# PEARLTHANE® 11T86

## Thermoplastic Polyurethane Elastomer

**PEARLTHANE® 11T86** is a polycaprolactone copolyester based TPU, supplied in form of translucent, colourless pellets, offering adequate hardness, excellent mechanical properties and fast processing conditions. Additionally, this grade exhibits low gel content and improved transparency. It can be easily extruded.

## TYPICAL PHYSICAL PROPERTIES

| Property | Test Method | Typical Values * |
|---|---|---|
| Density @ 20ºC | DIN 53.479 | 1.16 g/cm$^3$ |
| Shore Hardness | DIN 53.505 | 86 A |
| Tensile Strength | DIN 53.504 | 35 MPa |
| Elongation @ Break | DIN 53.504 | 575 % |
| Modulus @ 100% Elongation | DIN 53.504 | 6 MPa |
| Modulus @ 300% Elongation | DIN 53.504 | 10 MPa |
| Tear Strength | DIN 53.515 | 90 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 | 35 % |
| Moisture Content | MQSA 44 | < 0.1 % |
| Melting Range *(MFI=10**)* | MQSA 111 | 178 – 188 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 are suitable for processing **PEARLTHANE® 11T86** are as follow:

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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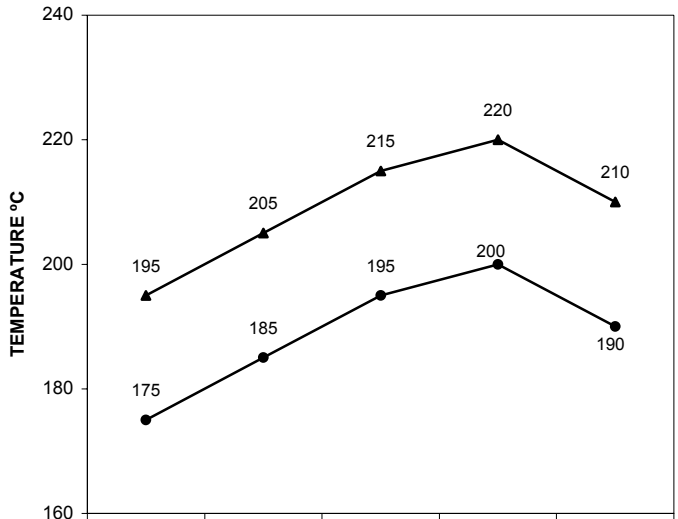
5. The filters used should be disks with holes of 1.5 to 5 mm. (depending on the screw and the die), and screen packs (the nr. of meshes /cm$^2$ will depend on the end product that is processed), so as to create a pressure built-up.

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




| | 1 | 2 | 3 | 4 | DIE |
|---|---|---|---|---|---|
| PROFILE 11T86/1 | 175 | 185 | 195 | 200 | 190 |
| PROFILE 11T86/2 | 195 | 205 | 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

## APPLICATIONS

**PEARLTHANE® 11T86** when processed by extrusion can be used for making tubes and hoses. This grade also offers European Food certificate according to CE 2002/72.



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## HEALTH AND SAFETY

A safety data sheet of **PEARLTHANE® 11T86** is available, with all the information related to safety.

## PACKAGING

**PEARLTHANE® 11T86** is packaged in heat-sealed, moisture proof PE bags of 25 Kg net weight. 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® 11T86** 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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