



THE AM PRODUCTION FACTORY

TECHNOLOGIES



Laser Sintering SLS

High-Performance Products

The additive manufacturing technology **Selective Laser Sintering (SLS)** uses a high power laser to fuse, layer upon layer, the material in the form of spray-dried powder to create prototypes and functional components that can take advantage of the additive design. **The laser selectively fuses the areas** of the manufacture on the workspace by following the digital instructions given to the plant by a project realized using a 3D cad software.

Our Department of Selective Laser Sintering (SLS) has **three industrial class plants** also useful to produce **CRITICAL functional components**. The possibility to employ **high performance powder materials** allows us to achieve the state of the art in the field of 3D printing technologies that use plastic.

THE WORK OF THOSE WHO ONLY RACE TO WIN

When a passion for vehicles and design turns into the job of designing the next single-seat car, one of the key factors in the success of the enterprise is **building a team**. Determination, clear and shared objectives and, obviously, the highest level of technical expertise are essential in order to race and win!

- Scrupulous planning of activities;
- Continuous testing of the materials to ensure that the mechanical characteristics remain unchanged across different production runs;
- Direct relationships with the manufacturers of industrial additive manufacturing systems: no intermediaries between you and those creating future technologies.

Your team will be a winner if it combines the desire to come first with a rigorous and organized working method. Don't make the mistake of choosing someone who is not making the most of the possibilities offered by additive manufacturing technology.

SELECTED MATERIALS FOR EXTREME APPLICATIONS

ZARE has chosen high-tech materials to meet the project requirements of the professionals working in the field of **Motorsport and other extreme sectors** with whom the company works side by side to produce fully functional applications.

In particular, **PA 603CF** is a carbon fiber filled nylon 12 with low specific weight, good dimensional stability and excellent mechanical strength at elevated temperatures.

Since its introduction in the manufacturing industry, SLS technology has been widely used by engineers and designers for the production of **esthetic prototypes** with high quality finishes and **functional components**; indeed, this technology is cost-effective and offers a wide range of materials which are typically nylon-based.

SLS makes it possible to produce elements with different characteristics of strength, elasticity, resistance to high temperatures





THE AM PRODUCTION FACTORY

SLS

MATERIALS

High-performance products

MATERIAL	DESCRIPTION
PA 603-CF	PA 603-CF is a carbon fiber filled nylon 12 easy to process, strong, light weight filled material. Its peculiarities are: low specific weight, good dimensional stability, excellent mechanical properties and excellent resistance to warping.
PA 620-MF	A 620-MF is a mineral fiber filled nylon 12 easy to process, performing and heavier weight filled material. Fibers have been optimized to produce a smooth surface finish without sacrificing feature detail for mechanical properties. The material boasts isotropic mechanical properties, excellent combination of strength and resistance to high temperatures.
PA6GB40	The PA6GB40 material is a glass filled polyamide widely used in all those applications where the components are subject to wear or friction. Compared to PA12, it has superior mechanical properties.
White Sinter (PA 12)	WhiteSinter is standard white Nylon , it's a great material for design aesthetic evaluations. Because of its snow-white color it's also widely used in the production of architectural models.
DuraForm EX Black	DuraForm EX is an impact resistant rigid plastic that is ideal for applications where impact resistance is required and functional hinges. DuraForm EX combines the characteristics of ABS with extraordinary flexural strength and it is perfect for creating functional snaps and hinges.
Polypropylene PP	Polypropylene PP can be used for the direct production of pre-series and functional elements via selective laser sintering using a material that is identical to that employed for high-volume productions with traditional technologies.
TPU	TPU is a thermoplastic elastomer material with rubber-like flexibility and functionality , durable with good tear resistance and excellent surface finish.
Castform™ PS	Castform™ PS is a styrene-based material, compatible with most standard foundry processes . For prototype metal castings and low to medium production runs without tooling.
FlexSinter (Rubber-like)	FlexSinter is a sintered polymer that simulates the characteristics of the rubber , available in different colors (black, blue, yellow, natural, red) all with 60ShA of hardness.
AlluSinter (PA+Aluminium)	AlluSinter is a structural material made of nylon filled with aluminum ; excellent for applications which require good mechanical and thermal characteristics.

PA 603-CF

PA 603-CF is a **carbon fiber filled nylon 12** easy to process, strong light weight filled material. Its peculiarities are: low specific weight, good dimensional stability while maintaining excellent mechanical properties and excellent resistance to warping at elevated temperatures. The mixture has been optimized to produce a smooth surface finish without sacrificing feature detail for mechanical properties.

PA 603-CF is an excellent choice for rugged industrial applications with an HDT of **~177°C**, high impact sports equipment, high performance racing applications, wind tunnel model testing and applications requiring the highest stiffness and heat resistance.

