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- IATF 16949: 2016

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- Functional inspections with gauges
- Custom sampling
- CMM
- PPAP
- T1 samples & first articles (incl. AS9102)
- APQN



CNC MACHINING

CNC MACHINING

General process information

	3-AXIS MILLING	5-AXIS MILLING	TURNING
MAX. PART SIZE	<ul style="list-style-type: none">• 1800 x 1000 x 500 mm• 70.9 x 39.4 x 19.7 in	<ul style="list-style-type: none">• 1000 x 900 x 600 mm• 39.4 x 35.4 x 23.6 in	<ul style="list-style-type: none">• Ø 350 x 600 mm• Ø 13.8 x 23.6 in
MIN. PART SIZE	<ul style="list-style-type: none">• 12.7 x 12.7 x 12.7 mm• 0.5 x 0.5 x 0.5 in	<ul style="list-style-type: none">• 12.7 x 12.7 x 12.7 mm• 0.5 x 0.5 x 0.5 in	<ul style="list-style-type: none">• 6.4 x 6.4 x 6.4 mm• 0.25 x 0.25 x 0.25 in
MIN. FEATURE SIZE	<ul style="list-style-type: none">• Ø 1 mm• Ø 0.039 in	<ul style="list-style-type: none">• Ø 1 mm• Ø 0.039 in	<ul style="list-style-type: none">• Ø 1 mm• Ø 0.039 in
STANDARD TOLERANCE	<ul style="list-style-type: none">• Metals: +/-0.13 mm (0.005 in)• Plastics: +/-0.20 mm (0.008 in)		
LEAD TIME	<ul style="list-style-type: none">• As low as 8 days for less than 50 parts	<ul style="list-style-type: none">• As low as 10 days for less than 50 parts	<ul style="list-style-type: none">• As low as 8 days for less than 50 parts

CNC MACHINING

Materials

PLASTIC

- ABS
- Acrylic (PMMA)
- HDPE
- Nylatron
- Nylon 30GF
- Nylon 6/6
- PC (Polycarbonate)
- PEEK
- POM (Delrin, Acetal)
- POM Acetal
- PP (Polypropylene)
- PTFE (Teflon)
- PVC (Polyvinyl chloride)

ALUMINUM

- AL-2014
- Aluminum, Stock, 2024 T3
- Aluminum, Stock, 2024 T351
- Aluminum, Stock, 2024 T4
- Aluminum, Stock, 5052 H32
- Aluminum, Stock, 5052 O
- Aluminum, Stock, 6061 T6
- Aluminum, Stock, 6061 T6511
- Aluminum, Stock, 7050 T7451
- Aluminum, Stock, 7050 T7651
- Aluminum, Stock, 7075 T6
- Aluminum, Stock, 7075 T651
- Aluminum, Stock, MIC6

STAINLESS STEEL

- Stainless Steel, Stock, 15-5 PH
- Stainless Steel, Stock, 17-4 PH
- Stainless Steel, Stock, 303
- Stainless Steel, Stock, 304
- Stainless Steel, Stock, 316
- Stainless Steel, Stock, 416
- Stainless Steel, Stock, 420
- Stainless Steel, Stock, 440C

OTHER STEEL

- Steel, Cold Worked, 1010
- Steel, Cold Worked, 1018
- Steel, Cold Worked, 1020
- Steel, Cold Worked, 4340
- Steel, Hot Worked, A2
- Steel, Hot Worked, 1045
- Steel, Hot Worked, 4140
- Steel, Hot Worked, A36
- Steel, Hot Worked, D2
- Steel, Hot Worked, O1
- Steel, Hot Worked, S2
- Steel, Hot Worked, S7

