PEARLTHANE® 11T92EM

Thermoplastic Polyurethane Elastomer

PEARLTHANE® 11T92EM is a polycaprolactone copolyester based TPU, supplied in form of translucent, colourless pellets, combining hardness with excellent mechanical properties. It can be extruded and injection-moulded.

TYPICAL PHYSICAL PROPERTIES

Physical Property	Test Method	Typical Values *
Density @ 20ºC	DIN 53.479	1.16 g/cm^3
Shore Hardness	DIN 53.505	91 A
Tensile Strength	DIN 53.504	35 MPa
Elongation @ Break	DIN 53.504	630 %
Modulus @ 100% Elongation	DIN 53.504	8 MPa
Modulus @ 300% Elongation	DIN 53.504	12 MPa
Tear Strength	DIN 53.515	100 kN/m
Abrasion Loss	DIN 53.516	25 mm^3
Compression Set *(70 h. @ 23ºC)*	ASTM D395B	25 %
Compression Set *(24 h. @ 70ºC)*	ASTM D395B	43 %
Moisture Content	MQSA 44	< 0.1 %
Melting Range *(MF=10)*	MQSA 111	180 – 190 ºC
Tg *(DSC, 10ºC / min)*	DIN 51.007	- 38 ºC

** 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® 11T92EM** 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), so as to avoid material degradation due to shearing.

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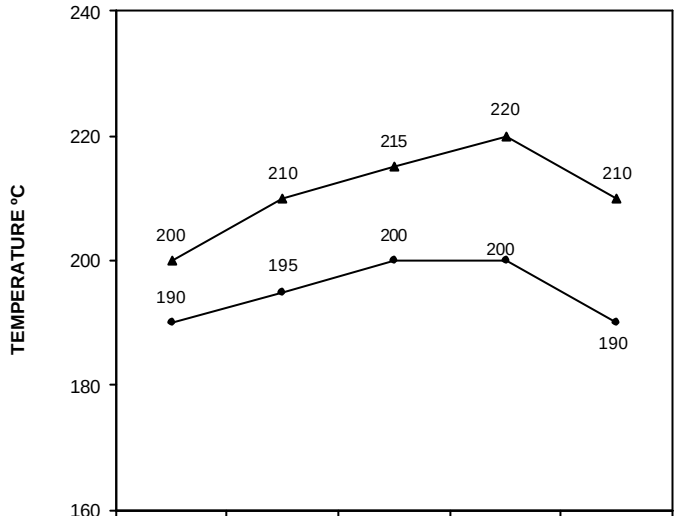
5. The filters used should be disks with holes of 1.5 to 5 mm. (depending on the screw and the die), and screen packs (the no. of meshes /cm^2 will depend on the end product which is processed), so as to create a pressure built-up.

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



	1	2	3	4	DIE
PROFILE 11T92EM/1	190	195	200	200	190
PROFILE 11T92EM/2	200	210	215	220	210

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 @ 105 ºC

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 follow:

INJECTION CONDITIONS			
Feed zone	195ºC	Injection pressure	85 bar
Compression zone	200ºC	Injection time	3 sec
Metering zone	210ºC	Holding pressure	50 bar
Nozzle	210ºC	Holding time	15 sec
Mould temperature	35ºC	Cooling time	30 sec

Screw speed: approx. 180 rpm.

APPLICATIONS

PEARLTHANE® 11T92EM can be extruded into profiles, belts, tubes and film. In the case of injection moulding, 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® 11T92EM** is available, with all the information related to safety.

PACKAGING

PEARLTHANE® 11T92EM 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® 11T92EM** 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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