (Die C) |
| Taber Loss | 45 mm ³ | DIN 53,516) |
| Softening range | 110–110° C | MQSA 70A |
| Melting range | 118–128° C | MQSA 70A |
| Melt Viscosity (160°C/2.16 Kg) | 890 Pa.s | ISO 1133 |
| Glass Transition | 30° C (22° F) | DIN 51,007 |

*These are typical values & should not be used for establishing specifications.

Regulatory Status: None

Material Preparation Prior to Processing:

- Material must be dried at 158-176° F (70-80° C) for 1 to 2 hours.
- It is recommended to be dried in a desiccant, hot air circulatory or vacuum type dryer. The target dew point should be negative 40° C.
- Depending upon the processing technique, the maximum moisture level should be 0.02 percent.

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EXTRUSION

In accordance with our experience, the characteristics of the extruder that is suitable for processing **Pearlbond™ DIPP 119** are the following:

1. L/D ratio between 25:1 and 30:1
2. The extruder screw must have 3 zones and a compression ratio in between 2:1 and 3:1 (usually, the screws that are used for Polyethylene extrusion give good results).
3. The extruder screw should have a continuous regulation device and a working power higher than for processing other plastics.
4. The speed of the extruder should be low (12 to 60 rpm, depending on its diameter), to avoid material degradation due to shearing.
5. The filters used should be disks with holes of 1.5 to 5 mm. Depending on the screw and the screen packs (the no. of meshes/cm² will depend on the product that is processed), so as to create a pressure built-up.

The suggested processing-temperature profiles for film extrusion (flat films) are depicted in the figure below:

| | | |
|---------------|----------------------|----------------------|
| Zone 1 | 125°C (248°F) | 135°C (266°F) |
| Zone 2 | 150°C (266°F) | 160°C (284°F) |
| Zone 3 | 165°C (284°F) | 175°C (302°F) |
| Zone 4 | 170°C (293°F) | 180°C (311°F) |
| Die | 150°C (293°F) | 160°C (311°F) |

Type.- 30/25d (l/d=25:1), **Cooling.-** air, **Screw.-** 3:1, **Speed.-** 50 rpm **Breaker plate.—Filter:----** **Thickness die.-** 0,2 mm
Pre-heating: 2 hours @ 176° C (80° C)

STORAGE

Pearlbond™ DIPP 119 must be stored in a cool (15–25°C) and environment prior to being processed. Standard practice of consuming resin on first-in first-out basis should be employed.

For further information refer to Lubrizol Advanced Materials processing guides.

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