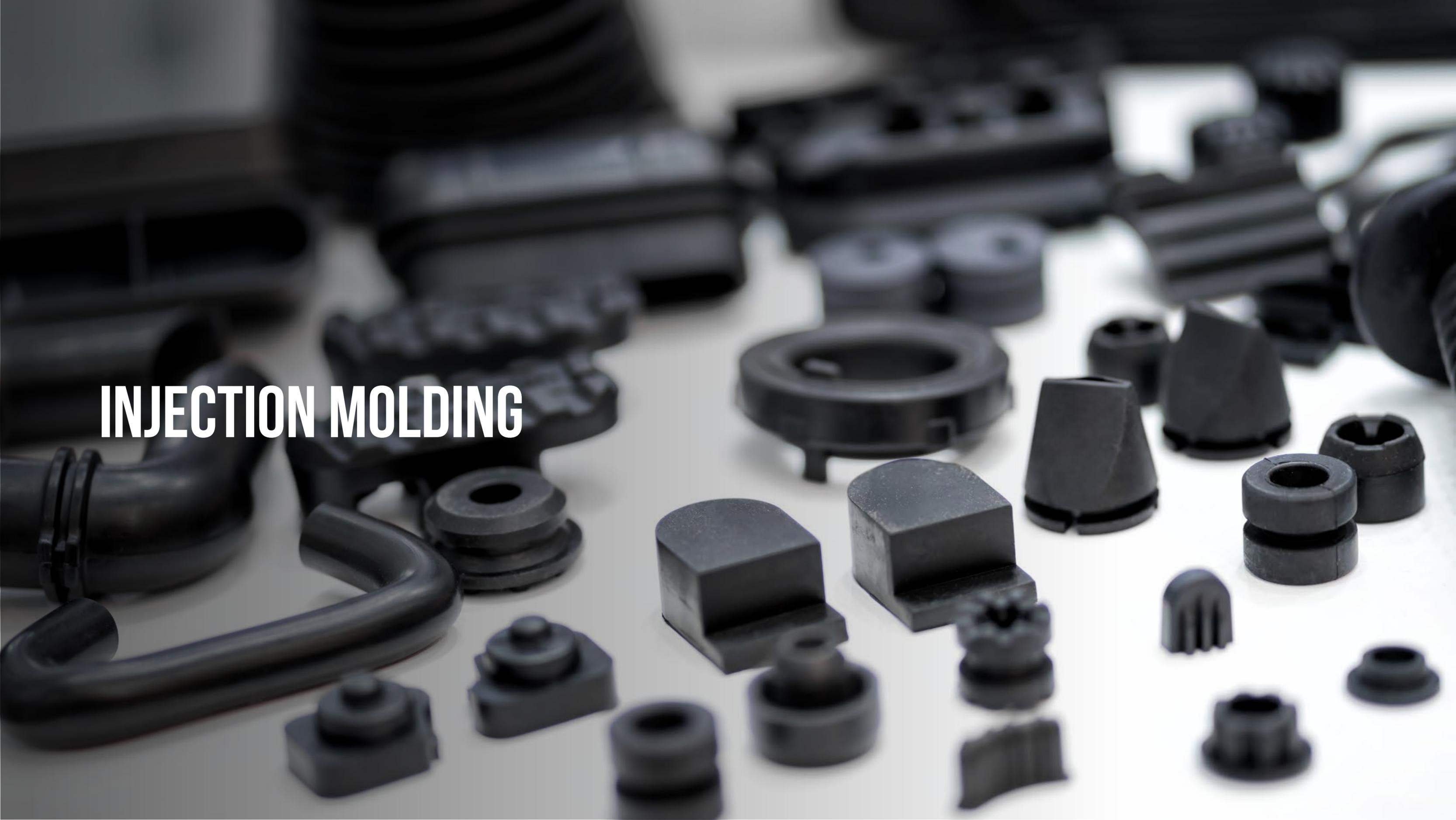
OTHER METAL

- Brass
- Brass 330
- Brass 360
- Bronze
- Bronze 642
- Bronze 655
- Copper
- Copper 101
- Copper 110
- Copper 182
- Titanium Grade 2
- Titanium Grade 5

Finishing / post-processing options

- As machined (standard)
- Anodizing
- Powder coating
- Bead blasting
- Brushing
- Painting
- Polishing
- Screen printing
- Engraving
- Heat treating
- Passivating
- Plating
- Black oxide (steel)

INJECTION MOLDING

A collection of various black plastic injection-molded parts scattered on a light surface. The parts include a large curved bracket, several circular washers or spacers, a ring with three legs, a trapezoidal piece, a small fan-like component, and numerous other small, complex shapes. The background is a light, neutral color, and the lighting is soft, highlighting the textures and forms of the plastic parts.

INJECTION MOLDING

General process information

MAX. PART SIZE	<ul style="list-style-type: none">• 800 x 800 x 400 mm• 31.5 x 31.5 x 15.7 in
MIN. PART SIZE	<ul style="list-style-type: none">• 1 x 1 x 1 mm• 0.04 x 0.04 x 0.04 in
TOLERANCE	<ul style="list-style-type: none">• Best achievable tolerance: ± 0.001" (0.025mm)• Standard: ± 0.005" (0.127mm)• For larger part tolerances please contact a SyBridge engineer
LEAD TIME	<ul style="list-style-type: none">• As low as 2 weeks for T1 samples• After T1 sample approval, lead time for < 10,000 parts is as low as 1 week
TOOL VALIDATION	<ul style="list-style-type: none">• Standard process is to produce a small set of T1 samples for approval before initiating full production
PRESS SIZE	<ul style="list-style-type: none">• 4500T - 5000T
MIN. ORDER SIZE	<ul style="list-style-type: none">• 100 parts and \$5000
SET-UP FEE	<ul style="list-style-type: none">• \$500 per mold per order (applies to sample runs after initial T1 samples or engineering changes)

INJECTION MOLDING

Tooling

RAPID TOOLING

- Molds with aluminum cavity and core with a shot life of 5,000-10,000 shots
- Typically machined in 2 weeks

PRODUCTION TOOLING

- Steel tool with shot life up to 1M shots
- Ability to integrate side-pulls or cam-actions
- Typically machined in 3 weeks

MULTI-CAVITY OR FAMILY MOLDS

- Multiple identical cavities or family of parts machined into a single tool
- Allows for more parts to be produced per shot, minimizing unit costs

INSERT MOLDING

- Inserts are placed into the mold and molding occurs around them to extend tool life for critical features
- Allows for inserts such as helicoils to be molded in your design

OVERMOLDING

- Premade parts are placed into the mold and molded over
- Allows for multi-material injection molding

INJECTION MOLDING

Materials

MOST COMMON MATERIALS

- Acrylonitrile Butadiene Styrene (ABS)
- Polyethylene (PE)
- Polypropylene (PP)
- Polycarbonate (PC)

OTHER SUPPORTED MATERIALS

- Nylon (PA 6, PA 11, PA 12, PA 66)
- Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS)
- Polyurethane (PU)
- Polymethyl Methacrylate (PMMA/Acrylic)
- High Density Polyethylene (HDPE)
- Low Density Polyethylene (LDPE)
- Polystyrene (PS)
- PEEK
- POM (Acetal/Delrin)
- Polyethylene Terephthalate (PET)
- Thermoplastic Elastomer (TPE)
- Thermoplastic Polyurethane (TPU)
- Polyetherimide (PEI)
- Thermoplastic Vulcanizate (TPV)
- Polysulfone (PSU)

