

PEARLTHANE® 12T92E

Thermoplastic Polyurethane Elastomer

PEARLTHANE® 12T92E is a special polyester-based TPU, supplied in form of translucent, colorless pellets, combining hardness with excellent processability and low temperature performance. This grade has been specially designed for mechanically demanding applications where excellent mechanical properties are required, such as timing belts.

TYPICAL PHYSICAL PROPERTIES

Physical Property	Test Method	Typical Values *
Specific Gravity	ASTM D-792	1.20
Shore Hardness	ASTM D-2240	91 A
Tensile Strength	ASTM D-412	5739 psi
Elongation @ Break	ASTM D-412	500 %
Modulus @ 100% Elongation	ASTM D-412	1162 psi
Modulus @ 300% Elongation	ASTM D-412	2412 psi
Tear Strength	ASTM D-624 (Die C)	639 lb/in
Abrasion Loss	DIN 53.516	30 mm ³
Compression Set (70 h. @ 73°F)	ASTM D-395	26 %
Compression Set (24h. @ 158°F)	ASTM D-395	61 %
Moisture Content	MQSA 44	< 0.1 %
Melting Range (MFI=10)	MQSA 111	361 – 379 °F
Tg (DSC, 50°F / min)	DIN 51.007	- 40 °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 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® 12T92E 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 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), so as to avoid material degradation due to shearing.

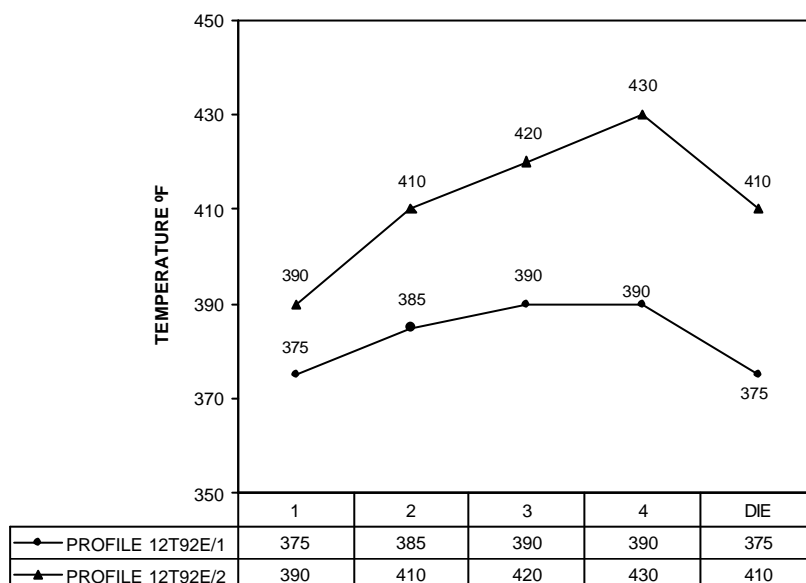


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5. The filters used should be disks with holes of $1/16$ to $3/16$ in (depending on the screw and the die), and screen packs (the no. of meshes /in² will depend on the end product which is processed), so as to create a pressure built-up.

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.- 1h @ 220 °F

INJECTION MOLDING

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

Merquinsa's Products are sold subject to Merquinsa's General Sales Conditions printed on the back of invoices and other shipping documents (available upon request). This is correct information based on our experience, and is given in good faith and without compromise. Each purchaser bears full responsibility for the application, use and processing of Merquinsa's products described herein, as well as their suitability to the purchaser's specific application, as this is beyond Merquinsa's control.

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The suggested processing conditions are as follows:

INJECTION CONDITIONS			
Feed zone	385°F	Injection pressure	1215 psi
Compression zone	390°F	Injection time	15 sec
Metering zone	410°F	Holding pressure	720 psi
Nozzle	410°F	Holding time	15 sec
Mould temperature	85°F	Cooling time	20 sec

Screw speed: approx. 180 rpm.

APPLICATIONS

PEARLTHANE® 12T92E can be extruded into profiles, belts, tubes and film. In the case of injection molding, this grade is only recommended for certain specific applications, e.g. when large, hard-to-fill mould cavities are used.

HEALTH AND SAFETY

A safety data sheet on **PEARLTHANE® 12T92E** is available, with all the information related to safety.

PACKAGING

PEARLTHANE® 12T92E 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. Additionally, PE-lined cardboard gaylords of 700 Kg net weight are available.

STORAGE

Material received from Merquinsa should be inspected to assure containers are not damaged during transportation before being stored prior to use. **PEARLTHANE® 12T92E** 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