PEARLTHANE® 11T80

Thermoplastic Polyurethane Elastomer

PEARLTHANE® 11T80 is a polycaprolactone copolyester based TPU, supplied in form of translucent, colourless pellets, combining hardness with excellent mechanical properties as well as an improved transparency. It can be extruded and injection-moulded.

TYPICAL PHYSICAL PROPERTIES

Property	Test Method	Typical Values *
Density @ 20ºC	DIN 53.479	1.16 g/cm^3
Shore Hardness	DIN 53.505	82 A
Tensile Strength	DIN 53.504	40 MPa
Elongation @ Break	DIN 53.504	630 %
Modulus @ 100% Elongation	DIN 53.504	5 MPa
Modulus @ 300% Elongation	DIN 53.504	8 MPa
Tear Strength	DIN 53.515	80 kN/m
Abrasion Loss	DIN 53.516	20 mm^3
Compression Set *(70 h. @ 23ºC)*	ASTM D395B	27 %
Compression Set *(24 h. @ 70ºC)*	ASTM D395B	36 %
Moisture Content	MQSA 44	< 0.1 %
Melting Range *(MFI=10**)*	MQSA 111	176 – 186 ºC
Tg *(DSC, 10ºC / min.)*	DIN 51.007	- 45º C

** 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 100-110º C is advisable, in a hot air circulatory, vacuum or desiccant-air dryer.

EXTRUSION

In accordance with our experience, the characteristics of the extruder that is suitable for processing **PEARLTHANE® 11T80** 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.
5. The filters used should be disks with holes of 1.5 to 5 mm. (depending on the screw and the die), and screen packs (the no. of meshes /cm^2 will depend on the end product that is processed), so as to create a pressure built-up.

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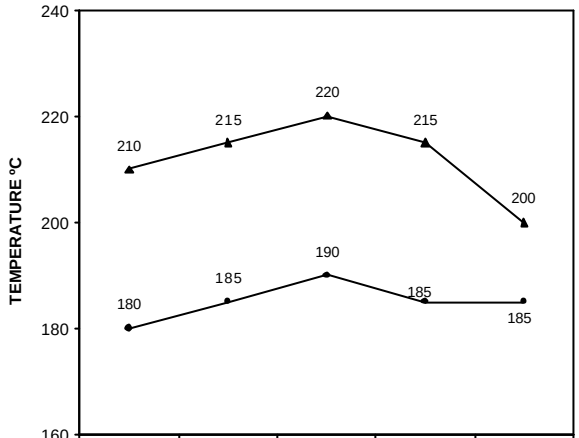
The suggested processing-temperature profiles for film extrusion (flat films) are



	1	2	3	4	DIE
PROFILE 11T80/1	180	185	190	185	185
PROFILE 11T80/2	210	215	220	215	200

EXTRUDER & CONDITIONS
TYPE.- 30/25D (L/D=25:1), COOLING.- Air, SCREW.- 3:1, SPEED.- 20 rpm.,
BREAKER PLATE.- --, FILTER PACK.- --, THICKNESS DIE.- 0,2 mm, PRE-DRYING.- 1h @ 105 ºC

depicted in the figure below:

INJECTION MOULDING

Based on an injection moulding equipment with the following characteristics:

Closing force:	30 tons
Screw diameter:	26 mm
L/D ratio:	23
Maximum hydraulic pressure:	210 bar
Mould:	Plaque 120x120x2 mm

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The suggested processing conditions are as follows:

INJECTION CONDITIONS

Feed zone	190ºC	Injection pressure	110 bar
Compression zone	195ºC	Injection time	4sec
Metering zone	205ºC	Holding pressure	60 bar
Nozzle	210ºC	Holding time	15 sec
Mould temperature	35ºC	Cooling time	20 sec

Screw speed: approx. 75 rpm.

APPLICATIONS

PEARLTHANE® 11T80 when extruded**,** is used for making films, tubing, profiles and a variety of technical components.

When processed by injection moulding, can be used for making automotive parts and technical parts.

HEALTH AND SAFETY

A safety data sheet on **PEARLTHANE® 11T80** is available, with all the information related to safety.

PACKAGING

PEARLTHANE® 11T80 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 the containers are not damaged during transportation before being stored prior to use. **PEARLTHANE® 11T80** should be kept in a cool (15-25ºC) 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**

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