ADDITIVES AND FIBER

- UV absorbers
- Flame retardants
- Plasticizers
- Colorants
- Glass fibers

INJECTION MOLDING

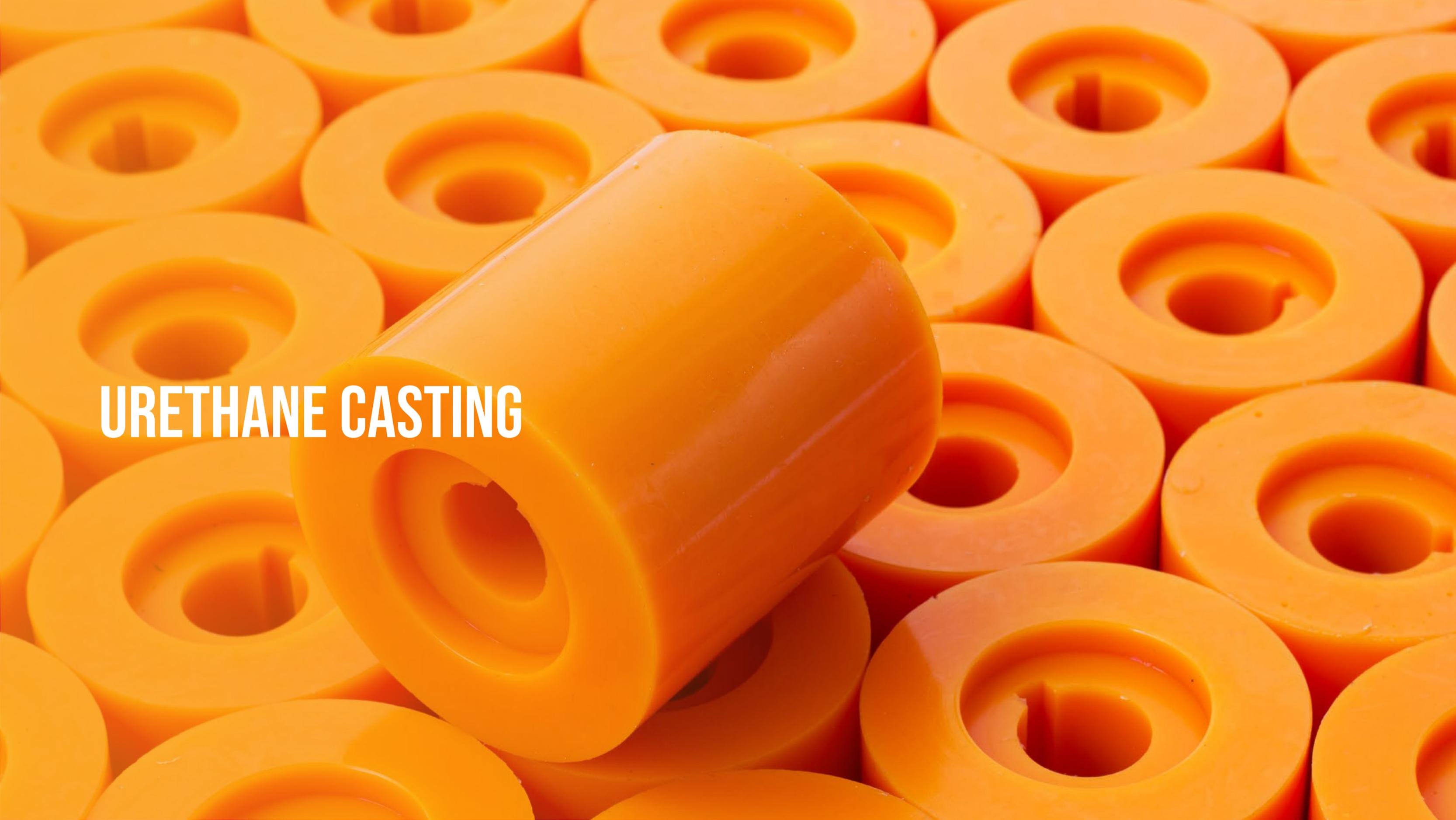
Additional information

COLORS

- Pantone color matching
- RAL color matching

FINISHING / POST-PROCESSING OPTIONS

- Standard SPI finishes (A2-D3)
- Pad printing
- Inserts (e.g. heat stake inserts)
- Mold-tech textures also available
- Light assembly
- Protective packaging / film



URETHANE CASTING

URETHANE CASTING

General process information

MAX. PART SIZE	<ul style="list-style-type: none">• 914.4 x 914.4 x 1828.8 mm• 36.0 x 36.0 x 72.0 in• Note: Ability to break parts up into multiple segments to create an even larger assembly
MIN. FEATURE SIZE	<ul style="list-style-type: none">• 0.635 mm for features• 0.02 in for features• 1.016 mm wall thickness• 0.040 in wall thickness
BEST ACHIEVABLE TOLERANCE	<ul style="list-style-type: none">• 0.005 in (0.127 mm) for first inch, 0.003 in (0.0762 mm) per lineal inch after the first one
LEAD TIME	<ul style="list-style-type: none">• As low as 3 days to first shot depending on part geometrys (FA)• After FA approval, as low as 2 weeks for remaining parts

URETHANE CASTING

Shore D materials

STANDARD

- ABS-like (80D)
- PE-like (65D)
- PC-like (84D)
- PP-like (70D)

HIGH PERFORMANCE

- Nylon-Delrin like (84D)
- ABS-High Impact (78D)
- High Impact FR (UL-94V0) (85D)
- Hi Temp (84D)
- 12 Sec burn (78D)

FDA

- ABS-like (80D)
- ABS-High Strength (85D)
- Hi Impact Class VI (85D)

CLEAR

- Optical Clear (80D, water clear)
- PC-like (84D, haze/pale yellow)

Finishing / post-processing options

PART FINISHES

- Smooth
- Satin
- Glossy / polish
- Custom finishing available

URETHANE CASTING

Shore A materials

ELASTOMERS

- Standard elastomers (15A-94A)
- High performance elastomers (15A-90A)

