



## Rapid Product Development Group, Inc.

RPDG is excited to introduce our new and improved materials for Rapid Prototyping. We have worked closely with our suppliers to develop industry leading materials, including our complete line of Urethane Casting materials that are proprietary to RPDG.

Our Rapid Prototyping services are enhanced with Rapid Quote.... the easiest way to quote and order world-class prototypes of your new product designs. Log on now @ [www.RPDG.com](http://www.RPDG.com) and let RPDG begin working for you.

### Rapid Process Chart:

Process	Stereolithography (SLA)	Selective Laser Sintering (SLS)	Polyjet (Objet)	Fused Deposition Modeling (FDM)	Urethane Casting (Rapid Casting)
Process Description	SLA builds plastic parts a layer at a time using a laser to cure liquid photopolymer. SLA produces parts with very good dimensional accuracy and surface finish. RPDG employs master model makers to finish your SLA parts accurately to your 3D Data. Choices of materials are available to emulate a variety of thermo plastics.	SLS uses a laser to trace over powder to selectively melt and bond the layers until the part is built. SLS builds parts in durable materials including Nylon and metals. A good choice for proto's that need to be tough.	PolyJet utilizes an inkjet that deposits photopolymer onto a build tray, the layers are cured by UV. PolyJet builds in super thin layers down to just 16 microns (0.0006 inch). Best for small parts with fine details.	FDM extrudes material via a nozzle. The nozzle is mounted to a mechanical stage which can be moved in both horizontal and vertical directions. FDM builds parts in ABS and PC. Surface finish and accuracy is rougher than our other RP processes.	The Rapid Casting process utilizes a master pattern to create a silicone rubber mold. Duplications are then cast in a vacuum chamber. Parts are very durable and cosmetically resemble injection molded parts. RPDG specializes in casting for Low Quantity Production, Over molded Parts, Lens, and Large Parts.
Materials (see details on back)	<b>ABS-like:</b> Somos 14120 <b>PP-like:</b> Accura 25 <b>Clear:</b> Accura 60	<b>Nylon</b> <b>Nylon GF</b> <b>Wax</b> <b>Metals</b>	<b>ABS-like</b> <b>TPE-like:</b> Tango (Black or Gray)	<b>ABS</b> <b>Polycarbonate</b> <b>Wax</b>	<b>ABS-like</b> <b>ABS/PC-like</b> <b>PP-like</b> <b>TPE-like</b> <b>Acrylic-like</b> <b>UL VO</b>
Model Making Finish	<b>Standard:</b> Support Removal & Bead Blast <b>Engineering Review:</b> Above + Wet Sanding Exterior <b>Show Model:</b> Master finish on exterior cosmetic area's <b>High Show Model:</b> Clear parts with interior+exterior polish			<b>None</b>	<b>Custom Molded-in:</b> <ul style="list-style-type: none"> <li>• Colors</li> <li>• Textures</li> <li>• Polish</li> </ul>
Secondary Finish	<b>Paint</b> <b>Texture</b> <b>Polish</b> <b>Semi-Clear</b> <b>Plating</b> <b>Metallic</b> <b>Artwork</b> <b>Threaded Inserts</b>	<b>Paint</b> <b>Texture</b> <b>Polish</b> <b>Plating</b> <b>Metallic</b> <b>Artwork</b> <b>Threaded Inserts</b>	<b>Paint</b> <b>Texture</b> <b>Polish</b> <b>Semi-Clear</b> <b>Plating</b> <b>Metallic</b> <b>Artwork</b> <b>Threaded Inserts</b>	<b>Paint</b> <b>Texture</b> <b>Plating</b> <b>Metallic</b> <b>Artwork</b> <b>Threaded Inserts</b>	<b>Molded-in Color</b> <b>Molded-in Texture</b> <b>Rubber Overmolding</b> <b>Insert Molding</b> <b>High Polish</b> <b>Clear &amp; Tints</b> <b>Metallic</b> <b>Paint &amp; Plating</b> <b>Artwork</b> <b>Threaded Inserts</b>

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## Prototyping Material Properties

### Rapid Prototyping Material Properties:

Name	Tensile Strength	Notch Izod	Heat Deflection / Glass Transition		Durometer
<b>SLA: PP-like</b>	38 Mpa (5450-5570 PSI)	19-24J/m (0.4 ft-lb/in)	@66 PSI @264 PSI	58-63°C(136-145°F) 51-55°C(124-131°F)	Shore D 80
<b>SLA: Clear</b>	58-68 Mpa (8410-9860 PSI)	15-25J/m (0.3-0.5ft-lb/in)	@66 PSI @264 PSI	53-55°C(127-131°F) 48-50°C(118-122°F)	Shore D 86
<b>SLA: ABS-like</b>	45.7 Mpa	23.5J/m	@0.46 Mpa	53°C	Shore D 81
<b>SLS: Nylon</b>	44 Mpa	8.5J/m	DTUL 0.45 Mpa	ASTMD648: 177 °C	NA
<b>SLS: Nylon GF (Glass-Filled)</b>	38.1Mpa	602J/m	DTUL 0.45 Mpa	ASTMD648: 175 °C	NA
<b>Objet: ABS-like</b>	49.9 Mpa	37.5J/m	@66 PSI/264 PSI	120°F-49°C/113°F49°C	Shore D 83
<b>Objet: TPE-like (Elastomer)</b>	2.0	NA		NA	Shore A 61

### Urethane Casting Rigid Material Properties:

Name	Tensile Strength	Notch Izod	Heat Deflection / Glass Transition		Durometer
<b>UL-Rated</b>	10650 PSI	1.6 ft. lbs/in	@66 PSI	179° F	Shore D1 85
<b>PP-like</b>	Mpa 25	NA		55°C	Shore D1 70
<b>ABS-like</b>	Mpa 70	kJ/m <sup>2</sup> 70		92°C	Shore D1 82
<b>ABS/PC-like (High Temp)</b>	Mpa 61	kJ/m <sup>2</sup> 41	T.M.A. Mettler	220°C	Shore D1 80
<b>Acrylic-like / Tinted</b>	Mpa 75	charpy impact strength kJ/m <sup>2</sup> 27	HDT 1.8 Mpa	100°C	Shore D1 87

### Urethane Casting Elastomer Material Properties:

Name	Tensile Strength	Notch Izod	Heat Deflection / Glass Transition		Durometer
<b>TPE-like (30A - Elastomer)</b>	675 PSI	NA		NA	Shore A 32±2
<b>TPE-like (40A - Elastomer)</b>	65 PSI	NA		NA	Shore A 42±2
<b>TPE-like (50A - Elastomer)</b>	845 Elasticity @100% strain 150 @200% strain 275 @300% strain 390	NA		NA	Shore A 50±2
<b>TPE-like (60A - Elastomer)</b>	685 Elasticity @ 100% 312 @ 200% 497 @ 300% 623	NA		NA	Shore A 60±2
<b>TPE-like (80A - Elastomer)</b>	1,900	NA		NA	Shore A 80±2