

# **PEARLTHANE<sup>®</sup> D15N70**

(PROVISIONAL DATA SHEET)

**PEARLTHANE D15N70** is a polyether copolymer-based TPU with Shore 72 A hardness, free of plasticiser, supplied in form of translucent, colourless or slightly yellowish pellets, combining low hardness and high elasticity with excellent mechanical properties and excellent hydrolysis resistance. It can be extruded and injection-moulded.

## **TYPICAL PHYSICAL PROPERTIES**

<b>Physical Property</b>	<b>Test Method</b>	<b>Typical Values *</b>
Specific Gravity	ASTM D-792	1.16
Shore Hardness	ASTM D-2240	72 A
Tensile Strength	ASTM D-412	5100 psi.
Elongation @ Break	ASTM D-412	700 %
Modulus @ 100% Elongation	ASTM D-412	510 psi.
Modulus @ 300% Elongation	ASTM D-412	800 psi.
Tear Strength	ASTM D-624 (Die C)	370 lb/in
Abrasion Loss	DIN 53.516	23 mm <sup>3</sup>
Compression Set (70 h. @ 73°F)	ASTM D-395	30 %
Compression Set (24h. @ 158°F)	ASTM D-395	60 %
Moisture Content	MQSA 44	< 0.05 %
Melting Range	MQSA 70 (Kofler)	375 – 390 °F

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

## **WORKING INSTRUCTIONS**

For optimum results, previous drying of the product during 1-2 hours at 210 - 230° F is advisable, in a hot air circulatory, vacuum or desiccant-air dryer.

### **EXTRUSION**

In accordance with our experience, the characteristics of the extruder that are suitable for processing **PEARLTHANE D15N70** 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 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.

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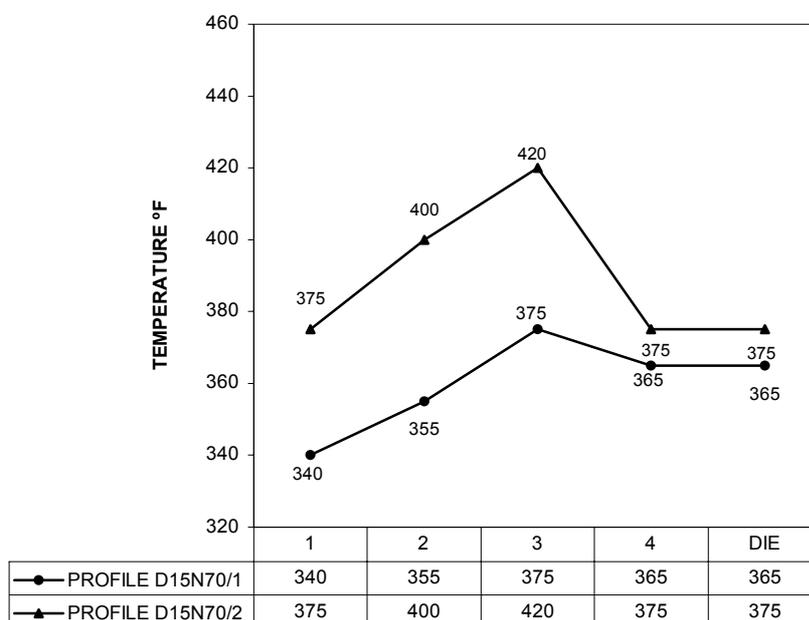
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5. The filters used should be disks with holes of  $\frac{1}{16}$  to  $\frac{3}{16}$  in (depending on the screw and the die), and screen packs (the nr. of meshes /in<sup>2</sup> will depend on the end product which is processed), so as to create a pressure built-up.

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



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

**INJECTION MOULDING**

Based on an injection moulding 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.

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The suggested processing conditions are the following ones:

INJECTION CONDITIONS			
Feed zone	355°F	Injection pressure	1600 psi
Compression zone	375°F	Injection time	4.1 sec
Metering zone	390°F	Holding pressure	1015 psi
Nozzle	390°F	Holding time	15 sec
Mould temperature	95°F	Cooling time	15 sec

*Screw speed : approx. 70 rpm.*

**CHARACTERISTICS OF THE FILM**

Appearance	: Colourless, elastic, translucent
Softening point	: 300 - 320 °F <i>MQSA 91 (Kofler)</i>
Dry cleaning resistance	: Excellent
Hydrolysis resistance	: Excellent.

**APPLICATIONS**

**PEARLTHANE D15N70** when extruded, is used for making films, tubing, profiles and a variety of technical parts. When processed by injection moulding, it can be used for making shoe soles and technical parts. To improve the microbiological protection of **PEARLTHANE D15N70**, it is necessary to add a biocide, preferably in form of TPU-based masterbatch.

**HEALTH AND SAFETY**

A safety data sheet on **PEARLTHANE D15N70** is available, with all information related to safety.

**PACKAGING**

**PEARLTHANE D15N60** is packaged in heat-sealed, moisture proof multi-layer bags of 25 kg net weight made of PE/Aluminium/PE. Bags are shipped on pallets of 750 kg or 500 kg (Europallets). 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 D15N60** 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.

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Our **TECHNICAL SERVICE** will answer any inquiries about our product and its applications.

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