CLEAR ELASTOMERS

- Clear elastomer (45A, water clear)
- Clear elastomer (65A, water clear)
- Clear elastomer (70A, water clear)
- Clear elastomer (90A, water clear)

SILICONES

- 15A
- 25A
- 35A
- 40A
- 42A
- 50A
- 53A
- 60A
- 75A

MEDICAL SILICONES

- 38A

Finishing / post-processing options

PART FINISHES

- Smooth
- Satin
- Glossy / polish
- Custom finishing available



CARBON[®] DIGITAL LIGHT SYNTHESIS[™]

CARBON[®] DIGITAL LIGHT SYNTHESIS[™] (DLS)

General process information

DESCRIPTION	Carbon's Digital Light Synthesis (DLS) is a resin-based polymer additive manufacturing process. Light is projected in a series of layered patterns as the build platform rises, selectively solidifying the UV-curable resin to achieve a green state part. After build, some of the resins will also require a secondary thermal cure to complete the process. The DLS process produces isotropic material properties.	
BENEFITS OF DLS	<ul style="list-style-type: none">• Production-grade parts off the printer• Isotropic material properties• Smooth surface finish and fine details• High throughput	
BUILD VOLUME	M2 Printer <ul style="list-style-type: none">• ~189 x 118 x 326 mm• ~7.4 x 4.6 x 12.8 in	L1 Printer <ul style="list-style-type: none">• ~400 x 250 x 460 mm• ~15.7 x 9.8 x 18.1 in
MIN. FEATURE SIZE	Material dependent, typically: <ul style="list-style-type: none">• ~0.25 - 0.5 mm• ~0.01 - 0.02 in	
BEST ACHIEVABLE TOLERANCE	Material dependent, typically at least: <ul style="list-style-type: none">• +/- 0.3 mm• +/- 0.012 in	Validated builds can hold tighter tolerances, but require review from engineering team. Costs will be adjusted to reflect inspection and quality fallout.
LEAD TIME	<ul style="list-style-type: none">• Typically 4 business days, can expedite orders to as low as 2 business days.	

CARBON[®] DIGITAL LIGHT SYNTHESIS[™] (DLS)

Materials (continued on pages 17 and 18)

RIGID MATERIALS

MATERIAL	COLOR	DESCRIPTION
Rigid Polyurethane - RPU 70	Black	<ul style="list-style-type: none">• Best for aesthetic prints• Great combination of strength, stiffness, and toughness• Versatile in printing capabilities• Better built for high volume production
Rigid Polyurethane - RPU 130	Black	<ul style="list-style-type: none">• Best for aesthetic prints and good for high durability dampening applications• Great combination of strength, stiffness, toughness, and ductility• Versatile in printing capabilities• Requires a heated cassette for printing, making cleaning and support removal difficult compared to RPU 70
Epoxy - EPX 82	Black	<ul style="list-style-type: none">• Temperature resistant, strong, and tough• Comparable to lightly glass-filled thermoplastics• Perfect for connectors, brackets, and housings• Better built for high volume production
EPX 86	Black	<ul style="list-style-type: none">• Flame retardant variant of EPX 82• Prints as easily as EPX 82, with similar design rules• Good chemical resistance and functional toughness• Higher stiffness and more brittle than EPX 82

Finishing / post-processing options

- Painting
- Press-fit inserts
- Bead blasting
- Digital Texturing

CARBON[®] DIGITAL LIGHT SYNTHESIS[™] (DLS)

Materials (continued)

RIGID MATERIALS		
MATERIAL	COLOR	DESCRIPTION
Urethane Methacrylate - UMA 90	Select RGB colors	<ul style="list-style-type: none">• Perfect for manufacturing jigs, fixtures, and general-purpose prototypes• Comparable to conventional SLA resins• Ideal for quick and aesthetic prints
IND 405	Clear	<ul style="list-style-type: none">• Clear, semi-rigid, and very flexible• For when translucence is an aesthetic requirement but perfect optical clarity is not
Medical Polyurethane - MPU 100	White	<ul style="list-style-type: none">• Biocompatible, sterilizable, and durable• Perfect for medical products and devices, consumer health care products, and drug contact
Cyanate Ester - CE 221	Orange	<ul style="list-style-type: none">• Highly temperature resistant and stiff• Comparable to glass-filled nylon• Perfect for applications that need long-term thermal stability such as under-the-hood components, electronics assemblies, etc.

Finishing / post-processing options

- Painting
- Press-fit inserts
- Bead blasting
- Digital Texturing

CARBON[®] DIGITAL LIGHT SYNTHESIS[™] (DLS)

Materials (continued)

NON-RIGID MATERIALS		
MATERIAL	COLOR	DESCRIPTION
IND 147 - HDT 230	Black	<ul style="list-style-type: none"> • Highly temperature resistant and stiff • Ideal for tooling and molding applications. • Perfect for applications that need long-term thermal stability such as under-the-hood components, electronics assemblies, etc.
Elastomeric Polyurethane - EPU 40	Black	<ul style="list-style-type: none"> • Rubbery, elastic material • Highly impact and tear resistant • Better built for dampening than EPU 41 • Better fine feature resolution than EPU 41
Elastomeric Polyurethane - EPU 41	Linen green	<ul style="list-style-type: none"> • Rubbery, elastic material • Highly impact and tear resistant • Better built for energy return than EPU 40 • Better for larger volumes than EPU 40 • Easier to print than EPU 40
Silicone - SIL 30	Light gray	<ul style="list-style-type: none"> • Soft touch, biocompatible, and tear resistant • Sterilizable, good for skin contact medical applications • Perfect for comfortable skin contact products such as headphones, wristbands, and attachment wearables

Finishing / post-processing options

- Painting
- Press-fit inserts
- Bead blasting
- Digital Texturing

HP MULTI JET FUSION (MJF)



