# PEARLTHANE® 11T98

## Thermoplastic Polyurethane Elastomer

**PEARLTHANE® 11T98** is a polycaprolactone copolyester based TPU, supplied in form of translucent, colourless pellets, combining high hardness with excellent mechanical properties. It can be extruded and injection-moulded.

## TYPICAL PHYSICAL PROPERTIES

| Property | Test Method | Typical Values * |
|---|---|---|
| Density @ 20ºC | DIN 53.479 | 1.18 g/cm$^3$ |
| Shore Hardness | DIN 53.505 | 98 A / 52 D |
| Tensile Strength | DIN 53.504 | 40 MPa |
| Elongation @ Break | DIN 53.504 | 470 % |
| Modulus @ 100% Elongation | DIN 53.504 | 16 MPa |
| Modulus @ 300% Elongation | DIN 53.504 | 29 MPa |
| Tear Strength | DIN 53.515 | 175 kN/m |
| Abrasion Loss | DIN 53.516 | 25 mm$^3$ |
| Compression Set *(70 h. @ 23ºC)* | ASTM D395B | 35 % |
| Compression Set *(24 h. @ 70ºC)* | ASTM D395B | 42 % |
| Moisture Content | MQSA 44 | < 0.1 % |
| Melting Range *(MFI=10**)* | MQSA 111 | 193 – 203 ºC |
| Tg *(DSC, 10ºC / min.)* | DIN 51.007 | - 30º 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® 11T98** 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.



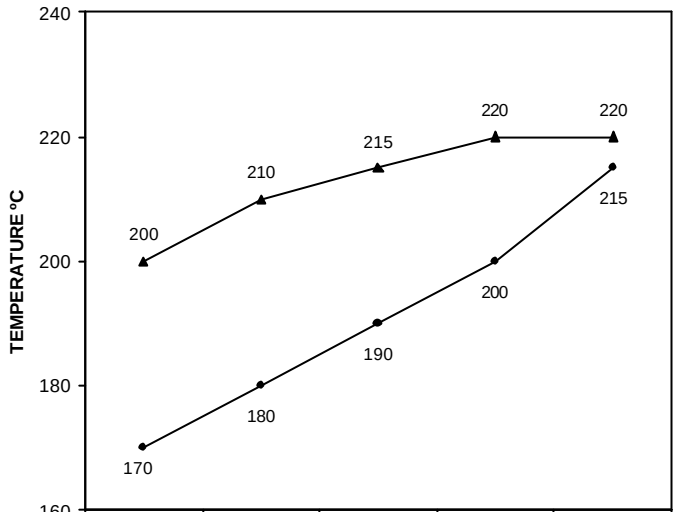
Merquinsa's Products are sold subject to Merquinsa's General Sales Conditions printed on the back of invoices and other shipping documents (available upon request). This is correct information based on our experience, and is given in good faith and without compromise. Each purchaser bears full responsibility 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.

**Gran Vial, 17 08160 Montmeló, Spain Tel. (34) 93 572 11 00 Fax (34) 93 572 09 34**
**E-mail: info@merquinsa.com http://www.merquinsa.com**
Registered in Barcelona Trade Register under Tax Identification Number B08530305, volume 31186, folio 106, page B-30777, entry 12.

ISO 9001 CERTIFICATED FIRM
ISO 14001 CERTIFICATED FIRM
Responsible Care®

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 nr. 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 11T98/1 | 170 | 180 | 190 | 200 | 215 |
| PROFILE 11T98/2 | 200 | 210 | 215 | 220 | 220 |

**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

## 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 |



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.

**Gran Vial, 17 08160 Montmeló, Spain Tel. (34) 93 572 11 00 Fax (34) 93 572 09 34**
**E-mail: info@merquinsa.com http://www.merquinsa.com**
Registered in Barcelona Trade Register under Tax Identification Number B08530305, volume 31186, folio 106, page B-30777, entry 12.

ISO 9001 CERTIFICATED FIRM
ISO 14001 CERTIFICATED FIRM
Responsible Care®

The suggested processing conditions are as follows:

**INJECTION CONDITIONS**

| | | | |
|---|---|---|---|
| Feed zone | 195ºC | Injection pressure | 90 bar |
| Compression zone | 205ºC | Injection time | 3.6 sec |
| Metering zone | 215ºC | Holding pressure | 60 bar |
| Nozzle | 205ºC | Holding time | 15 sec |
| Mould temperature | 35ºC | Cooling time | 30 sec |

*Screw speed: approx. 100 rpm.*

## APPLICATIONS

**PEARLTHANE® 11T98** when extruded, is used for making tubing, profiles and a variety of technical parts.
When processed by injection moulding, can be used for making sport shoe soles (football, golf shoes), wheels, seals, etc.

## HEALTH AND SAFETY

A safety data sheet on **PEARLTHANE® 11T98** is available, with all the information related to safety.

## PACKAGING

**PEARLTHANE® 11T98** 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® 11T98** 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**



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.

**Gran Vial, 17 08160 Montmeló, Spain Tel. (34) 93 572 11 00 Fax (34) 93 572 09 34**
**E-mail: info@merquinsa.com http://www.merquinsa.com**
Registered in Barcelona Trade Register under Tax Identification Number B08530305, volume 31186, folio 106, page B-30777, entry 12.

ISO 9001 CERTIFICATED FIRM
ISO 14001 CERTIFICATED FIRM
Responsible Care®