MOCOM

Altech® ECO PP
Processing Guide
Injection Molding

Altech® ECO PP is a semi-crystalline thermoplastic, unfilled or reinforced with glass fibers, glass beads and / or mineral. Altech® ECO PP-H is a polypropylene homopolymer and Altech® ECO PP-B stands for polypropylene copolymer.

Pre-drying

Altech® ECO PP is a non-hygroscopic polymer. Original packaged granules are protected from moisture and do not require any special treatment. Due to external influences such as climate or storage, moisture could condensate on the surface of the granules, in which case drying would be advisable. Storage at ambient temperature before processing minimizes the risk of condensation. Specially filled or reinforced products require pre-drying. See the corresponding technical data sheet.

Processing

Altech® PP ECO can be processed on all standard injection molding machines. Wear protected plasticizing units for reinforced or filled compounds are advised. High processing and mold temperature can improve part quality of the PP Compound, but attention should be paid to a short residence time of the melt in the plasticizing unit, among other factors. The exact temperature range for each material is mentioned on the according material data sheet. Higher injection speed for glass fiber reinforced Altech® ECO PP helps to cover the glass fiber in parts and to reduce glass fiber coming to the part surface.

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, processing method, shape of the molded part the shape of the molded part, the uniformity of the wall thickness, the mold design and the processing conditions. As a result of the orientation of the macromolecules and the type and level of the reinforcing materials, the shrinkage is shrinkage depends on the direction, resulting in different shrinkage behavior. Platelet-shaped reinforcing materials, such as those contained in talc-reinforced Altech® ECO PP grades show an increasingly isotropic shrinkage behavior with increasing filler content. Compared with unreinforced grades, the shrinkage is lower, the difference between longitudinal and transverse shrinkage is low, and consequently also the tendency to warp. Fibrous reinforcing materials, such as glass fibers, also lead to a reduction of the shrinkage in the flow direction. However, the difference between longitudinal and transverse shrinkage is considerably greater. For the individual plastics, shrinkage can therefore only be given in scattering range scan be given.

Adding regrind material

The addition of 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.

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.

Coloration

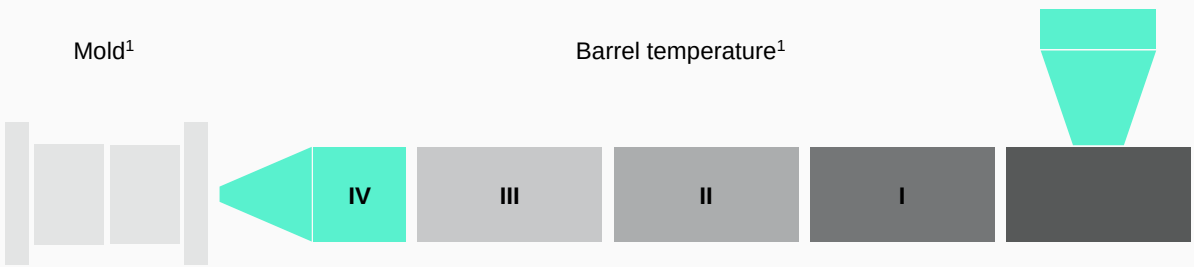
For Altech® ECO PP are offered in a variety of different colors and can also be colored according to customer requirements. Please feel free to contact us for this purpose. Subsequent coloration by batch is also possible. Color batches based on polyethylene or polypropylene are recommended with regard to compatibility and dispersion. Similar melting and flow properties to the selected Altech® ECO PP should be ensured. An improvement in the homogeneity of the color image can be achieved by increasing the back pressure or by installing a mixing element on the machine side. The batch manufacturer's instructions must also be observed.

Downtimes / Cleaning

In case of longer downtimes, please clean the injection molding machine from already melted material. Screws and barrels of the injection molding machine should be cleaned during material, color and production changes. Special cleaning granules are available 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.

Residues

In general, the existence of residual amounts of ferrous and non-ferrous metals cannot be completely ruled out in recyclate feedstocks. In order to minimize potential negative effects of such inclusions, MOCOM ueses state-of-the-art metal (and non-metal) detection and separation systems in the production of its Altech® ECO PP compounds. How ever the highest product quality assurance processes cannot guarantee zero levels of ferrous and non- ferrous metal in the final product. To further reduce risks, molders are therefor advised to deploy their own detection and separation techniques. In particular, special measures are proposed for hot runner tools.



	Mold[1]	IV	III	II	I	Barrel temperature[1]
PP unfilled	20 - 70	250 - 270	250 - 270	230 - 250	230	30 - 50
PP reinforced	20 - 90	250 - 270	250 - 270	230 - 250	230	30 - 50

Temperatures in degrees Celsius (°C)

[1]Guide values. Standard starting profile might be in the middle.

Properties

Polymer	PP
Density (ISO 1183)	0,90 - 1.30 g/cm³ (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

	PP, unfilled	PP, glass fiber reinforced	PP, mineral filled
Mass temperature[2]	200 - 240 °C	200 - 250 °C	200 - 250 °C
Mold temperature	20 - 70 °C	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		

Shrinkage[3]

	PP, unfilled	PP, glass fiber reinforced	PP, mineral filled
Parallel to flow, 24 h (ISO 294-4)	1,2 – 1,8%	0,2 – 0,7%	0,5 – 1,8%
Transverse to flow, 24 h (ISO 294-4)	1,2 – 1,8%	0,3 – 0,9%	0,7 -1,2%

[2]Please pay attention to the process temperature of the material data sheet
[3]Shrinkage 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.

MOCOM Compounds GmbH & Co. KG
Mühlenhagen 35 | 20539 Hamburg
T +49 40 78105-720 | sales@mocom.eu
T +49 40 78105-710 | technical@mocom.eu
www.mocom.eu