HP MULTI JET FUSION (MJF)

General process information

DESCRIPTION	<p>HP MJF is a powder bed fusion process. Our MJF projects are produced on 4200 and 5200 printers which selectively apply fusing and detailing agent, and thermal energy, to layers of powder in order to form solid parts. The printers then re-apply a new layer of powder to the top of the build and repeat the process until the print is complete. After excavation from the powder bed, finished parts undergo bead-blasting to achieve optimal surface finishes.</p>			
BENEFITS OF HP MJF	<ul style="list-style-type: none"> • Produces fine features and complex parts • More consistent isotropic mechanical properties in the Z build direction when compared to other additive processes • Does not require supports (self-supporting) allowing more design freedom • High throughput 			
BUILD VOLUME	<ul style="list-style-type: none"> • 375 x 375 x 280 mm • 14.8 x 14.8 x 11.0 in 			
MIN. FEATURE SIZE	<ul style="list-style-type: none"> • 0.5 mm • 0.02 in 			
BEST ACHIEVABLE TOLERANCE	Features in X-Y Dimension (0-100mm feature size) <ul style="list-style-type: none"> • +/- 0.3 mm • +/- 0.012 in 	Features in X-Y Dimension (>100mm feature size) <ul style="list-style-type: none"> • +/- 0.3% of feature size 	Features in Z Dimension (0-100mm feature size) <ul style="list-style-type: none"> • +/- 0.4 mm • +/- 0.016 in 	Features in Z Dimension (>100mm feature size) <ul style="list-style-type: none"> • +/- 0.4% of feature size
LEAD TIME	<ul style="list-style-type: none"> • As low as 4 business days for Nylon PA 12 • As low as 5 business days for 40% Glass Bead Filled Nylon PA 12 • As low as 5 business days for TPA 			

HP MULTI JET FUSION (MJF)

Materials

MATERIAL	COLOR	DESCRIPTION
Nylon PA 12	Gray or Black	<ul style="list-style-type: none"> • Fine detail and high dimensional accuracy • Produces strong quality parts • Provides excellent chemical resistance to oils, greases, aliphatic hydrocarbons, and alkalies • Creates complex parts and lattice structures • Ideal for complex assemblies, housings, enclosures, and connectors • Biocompatibility – Meets USP Class I-IV and US FDA guidance for intact Skin Surface Devices • Certifications – UL 94, UL 746A
Glass Bead Filled Nylon PA 12	Gray or Black	<ul style="list-style-type: none"> • Produces stiff, functional parts • Provides dimensional stability along with repeatability • Ideal for applications requiring high stiffness like enclosures, housings, fixtures, and tooling • Certifications – UL 94, UL 746A
TPA (Thermoplastic Polyamide)	Gray or Black	<ul style="list-style-type: none"> • Springy with some resistance • Parts that need to bend, but not as soft as silicone or TPE

Finishing / post-processing options

- Painting
- Black dyeing
- Bead blasting
- Heat staked inserts
- Press-fit inserts
- Digital texturing
- Clear coat
- Vapor smoothing
- Laser surface decorating / etching

HP MULTI JET FUSION (MJF) - COLOR

General process information

DESCRIPTION	The HP Jet Fusion 580 Color Printer is a first-generation, full color, polymer 3D printer. The 580 uses the same basic Multi Jet Fusion technology as the 4200/5200 printer models, but with the added capability of printing in color. It receives Cyan, Magenta, Yellow, and Black colored agents (CMYK).				
BENEFITS OF HP MJF COLOR	<ul style="list-style-type: none">• Produces full-spectrum color parts with a voxel-control system• Produces accurate, functional parts with intricate detail				
MAX. PART SIZE	<ul style="list-style-type: none">• 332 x 190 x 248 mm• 13.1 x 7.5 x 9.8 in				
MIN. FEATURE SIZE	<ul style="list-style-type: none">• 0.5 mm• 0.02 in				
BEST ACHIEVABLE TOLERANCE	<table><thead><tr><th>Features in X-Y dimension</th><th>Features in Z dimension</th></tr></thead><tbody><tr><td><ul style="list-style-type: none">• +/- 0.4 mm• +/- 0.016 in</td><td><ul style="list-style-type: none">• +/- 0.8 mm• +/- 0.031 in</td></tr></tbody></table>	Features in X-Y dimension	Features in Z dimension	<ul style="list-style-type: none">• +/- 0.4 mm• +/- 0.016 in	<ul style="list-style-type: none">• +/- 0.8 mm• +/- 0.031 in
Features in X-Y dimension	Features in Z dimension				
<ul style="list-style-type: none">• +/- 0.4 mm• +/- 0.016 in	<ul style="list-style-type: none">• +/- 0.8 mm• +/- 0.031 in				
LEAD TIME	<ul style="list-style-type: none">• As low as 5 business days				

