



Cycletime Tips - General

Volume 44: Which Polypropylene is Best for my Application?

By Bill Fierens

Recently, I've experienced several applications where polypropylene was utilized and the material wasn't performing at the expected performance levels. Often times, we are forced to use the specified material by our customer, but an awareness of the alternatives will bring value to yourself and your organization.

Polypropylene (PP) is an example of a commodity material, which can be as complex as any engineering product. This family consists of block and random copolymers and homopolymers. Block and random products have ethylene in them and that will impart a property influence as you will see. Homopolymers, as the name implies, consists of polypropylene only minus the ethylene. When you are planning to use this material or if you are experiencing issues with the existing materials, please refer to this chart to help you understand the performance benefits of homopolymer vs. copolymer polypropylene.

	HOMOPOLYMER	COPOLYMER
Toughness	-	+
Creep Resistance	+	-
Thermal Stability	+	-
Low Temperature Impact	-	+
UV Stability	-	+ (slight)
Living Hinge Applications	+	-

The addition of fillers in the form of glass, talc, calcium carbonate, mica, and many others will impact many of these categories. Remember that as stiffness increases through the appearance of fillers, toughness usually suffers but creep resistance is enhanced. Clarifying agents are added to improve upon the clarity of the polypropylene, but don't expect clarity like general purpose polystyrene (GPPS) or acrylic (PMMA). Various stabilizing agents are added to oppose certain elements that the part will experience in application. As with any material, as we introduce additives a trade-off on properties is experienced. I would encourage you to contact us so we can assist in guiding you through this seemingly endless maze.

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