

PEARLTHANE® **ECO** D12T55D

Thermoplastic Polyurethane

PROVISIONAL TECHNICAL DATA SHEET

PEARLTHANE® **ECO** D12T55D is a 55 Shore D , High Performance natural TPU based on *Renewable Sources* for Extrusion and Injection Molding applications. This natural TPU resin features properties similar to standard TPU of same hardness, i.e. excellent mechanical properties and abrasion resistance.

PEARLTHANE® **ECO** D12T55D contains 30% of renewable material.

APPLICATIONS

PEARLTHANE® **ECO** D12T55D enhances the performance of a wide range of end use products that ranges from extrusion profiles, belts, consumer electronics and sport and leisure applications, among others, where environmentally-friendly materials can bring value to the end product.

TYPICAL PHYSICAL PROPERTIES

Physical Property	Test Method	Typical Values *
Specific Gravity	ASTM D-792	1.16
Shore Hardness	ASTM D-2240	55 D
Tensile Strength	ASTM D-412	5366 psi
Elongation @ Break	ASTM D-412	450 %
Modulus @ 100% Elongation	ASTM D-412	2176 psi
Modulus @ 300% Elongation	ASTM D-412	3916 psi
Tear Strength	ASTM D-624 (Die C)	999 lb/in
Abrasion Loss	DIN 53.516	35 mm ³
Moisture Content	MQSA 44	< 0.10 %
Melting Range (MFI=10**)	MQSA 111	401 – 419 °F

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

** Temperature at which MFI = 10 g/10 min @ 21.6 kg.

WORKING INSTRUCTIONS

For optimum results, previous drying of the product during 1-2 hours at 212-230 ° F is advisable, in a hot air circulatory, vacuum or desiccant-air dryer.

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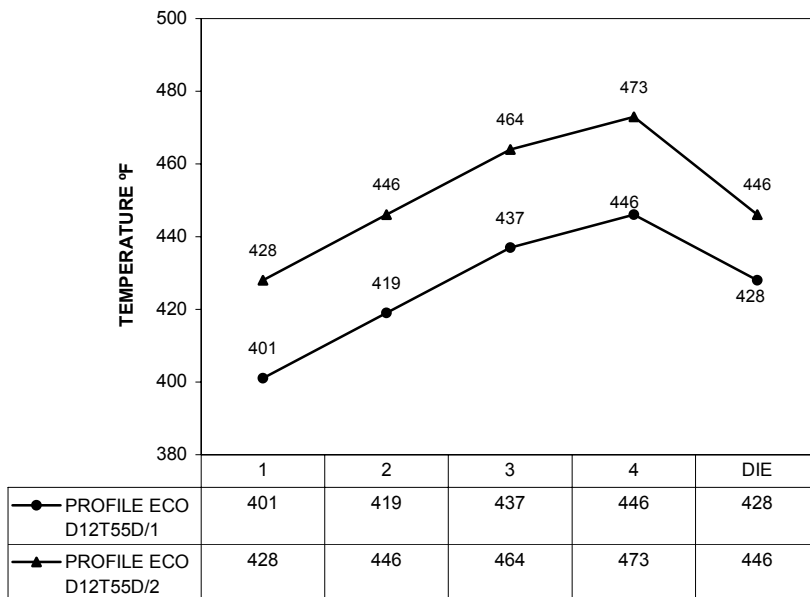
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EXTRUSION

In accordance with our experience, the characteristics of the extruder that are suitable for processing **PEARLTHANE® ECO D12T55D** are the following ones:

1. L/D ratio between 25:1 and 30:1
2. The extruder screw must have 3 zones and a compression ratio 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), so as to avoid material degradation due to shearing.
5. The filters used should be disks with holes of $1/16$ to $3/16$ in (depending on the screw and the die), and screen packs (the no. of meshes /in² will depend on the end product which 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.



EXTRUDER & CONDITIONS
 TYPE.- 30/25D (L/D=25:1), COOLING.- Air, SCREW.- 3:1, SPEED.- 20-50 rpm.,
 BREAKER PLATE.- --, FILTER PACK.- --, THICKNESS DIE.- 0,2 mm, PRE-DRYING.- 1 h @ 220 °F

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INJECTION MOULDING

Based on an injection molding equipment with the following characteristics

Closing force:	: 30 tons
Screw diameter:	: 1.02 in
L/D ratio:	: 23
Maximum hydraulic pressure:	: 3050 psi
Mould:	: Plaque 4.7x4.7x0.08 in

The suggested processing conditions are the following ones:

INJECTION CONDITIONS	
Feed zone	410°F
Compression zone	428°F
Metering zone	437°F
Nozzle	437°F
Mould temperature	95°F

HEALTH AND SAFETY

A safety data sheet on **PEARLTHANE® ECO D12T55D** is available, with all information related to safety.

PACKAGING

PEARLTHANE® ECO D12T55D is packaged in heat-sealed, moisture proof PE bags of 25 kg net weight. Bags are shipped on pallets of 750 kg. Additionally, PE-lined cardboard gaylords of 700 kg net weight are available.

STORAGE

Material received from Merquinsa should be inspected to assure the containers are not damaged during transportation before being stored prior to use. **PEARLTHANE® ECO D12T55D** should be kept in a cool (60-75°F) and dry environment prior to being processed. Standard practice of consuming resin on first-in first-out basis should be employed.

For more information, please feel free to contact us at www.merquinsa.com