



MOCOM

❖ Wipelast & ❖ Wipaflex Processing Guide Injection Molding

Wipelast and Wipaflex are mineral-filled thermoplastic olefin elastomers based on recyclates. High-quality post-consumer recyclates (PCR) and post-industrial recyclates (PIR) are used.

Wipelast and Wipaflex can generally be processed on all standard injection molding machines that are preferably used to process polyolefins. Three-zone polyolefin screws are recommended. No special wear-protected plasticizing units are required.

Pre-drying

Wipelast and Wipaflex are basically non-hygroscopic. However, pre-drying for 2 - 4 h at 60 - 100 °C in dry-air (desiccant) dryers is recommended to ensure a stable injection molding process and good surface quality of injection molded parts. Open bags should not be stored open, they should be stored protected from light, tightly sealed and in a dry place.

Residues

In general, the existence of residual amounts of ferrous and non-ferrous metals cannot be completely ruled out in recyclates or recycling feedstocks. In order to minimize potential negative effects of such impurities, MOCOM uses state-of-the-art metal (and non-metal) detection and separation systems in the production of its Wipelast and Wipaflex compounds. However, even the best quality assurance processes in production cannot guarantee that the end product does not contain any ferrous or non-ferrous metals. To further reduce risks, molders are therefore advised to deploy their own detection and separation techniques. In particular, special measures are suggested for hot runner molds or high demands on part quality.

Use of regrind

In principle, production waste such as sprues from Wipelast and Wipaflex can be recycled and returned to the injection molding process. The maximum amount of regrind that can be added depends on many factors, e.g., the part design and application. It should also be noted that Wipelast and Wipaflex are already made from recycled feedstocks, which therefore already have a relevant thermomechanical stress history. The amount of regrind to be added should therefore be determined and checked individually for each process and each part. As a rule, we would recommend to limit the regrind amount to 20 %. It is essential that the regrind is clean and free from any impurities. Grinding or regranulation of the scrap to a particle size comparable to the granule size of the virgin material is recommended. A high level of dust or fine particles in the regrind should be avoided, as this can lead to problems in the processing and feeding. Pre-drying of the regrind is also recommended. Pre-drying conditions are similar to virgin material, 2 - 4 h at 60 - 100 °C in a dry-air (desiccant) dryer.

Downtimes and cleaning

Longer downtimes (>10 min) should generally be avoided during injection molding processing, as Wipelast and Wipaflex are based on recycled feedstocks and therefore already have a thermomechanical stress history. However, should longer downtimes or production interruptions occur, the injection molding machine must be cleared of any molten material inside. The screw and barrel of the injection molding machine should be cleaned when changing materials and production. Special cleaning granules are available for this purpose. If necessary, the machine has to be cleaned mechanically.

Temperature profile

A gradually increasing temperature profile is recommended. The temperature profile below is a guideline and a starting point for process optimization. Temperature adjustments may be necessary depending on the injection molding

process applied, the part design, and the Wipelast or Wipaflex grade used.

The optimum mass temperature for Wipelast and Wipaflex should range between 200 and 250 °C. High mass temperature normally

- improves the quality of the part surface
- improves the quality of weld lines
- promotes long flow paths and improves mold filling
- but also results in longer cooling time

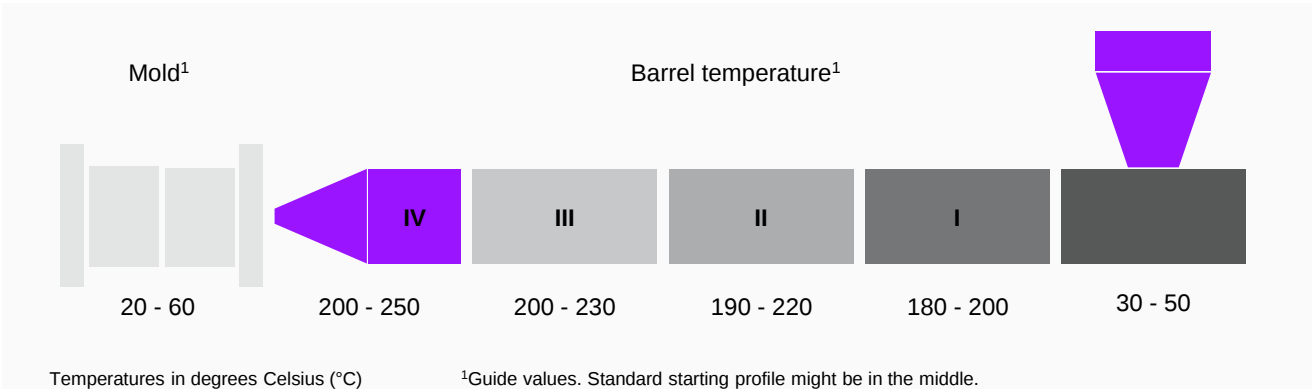
Mass temperatures significantly higher than 250 °C are not recommended, especially in combination with extended residence times in the machine as this can cause thermal degradation of Wipelast or Wipaflex and / or lead to excessive emissions and release of additives.

Mold temperature

The mold temperature should preferably be 20 - 60 °C, depending on the part design, injection molding process and surface requirements. High mold temperatures

- promote long flow paths
- support thin-walled part moldings
- improve the quality of the part surface
- but also increase cooling time

Excessive mold temperatures should be avoided, as these can lead to problems during demolding or can result in unnecessary warpage, especially in the case of complex parts.



Properties

Polymer	TPO
Density (ISO 1183)	0.94 - 1.13 g/cm ³ (see technical data sheet)

Injection molding machine

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

Pretreatment

Storage	Dry, tightly sealed, protected from heat and light
Dryer type	Dry air (desiccant)
Drying time	2 - 4 h
Drying temperature	60 - 100 °C
Recommended moisture content	<0.10 %

Processing conditions

Mass temperature ¹	200 - 250 °C
Mold temperature	20 - 60 °C
Coolant	Water
Throughput coolant	Turbulent flow must be achieved
Peripheral screw speed	0.1 - 0.3 m/s
Screw speed	50 - 100 1/min
Back pressure (specific)	50 - 150 bar
Residence time	< 8 min
Injection speed	Medium to fast (depending on part and flow path)

Shrinkage²

Parallel to flow, 24 h (ISO 294-4)	0.3 - 1.5 %
Transverse to flow, 24 h (ISO 294-4)	0.5 - 1.5 %

¹Please also note the processing parameters on the technical data sheet.

²Shrinkage is not an inherent property of the material, but is influenced by additives and fillers, the part geometry, its wall thickness, the mold design (e.g., position and size of the gate) as well as the processing conditions (e.g., temperatures).

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