Polypropylene

Low cost, chemical resistant plastic with excellent aesthetic qualities

Polypropylene is a low cost, chemical resistant plastic with excellent aesthetic qualities. It is easy to weld using thermoplastic welding equipment and is often fabricated into water and chemical tanks. Polypropylene used in the manufacturing of upper and lower extremity orthoses and prosthetics offers the O&P fabricator a material that is easy to drape, blister form and seam. Polypropylene is easy to decorate with transfer patterns for O&P applications. FDA compliant polypropylene grades are available.

Polypropylene is available in homopolymer, carbon reinforced homopolymer, and copolymer grades.

Polypropylene Material Options

Homopolymer Polypropylene (Polypro) – Homopolymer polypropylene is stronger and stiffer than copolymer. It is a very durable, rigid plastic available in natural (a translucent white) and a variety of colors. Easily formed, polypropylene is widely used for body jackets, upper and lower extremity orthoses (especially AFO's), and rigid outer prosthetic sockets.

Copolymer Polypropylene (Copoly PP) – Copolymer polypropylene is a bit softer, but it is tougher and more durable than homopolymer polypropylene. Copolymer polypropylene tends to have better stress crack resistance and low temperature toughness than homopolymer polypropylene. Used in many of the same applications as homopolymer polypropylene, but where slightly more flexibility is needed.

ProComp (Carbon reinforced polypropylene) – Innovative polypropylene material reinforced with carbon fibers for a 25% increase in stiffness. Layers of carbon fibers are infused between layers of homopolymer polypropylene which results in zero carbon fiber strand protrusion when finishing.

Polypropylene is widely used for:

- Chemical and plating tanks
- Fire truck water tanks (copolymer polypropylene)
- Cutting boards for food preparation
- Semiconductor equipment cabinets and work surfaces
- Lower & upper extremity orthoses: body jackets, AFOs, KAFOs, DAFOs, helmets, splints (O&P)
- Rigid, outer prosthetic sockets (O&P)

Performance characteristics:

- Easy to weld using thermoplastic welding equipment
- Easy to fabricate, seam, and drape and blister form (O&P)
- Easy to decorate with transfer patterns (O&P)
- Low moisture absorption; good chemical resistance
- Extremely tough (copolymer)
- Excellent aesthetic properties

Common brands:

- Orthoform®
- SIMOLIFE
- Polystone®
- ProComp

Available in:

Sheet Rod

TYPICAL PROPERTIES OF POLYPROPYLENE

	UNITS	ASTM TEST	POLYPROPYLENE	POLYPROPYLENE
Tensile strength	psi	D638	5,400	3,800
Flexural modulus	psi	D790	225,000	215,000
Izod impact (notched)	ft-lbs/in of notch	D256	1.2	12.5
Heat deflection temperature @ 264 psi	°F	D648	210	190
Maximum continuous service temperature in air	°F		-	-
Water absorption (immersion 24 hours)	%	D570	slight	slight
Coefficient of linear thermal expansion	in/in/°Fx10^{-5}	D696	-	-

Values may vary according to brand name. Please ask your Curbell Plastics representative for more specific information about an individual brand.

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