HP MULTI JET FUSION (MJF) - COLOR

Materials

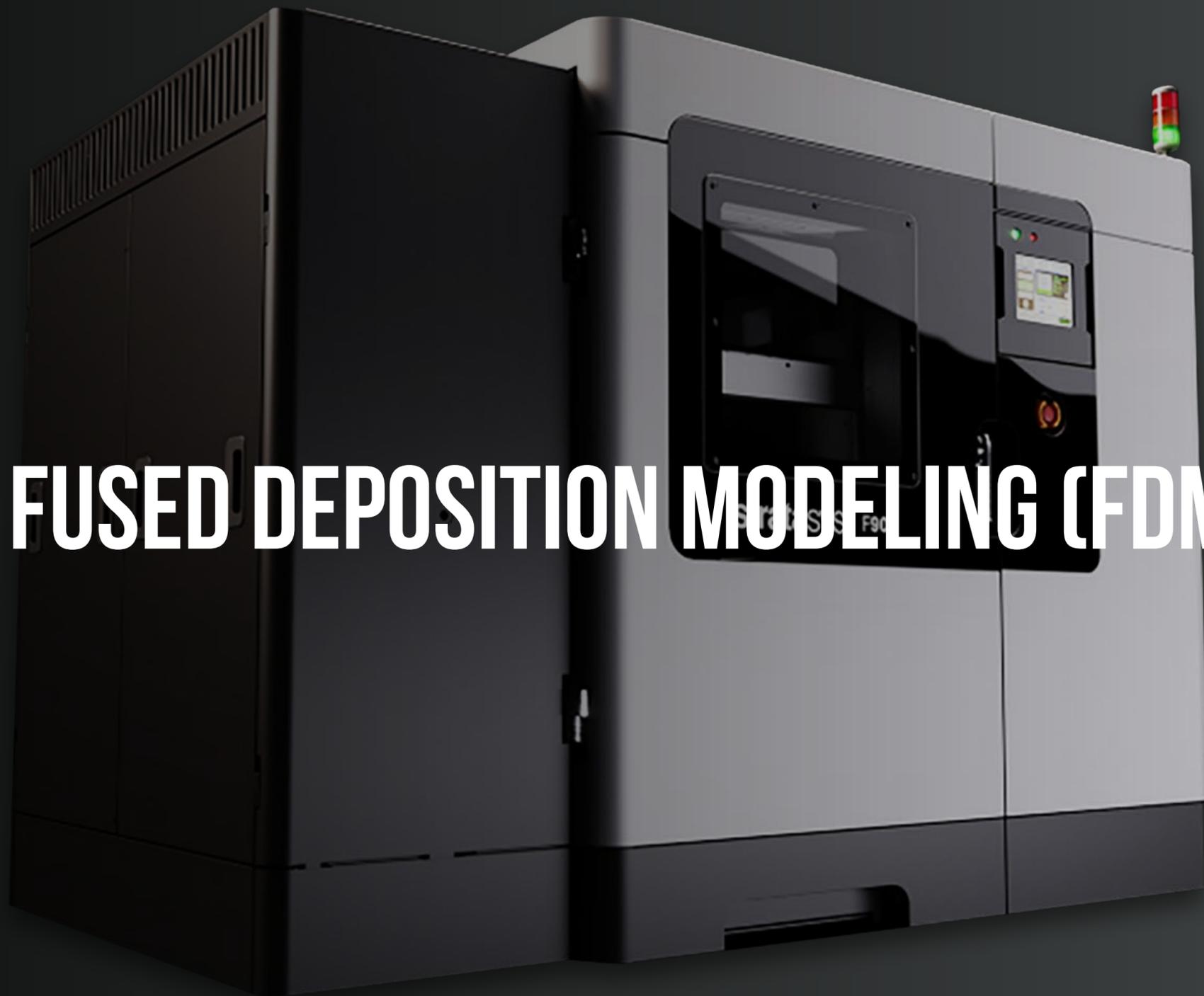
MATERIAL	COLOR	DESCRIPTION
CB Nylon PA 12	All CMYK values are accepted, but system is not capable of a perfect color match. Part geometry, orientation, and nesting position all affect the color uniformity and repeatability	<ul style="list-style-type: none">• Produces strong, functional complex parts• Provides excellent chemical resistance to oils, greases, aliphatic hydrocarbons, and alkalies• Ideal for color and white parts like jigs, fixtures, labeling, presentation models and functional prototypes

Color demonstration samples



Finishing / post-processing options

- Painting
- Bead blasting
- Heat staked inserts
- Press-fit inserts
- Digital texturing
- Clear coat
- Vapor smoothing
- Laser surface decorating / etching



STRATASY FUSED DEPOSITION MODELING (FDM)

STRATASYS FUSED DEPOSITION MODELING (FDM)

General process information

DESCRIPTION	The most common additive method on the market. This process uses a spool of plastic filament which is melted down and deposited layer-by-layer until a 3-dimensional part is created.
BENEFITS OF FDM	<ul style="list-style-type: none">• Engineering-grade materials• Industry certifications• Large build volume
MAX. PART SIZE	<ul style="list-style-type: none">• 914 x 610 x 914 mm• 36.0 x 24.0 x 36.0 in
MIN. FEATURE SIZE	<ul style="list-style-type: none">• 0.4 mm• 0.016 in
BEST ACHIEVABLE TOLERANCE	<ul style="list-style-type: none">• 0.381 mm• 0.015 in
LEAD TIME	<ul style="list-style-type: none">• As low as 3 business days

STRATASYS FUSED DEPOSITION MODELING (FDM)

Materials (continued on page 27)

MATERIAL	COLOR	LAYER HEIGHT OPTIONS
Ultem 1010	Tan	0.010", 0.013"
Ultem 9085	Black, Tan	0.010", 0.013"
Ultem 9085 CG	Tan	0.010", 0.013"
PC-10	White	0.005", 0.007", 0.010", 0.013"
PC-ABS	Black	0.005", 0.007", 0.010", 0.013"
ASA	Black, Dark Gray, White, Ivory, Light Gray, Red, Orange, Yellow, Green, Dark Blue	0.005", 0.007", 0.010", 0.013", 0.020"
ABS-ESD7	Black	0.007", 0.010"

Finishing / post-processing options

- Painting
- Heat staked inserts
- Bead blasting
- Helicoil inserts
- Sanding

STRATASYS FUSED DEPOSITION MODELING (FDM)

Materials (continued)

