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❖ Altech NXT PP® Processing Guide Injection Molding

Altech NXT PP® is a semi-crystalline thermoplastic reinforced with glass fibers or glass beads, which are bonded more strongly to the polypropylene matrix by a special formulation. This results in better performance in terms of strength, heat ageing and heat resistance compared to a conventional PP compound. At the same time, Altech NXT PP® closes the gap between technical PP and PA compounds.

Pre-drying

Altech NXT PP® is a non-hygroscopic polymer. The original packed granulate is protected against moisture and does not require any special treatment. Due to external influences such as climate or storage, moisture may condense on the surface of the granulate, in that case drying is advisable. Storage at ambient temperature before

processing minimizes the risk of condensation. Specially filled or reinforced products require pre-drying. See the corresponding technical datasheet.

Processing

Altech NXT PP® can be processed on all common injection molding machines. Wear-protected plasticizing units are recommended. Higher processing and mold temperatures can improve the quality of the molded part, but care must be taken, among other things, to ensure a short residence time of the melt in the plasticizing unit. The exact temperature range for the individual materials is given on the respective material data sheet. In case of Altech NXT PP®, a higher injection speed helps to reduce visible glass fibers at the surface of the finished parts.

Shrinkage

Shrinkage values are generally only to be understood as guide values and do not release the user from the obligation to carry out appropriate tests. They do not represent a pure material property, but are also dependent on the filler, the processing method, the shape of the molded part, the equality of the wall thickness, the mold design and the processing conditions. Shrinkage depends on several factors. An Altech NXT PP® reinforced with glass beads shows an increasingly isotropic shrinkage behavior with increasing filler content. Fibrous reinforcing materials, such as glass fibers, also lead to a reduction in shrinkage in the flow direction. However, the difference between longitudinal and transverse shrinkage is significantly greater. For the individual material types, shrinkage can only be given in a scattering range due to the multitude of different influencing factors.

Adding regrind material

The addition of ground sprues and rejects is generally possible. Exceptions to this are functionalized compounds, which are intended for welding or equipped with flame retardants, for example. The proportion of material returned to the process depends on the process and the final part. It is recommended to determine the ideal point of part quality and usage of the grinded material by means of a series of tests, starting with a low percentage addition.

Coloration

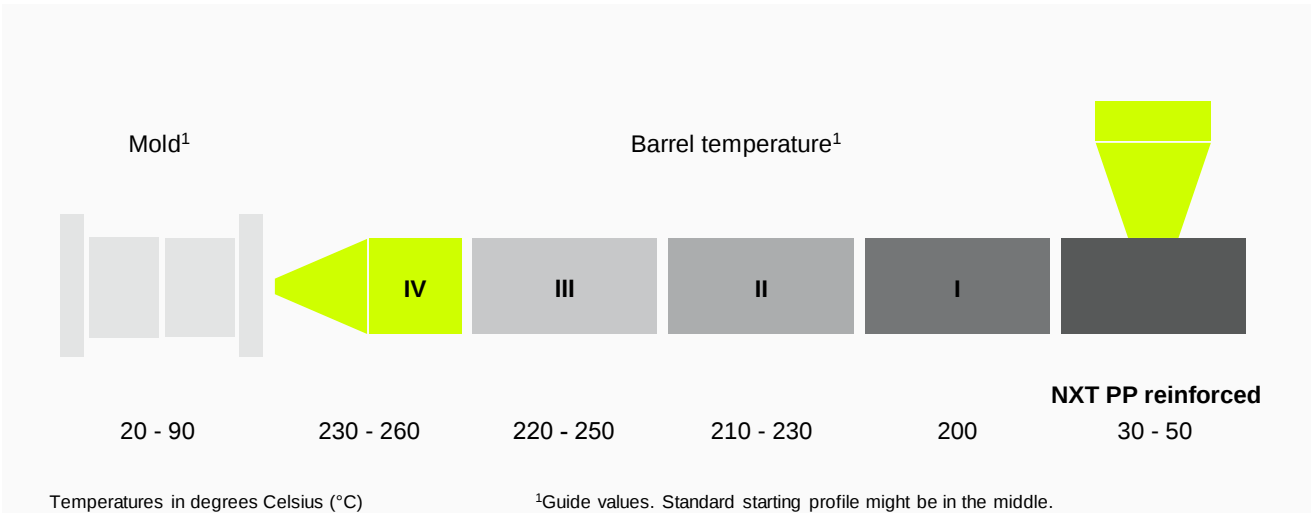
Altech NXT PP® can be offered in a wide range of colors and can also be colored according to customer requirements. Please contact us for this purpose. Subsequent coloring of the material is also possible. Color batches based on polyethylene or polypropylene are recommended about compatibility and dispersion. Similar melting and flow properties as the selected Altech NXT PP® should be given. The batch manufacturer's instructions should also be followed. An improvement of the homogeneity of the color image can be achieved by increasing the back pressure or by installing a mixer on the machine side.

Downtimes / Cleaning

In case of longer downtimes clean the injection molding machine from already molten material inside. Screws and barrels of the injection molding machine should be cleaned during material, color and production changes. Special cleaning granules are available for this purpose, which contain special additives and use a tough, low-viscosity melt to remove deposits from the components. When critical material changes occur, the components should be disassembled and cleaned with hand tools or ovens.

Storage / Shelf life

The original packaging of our goods ensure sufficient protection against dust and other contamination. The quality of plastics during storage depends principally on the storage conditions. Only small variation of the temperature at the storage area are recommend – room temperature is preferred. Avoid high temperature differences between storage and processing area. Store the material in original package for as long as possible and avoid any source of UV-light at the storage area.



Properties

Polymer	PP
Density (ISO 1183)	1.05 - 1.33 g/cm ³ (see technical data sheet)

Injection machinery

Screw stroke	Metering stroke between 1 x D and 3 x D (D = screw diameter)
Screw type	Three zone screw with L/D ratio 18:1 to 22:1
Nozzle type	Open or needle shut-off nozzle
Hopper type	Standard

Pre-processing

Storage	Dry, protected from heat and UV radiation	
Dryer type	Dry air (desiccant)	
Drying time	2 - 12 h	
Drying temperature	80°C	
Permissible moisture content	Max.: 0.10 %	Optimum: 0.08 %

Processing conditions

	NXT PP, glass fiber reinforced	NXT PP, glass fiber / beads reinforced
Mass temperature ²	200 - 260°C	200 - 260°C
Mold temperature	20 - 90°C	20 - 70°C
Coolant	Water	
Throughput coolant	Turbulent flow must be achieved	
Peripheral screw speed	< 300 mm/s, e.g., screw speed of 40 rpm with a screw diameter of 50 mm	
Back pressure (specific)	50 - 150 bar	
Residence time	< 10 min	
Injection speed	Profile for constant flow front speed	

Shrinkage³

	NXT PP, glass fiber reinforced	NXT PP, glass fiber/beads reinforced
Parallel to flow, 24 h (ISO 294-4)	0.1 – 0.5 %	0.3 – 0.5 %
Transverse to flow, 24 h (ISO 294-4)	0.3 – 0.7 %	0.6 – 0.8 %

²Please pay attention to the process temperature of the material data sheet

³Shrinkage is not a pure material property, but is influenced by fillers, the part/component geometry, its wall thickness and the position and size of the gate. The processing parameters, such as mold wall and melt temperature, also play a decisive role.

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