EXTRUSION DATASHEET

Celanese
The chemistry inside innovation™

# Zytel® ST7301 NC010

## NYLON RESIN

Zytel® ST7301 NC010 is a Super Tough, heat stabilised, lubricated polyamide 6 resin for injection moulding and extrusion. It offers outstanding impact resistance over a wide temperature and humidity range and high productivity.

## General Information

| | |
|---|---|
| Resin Identification ISO 1043 | PA6-HI |
| Density ISO 1183 | 1060/- kg/m$^3$ |
| Viscosity number ISO 307, 1157, 1628 | 160/* cm$^3$/g |
| Melting temperature, 10°C/min ISO 11357-1/-3 | 221/* °C |

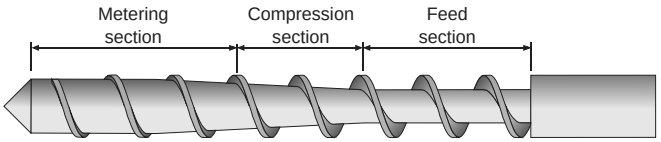
## Drying

| | |
|---|---|
| Drying Temperature | 80 °C |
| Drying Time, Dehumidified Dryer | 3 - 4 h |
| Processing Moisture Content | ≤0.06 % |

## Recommended Temperature profile settings

| | |
|---|---|
| Melt temperature (Range) | 235 - 250 °C |
| Rear temperature (Range) | 210 - 230 °C |
| Center Rear temperature (Range) | 225 - 230 °C |
| Center Front temperature (Range) | 230 - 240 °C |
| Front temperature (Range) | 235 - 250 °C |
| Head and Die temperature (Range) | 235 - 250 °C |

## Recommended screw design




- Standard 3-zone screws are recommended, with a compression ratio of 3:1 and L/D = 25 (L = Length of the screw, D = Outer diameter of the screw).
- A barrier screw is advised for better homogeneity.

## Recommended general settings for tubing

DDR: Draw-Down Ratio
Ratio of the cross section of the extrudate at the extrusion die-face to the cross section of the finished tube.

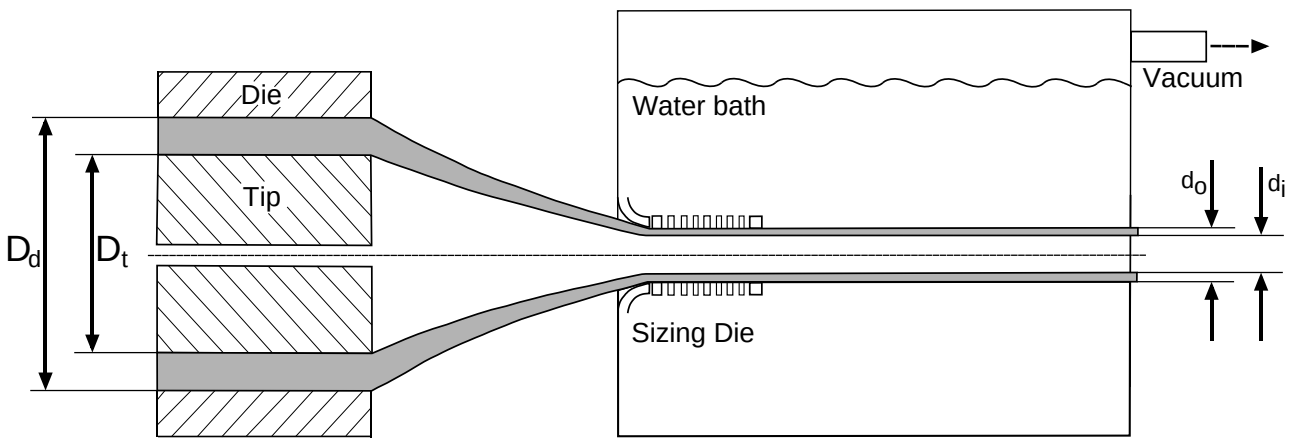
$$DDR = \frac{(D_d^2 - D_t^2)}{(d_o^2 - d_i^2)}$$

DDR (recommended range) 1.5 - 3.5

DRB: Draw-Ratio-Balance
Ratio of draw down between inside and outside.

$$DRB = \frac{(D_d / d_o)}{(D_t / d_i)}$$

DRB (recommended range) 0.95 - 1.05




$D_d$= Internal diameter of extrusion die; $D_t$= External diameter of pin (mandrel); do= External diameter of tube; $d_i$= Internal tube diameter

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## Check-list before processing

- Use Zytel® resin from sealed, undamaged containers.
- Dry Zytel® before the extrusion and check the moisture content.
- A clean extruder is preferred. Polyethylene, generally HDPE, is recommended to purge the barrel and the screw at the end of production. If concentrates or pigments are added, they should be dried.
- The Draw-Down Ratio (DDR) should be adapted to the process.
- When needed, a stainless steel screen pack unit of 80-mesh could be used.
- Follow the recommended temperature profiles. It is recommended to measure the temperature of the melt at the die and adjust the temperature profile of the extruder to reach the melt temperature recommendation. If the melt viscosity is too low, it is possible to reduce the temperature of the head.

## Special precautions

Thermal degradation can occur with excessive time and temperature and cause the evolution of harmful vapors. However, under normal operating conditions, the risk of decomposition of these resins is minimal. Local Exhaust Ventilation should be used to capture and remove fumes at places where volatiles may be generated.

Please refer to the MSDS of the material and wear appropriate personal protection as needed.

## Links for further information

For further processing guidelines, please refer to the following information:

Exhaust Ventilation

Technical Datasheet