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Achieve™ Advanced PP7123KNE1 processing guideline

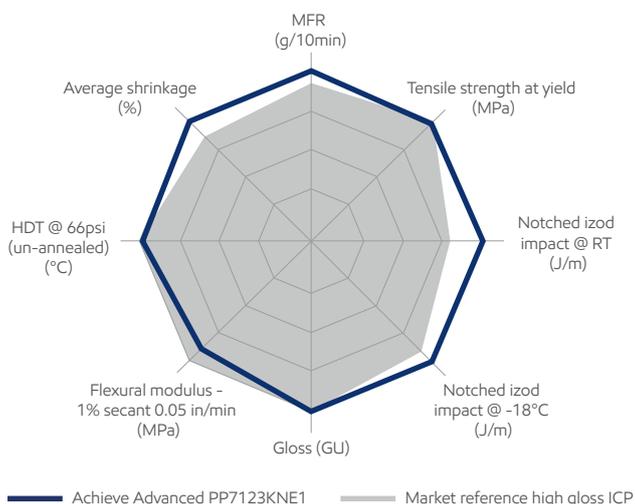
Achieve™ Advanced PP7123KNE1 is a high performance impact copolymer (ICP) grade with superior gloss and stiffness. It allows customers to produce amazingly eye-catching appliances, which is perfect for upgrading existing polypropylene (PP) or replacing over-engineered acrylonitrile butadiene styrene (ABS).

The processing of Achieve Advanced PP7123KNE1 is similar to neat PP, while to optimize the value of superior aesthetics without any defect, some processing guidelines are provided.

Achieve Advanced PP7123KNE1

Selected properties are compared for Achieve Advanced PP7123KNE1 and another reference ICP in Figure 1. Although the properties are similar, processing optimization may be required when switching materials due to different polymer design.

Figure 1. Selected properties comparison for Achieve Advanced PP7123KNE1 & reference ICP



Test	Test method
MFR (g/10min)	ASTM D1238
Tensile strength at yield (MPa)	ASTM D638
Notched izod impact @ room temperature (J/m)	ASTM D256A
Notched izod impact @ -18°C (J/m)	ASTM D256A
Gloss (GU) @ 60°	ASTM D523
Flexural modulus - 1% Secant 0.05 in/min (MPa)	ASTM D790A
HDT @ 66 psi (un-annealed) (°C)	ASTM D648
Average shrinkage (%)	ExxonMobil method

* Test results are generated by ExxonMobil test methods that may not fully conform to the ASTM and/or ISO methods. Test methods are available upon request.

Processing guidelines

General processing guidelines for Achieve™ Advanced PP7123KNE1

The table below includes the typical process parameter for Achieve Advanced PP7123KNE1.

All values included in the document are for reference purposes only and should not be construed as definite specifications.

Parameter		Range	Typical values* / notes
Drying			Not required
Melting temperature, °C		200 to 240 °C	230 °C
Barrel zones temperature, °C	Rear	200 to 230 °C	200 °C
	Middle	200 to 230 °C	215 °C
	Front	205 to 240 °C	230 °C
	Nozzle	205 to 240 °C	230 °C
Manifold and drops		±7 °C of melt temperature	Same as melt temperature
Mold temperature		20 to 60 °C	40 to 60 °C
Injection speed		Medium to fast	As fast as part acceptability allows
Screw speed		40 to 100 rpm	Depends on screw diameter
Cushion		5 to 10 mm	Depends on barrel capacity
Fill time		1 to 10 seconds	Fill part 95-98% full if conditions allow
Pack time		1 to 4 seconds	Profile to complete fill and eliminated screw bounce back
Hold time		5 to 20 seconds	Enough to pack out part and allow gate to freeze off
Cooling time		15 to 40 seconds	Depends on part and mold design
Cycle time		30 to 90 seconds	Application, wall thickness dependent
Pressure, bar	Injection	30 to 110 bar	Depends on molding parameter and part design
	Pack / Hold	15 to 82.5 bar	50-75% of transfer pressure
	Back pressure	5 to 10 bar	Min. 5 bar, for better dispersion

*Based on ExxonMobil Chemical internal laboratory conditions. Some general machinery information included, e.g. hydraulic/electrical injection molding machines with 40-80mm screw diameter, 150-700T clamping force, etc.

Sometimes you might encounter problem of sink marks, which may affect the surface appearance of final parts. This can be solved through more injection volume, and/or increased pack pressures/time. Cycle time can still maintain the same as the increased pack time can be compensated by decreasing cooling time (Note that the minimum cooling time still needs to be longer than screw recovery time).

To further achieve better gloss of Achieve Advanced PP7123KNE1 injection molded part, higher melt temperature are recommended. Cycle time maybe slightly prolonged but optimized cooling time which allows both complete screw recovery and part ejection without warpage/pin mark should be used.



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