Xpress Prototype Process and Material Description

XPDG is excited to introduce our new and improved materials for Xpress 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 XPDG.

Our Xpress Prototyping services are enhanced with our Xpress Quote service….the easiest way to quote and order world-class prototypes of your new product designs. Log on now @ www.XPDG.com and let XPDG begin working for you.

Process	Steroelithography (SLA)	Selective Laser Sintering (SLS)	Polyjet (Objet)	Fused Deposition Modeling (FDM)	Urethane Casting (Xpress 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. XPDG 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 utilises 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 Xpress Casting process utilises a master pattern to create a silicone rubber mould. Duplications are then cast in a vacuum chamber. Parts are very durable and cosmetically resemble injection moulded parts. XPDG specialises in casting for Low Quantity Production, Over moulded Parts, Lens, and Large Parts.
Materials	▪ ABS-like: Somos 18420 ▪ Somos DMX ▪ Clear ▪ PP-Like	▪ Nylon ▪ Nylon GF ▪ Wax ▪ Metals	▪ ABS-like ▪ TPE-like: Tango (Black or Gray)	▪ ABS ▪ Polycarbonate ▪ Wax	▪ ABS-like ▪ ABS/PC-like ▪ PP-like ▪ TPE-like ▪ Acrylic-like
Model Making Finish	▪ Standard: Support Removal & Bead Blast ▪ Engineering Review: Above + Wet Sanding Exterior ▪ Show Model: Master finish on exterior cosmetic areas ▪ High Show Model: Clear parts with interior+exterior polish			None	Custom moulded in: ▪ Colours ▪ Textures ▪ Polish
Secondary Finish	▪ Paint ▪ Texture ▪ Polish ▪ Semi-Clear ▪ Plating ▪ Metallic ▪ Artwork ▪ Threaded Inserts	▪ Paint ▪ Texture ▪ Polish ▪ Plating ▪ Metallic ▪ Artwork ▪ Threaded Inserts	▪ Paint ▪ Texture ▪ Polish ▪ Semi-Clear ▪ Plating ▪ Metallic ▪ Artwork ▪ Threaded Inserts	▪ Paint ▪ Texture ▪ Plating ▪ Metallic ▪ Artwork ▪ Threaded Inserts	▪ Moulded-in colour ▪ Moulded-in Texture ▪ Rubber Overmoulding ▪ Insert moulding ▪ High Polish ▪ Clear & Tints ▪ Metallic ▪ Paint & Plating ▪ Artwork ▪ Threaded Inserts

Prototyping Material Properties

Xpress Prototyping Material Properties:

Name	Tensile Strength	Notch Izod	Heat Deflection / Glass Transition	Durometer
SLA: DMX	44.1-45.5 Mpa	0.61-0.71 J/cn	@0.46 Mpa 43.4°C	Shore D 801
SLA: PP-like	38 Mpa (5450-5570 PSI)	19-24J/m ((0.4 ft-lb/in)	@66 PSI 58-63°C(136-145°F) @264 PSI 51-55°C(124-131°F)	Shore D 80
SLA: Clear	58-68 Mpa (8410-9860 PSI)	15-25J/m (0.3-0.5ft-lb/in)	@66 PSI 53-55°C(127-131°F) @264 PSI 48-50°C(118-122°F)	Shore D 86
SLA: ABS-like Somos 18420	45.7 Mpa	23.5J/m	@0.46 Mpa 53°C	Shore D 81
SLS: Nylon	44 Mpa	8.5J/m	DTUL 0.45 Mpa ASTMD648: 177 °C	NA
SLS: Nylon GF (Glass-	38.1Mpa	602J/m	DTUL 0.45 Mpa ASTMD648: 175 °C	NA
Objet: ABS-like	49.9 Mpa	37.5J/m	@66 PSI/264 PSI 120°F-49°C/113°F49°C	Shore D 83
Objet: TPE-like (Elastomer)	2.0	NA	NA	Shore A 61

Urethane Casting Rigid Material Properties:

Name	Tensile Strength	Notch Izod	Heat Deflection / Glass Transition	Durometer
UL-Rated	10650 PSI	1.6 ft. Lbs/in	@66 PSI 179° F	Shore D1 85
PP-like	Mpa 25	NA	55°C	Shore D1 70
ABS-like	Mpa 70	kJ/m² 70	92°C	Shore D1 82
ABS/PC-like (High Temp)	Mpa 61	kJ/m² 70	T.M.A. Mettlerl 220°C	Shore D1 80
Acrylic-like / Tinted	Mpa 75	charpy impact strength KJ/m² 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
TPE-like (30A - Elastomer)	675 PSI	NA	NA	Shore A 32±2
TPE-like (40A - Elastomer)	65 PSI	NA	NA	Shore A 42±2
TPE-like (50A - Elastomer)	845 Elasticity @100% strain 150 @200% strain 275 @300% strain 390	NA	NA	Shore A 50±2
TPE-like (60A - Elastomer)	685 Elasticity @ 100% 312 @ 200% 497 @ 300% 623	NA	NA	Shore A 60±2
TPE-like (80A - Elastomer)	1,900	NA	NA	Shore A 80±2