MATERIAL	COLOR	LAYER HEIGHT OPTIONS
ABS-M30i	Ivory	0.005", 0.007", 0.010", 0.013"
ABS-M30	Black, White, Gray, Ivory, Red, Blue	0.005", 0.007", 0.010", 0.013"
PPSF	Tan	0.010"
ST-130	Natural	0.013"
Nylon 6	Black	0.010", 0.013"
Nylon 12	Black	0.007", 0.010", 0.013"
Nylon 12CF	Black	0.010"
Antero 800NA	Tan	0.010"
Antero840CN03	Black	0.010"

Finishing / post-processing options

- Painting
- Heat staked inserts
- Bead blasting
- Helicoil inserts
- Sanding

STEREOLITHOGRAPHY (SLA)



STEREOLITHOGRAPHY (SLA)

General process information

DESCRIPTION	SLA is a type of photopolymerization 3D printing process capable of producing parts with excellent surface finishes and small feature resolution. During printing, a single laser traces the cross-section of a part layer by layer in UV-curable resin until the part is fully formed. SLA is more suited to prototypes and low-run parts due to its longer print times. Our factory houses Formlabs Form 3B and Form 3L printers.
BENEFITS OF SLA	<ul style="list-style-type: none">• Intricate, accurate detailing• Excellent surface finish• Great for prototypes or one-off parts
BUILD VOLUME	<ul style="list-style-type: none">• 335 × 200 × 300 mm• 13.2 × 7.9 × 11.8 in
MIN. FEATURE SIZE	The minimum feature size is different for each resin, but we are able to achieve complex and aggressive geometry.
LEAD TIME	Get your prototypes in as little as three days. Production or high volume runs will be examined on a case by case basis.

STEREOLITHOGRAPHY (SLA)

Materials (continued on pages 31 and 32)

MATERIAL	COLOR	DESCRIPTION
Biomed Clear	Clear	<ul style="list-style-type: none">• Biocompatible,• Sterilizable and solvent safe• Good material properties
Clear	Clear	<ul style="list-style-type: none">• Able to make clear parts with intricate features.• Not optically clear but perfect to let light pass through and achieve some transparency
Rigid 4000	White	<ul style="list-style-type: none">• Strong, stiff, and resistant to bending• Soft matte white finish
Tough 2000	Gray	<ul style="list-style-type: none">• Strong and sturdy• Good for prototypes• Resistant to bending

STEREOLITHOGRAPHY (SLA)

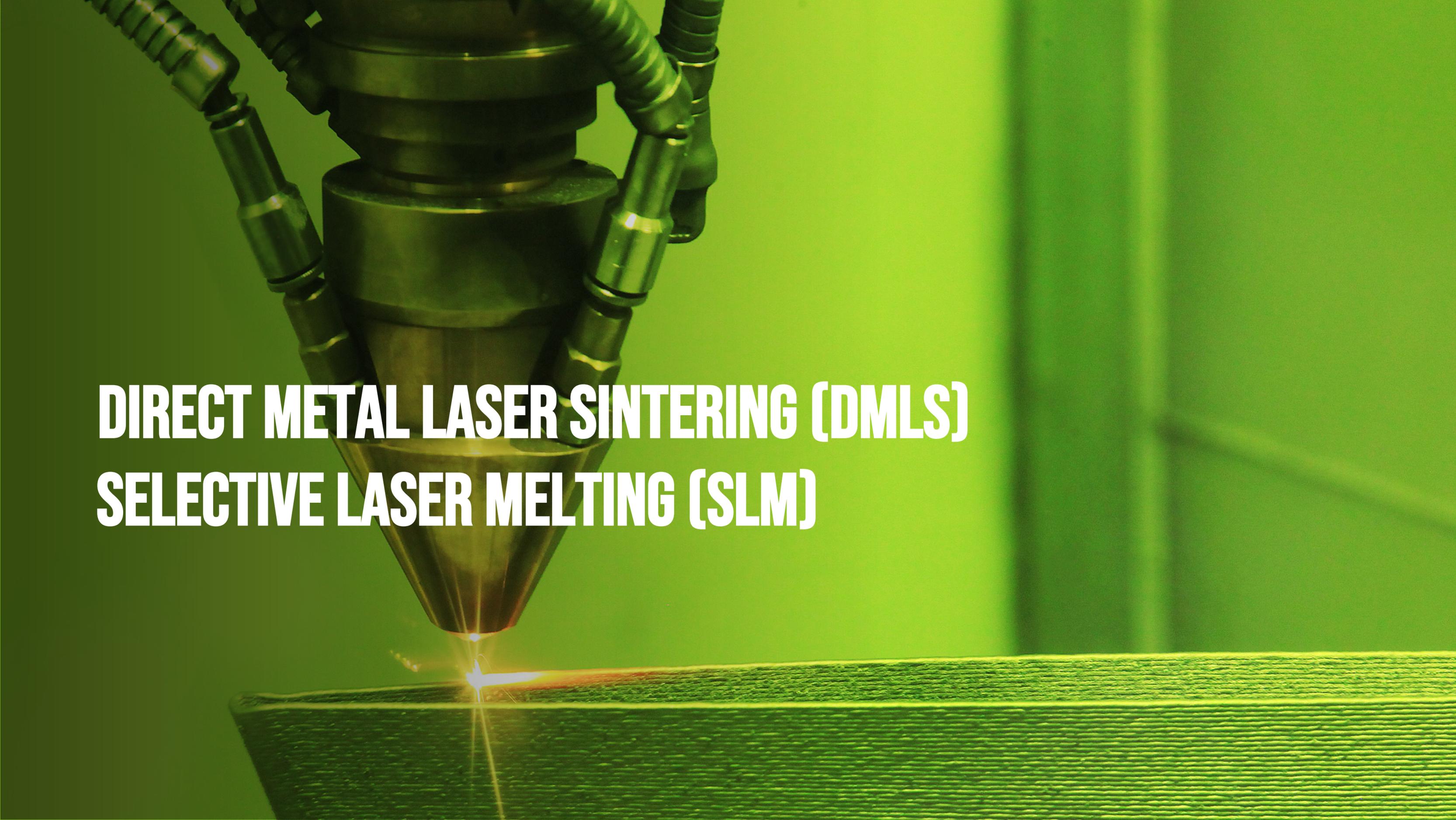
Materials (continued)

MATERIAL	COLOR	DESCRIPTION
Flexible 80A Clear	Black	<ul style="list-style-type: none">• Dampening properties• Good for cushioning and soft touch areas• Stronger mechanical properties than Elastic
High Temp	Translucent Orange	<ul style="list-style-type: none">• Detailed precise prototypes• Able to withstand temperatures up to 238 °C
Durable	Translucent, Clear	<ul style="list-style-type: none">• Pliable, impact resistant, lubricious• Ideal for high wear areas or rigid parts that need to be pliable

Finishing / post-processing options

- Painting
- Sanding
- Digital texturing
- Bead blasting
- Press-fit inserts

Other Formlabs materials available upon request.



**DIRECT METAL LASER SINTERING (DMLS)
SELECTIVE LASER MELTING (SLM)**

DIRECT METAL LASER SINTERING (DMLS) / SELECTIVE LASER MELTING (SLM)

General process information

DESCRIPTION	DMLS/SLM is a high powered laser with powder based printing technology for consistent, reproducible quality part production. Produce parts with complex geometries including living hinges for a variety of industries or functions. Your part will be feasible and functional for all downstream applications or continued manufacturing applications.
BENEFITS OF DMLS/SLM	<ul style="list-style-type: none">• Fast and reliable• Design freedom• DfAM support
MAX FEATURE SIZE	<ul style="list-style-type: none">• 15 x 13 x 18 inches (381 x 330 x 457 mm)
MIN. FEATURE SIZE	0.004 inches (0.1 mm)
LAYER THICKNESS	0.003 – 0.006 inches (0.08 – 0.15 mm)
LEAD TIME	Get your prototypes in as little as three days. Production or high volume runs will be examined on a case by case basis.
MATERIALS	Multi-Material capabilities, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, PA, Glass-Filled Nylon

SHEET METAL



SHEET METAL

General process information

BENEFITS	Dedicated engineer designers - get your design right the 1st time
MAX PART SIZE 2D	• 48 x 120 inches (1219 x 3048 mm) sheet
5-AXIS LASER	96 x 48 x 22 inches (2438 x 1219 x 559 mm)
MIN FEATURE SIZE	Depends on material, thickness and type holes as small as extremely accurate and repeatable
BEST ACHIEVABLE TOLERANCE	+/- 0.05mm
LEAD TIME	Depends on what is required

COMPOSITES

COMPOSITES

General process information

BENEFITS

- Heavy-use surgical grade accuracy and finishes for MRI beds
- Dedicated engineer designers - get your design right the 1st time
- Post-processing such as structural adhesive and painting to meet customer requirements

MATERIALS

- Fiberglass
- Carbon fiber
- Kevlar
- Ultralight graphite for aerospace
- Any other engineered material

A close-up photograph of industrial machinery, likely a lathe or similar turning machine. The image shows a series of metal components, including hexagonal nuts and cylindrical shafts, arranged in a row. The lighting is dramatic, highlighting the metallic textures and creating strong shadows. The text "POST PROCESSING" is overlaid in a bold, white, sans-serif font on the left side of the image.

POST PROCESSING

POST PROCESSING

General process information

OPTIONS

- Any CAD file format with guaranteed data security
- Design optimization and verification
- End of Arm Dedicated Tooling
- Post-production, painting, finishing
- Assemble, pack and ship
- Dedicated DFM support
- Painting
- Assembly
- Powder Coating
- Inserts
- Bead Blasting
- Brushing
- Polishing
- Screen Printing
- Engraving
- Heat Treating
- Passivating
- Anodizing/Plating
- Ultrasonic Welding

A close-up photograph of a worker in a white lab coat and safety glasses using a handheld probe to inspect a metal mold. The worker is positioned on the left, looking intently at the probe. The probe is a handheld device with a yellow and black body, connected to a coiled metal hose. The mold is a large, complex metal structure with multiple cavities, mounted on a blue industrial machine. The machine has a pressure gauge and a control knob. The background shows a factory setting with various equipment and a blue wall.

QUALITY CONTROL

QUALITY CONTROL

General process information

CERTIFICATIONS	QUALITY INSPECTION	PPAP OPTIONS	OVERVIEW
<ul style="list-style-type: none">• ISO 9001: 2015• AS 9100D• AIAG• IATF 16949: 2016	<ul style="list-style-type: none">• Supplier Audits• Inspection Reports• Functional Inspections with Gauges• Custom Sampling• CMM• T1 Samples & First Articles• APQN• PPAP	<p>Level 1</p> <ul style="list-style-type: none">• Part Submission Warrant submitted to customer only <p>Level 2</p> <ul style="list-style-type: none">• PSW with product samples and limited supporting data <p>Level 3</p> <ul style="list-style-type: none">• PSW with product samples and complete supporting data <p>Level 4</p> <ul style="list-style-type: none">• PSW and other requirements as defined by the customer <p>Level 5</p> <ul style="list-style-type: none">• PSW with product samples and complete supporting data• Available for review at the supplier's manufacturing location	<ul style="list-style-type: none">• Design Documentation• Engineering Change Documentation• Process Flow Diagram• Process Failure Mode and Effects Analysis (PFMEA)• Control Plan• Measurement System Analysis Studies (MSA) Dimensional Results (CMM)• IMDS Submission• Record of Material and Performance Test Result• Initial Process Studies• Qualified Laboratory Documentation• Appearance Approval Report (AAR)• Master Sample• Checking Aids• Customer Specific Requirements• Part Submission Warrant

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