General properties

Property	Test Method	English	Metric
Color/Appearance	Visual	Dark Grey	Dark Grey
Bulk Density	ASTM D1895	0.237 oz/in ³	0.41 g/cm ³
Average Particle Size (D50)	Laser Diffraction	0.002 inches	50 microns
Particle Size Range (D10-D90)	Laser Diffraction	0.001 – 0.004 inches	35 – 100 microns
Sintered Part Density	ASTM D792	0.0634 oz/in ³	1.10 g/cm ³

Mechanical properties

Property	Test Method	English	Metric
Ultimate Tensile Strength (XY)	ASTM D638	12,328 psi	85 MPa
Tensile Modulus (XY)	ASTM D638	1,145,797 psi	7,900 MPa
Flexural Modulus (XY)	ASTM D790	1,329,995 psi	9,170 MPa
Elongation at Break (XY)	ASTM D638	4%	4%
Izod Impact Strength – Notched (XY)	ASTM D256	1.58 ft-lb/in	84 J/m
Izod Impact Strength – Unnotched (XY)	ASTM D256	3.03 ft-lb/in	161 J/m

Thermal properties

Property	Test Method	English	Metric
Heat Deflection Temperature	ASTM D648	343° F @ 264 psi	173° C @ 1.82 MPa
Heat Deflection Temperature	ASTM D648	354° F @ 66 psi	179° C @ 0.45 MPa

PA 620-MF

PA 620-MF is a **mineral fiber filled nylon 12** easy to process, performing and heavier weight filled material. Fibers have been optimized to produce a smooth surface finish without sacrificing feature detail for mechanical properties.

PA 620-MF is an excellent choice for rugged industrial or tooling applications with high tensile modulus values and HDT of ~177°C, applications for aerospace and motor sports and enclosures. It is ideal for low to mid production parts requiring stiffness and durability at elevated temperatures.

Drop in replacement for other commercially available fiber filled materials with an increase in recyclability.

General properties

Property	Test Method	English	Metric
Color/Appearance	Visual	White	White
Bulk Density	ASTM D1895	0.266 oz/in ³	0.46 g/cm ³
Average Particle Size (D50)	Laser Diffraction	0.002 inches	55 microns
Particle Size Range (D10-D90)	Laser Diffraction	0.001 – 0.004 inches	30 – 100 microns
Sintered Part Density	ASTM D792	0.0694 oz/in ³	1.20 g/cm ³

Mechanical properties

Property	Test Method	English	Metric
Ultimate Tensile Strength (XY)	ASTM D638	7,350 psi	51 MPa
Ultimate Tensile Strength (Z)	ASTM D638	4,900 psi	34 MPa
Tensile Modulus (XY)	ASTM D638	831,000 psi	5,725 MPa
Tensile Modulus (Z)	ASTM D638	434,000 psi	3,000 MPa
Flexural Modulus (XY)	ASTM D790	660,000 psi	4,550 MPa
Flexural Modulus (Z)	ASTM D790	381,000 psi	2,825 MPa
Elongation at Break (XY)	ASTM D638	5%	5%
Elongation at Break (Z)	ASTM D638	3%	3%

Thermal properties

Property	Test Method	English	Metric
Heat Deflection Temperature	ASTM D648	355° F @ 264 psi	179° C @ 1.82 MPa
Heat Deflection Temperature	ASTM D648	363° F @ 66 psi	184° C @ 0.45 MPa

PA6GB40

The PA6GB40 material is a polyamide widely used in all those applications where the components are subject to wear or friction; it guarantees excellent results both used for prototype purposes and for the production of small batches and pre-productions. Compared to PA12, it has superior mechanical properties and greater resistance both at room temperature and at high temperatures.

Mechanical Properties

	Test Method	English	Metric
Tensile Strength	ASTM D638	8,122 psi	56 MPa
Tensile Modulus	ASTM D638	551 ksi	3800 MPa
Elongation at Break	ASTM D638	1,6%	1,6%
Flexural Strength	ASTM D790	13,923 psi	96 MPa
Flexural Modulus	ASTM D790	522 ksi	3600 MPa
IZOD Impact, notched	ASTM D256	1,15 ft-lbs/in ²	2.4 kJ/m ²
IZOD Impact, un-notched	ASTM D256	2,59 ft-lbs/in ²	5.4 kJ/m ²

Thermal Properties

	Test Method	English	Metric
Heat Deflection (HDT) @ 0.45 MPa	ISO 75-2	377°F	192°C
Heat Deflection (HDT) @ 1.8 MPa	ISO 75-2	217,4°F	103°C
Coefficient Thermal Expansion	ASTM E831	55.55 µin/in°F	100 µm/m°C

Other

	Test Method	Value	Available Colors
Shore Hardness (D)	ASTM D2240	85	☐ White
Water absorption, % - 24 hours	ASTM D570	2.80 %	
Dielectric Strength	ASTM D149	25 kV/mm	
Dielectric Constant @ 1 Khz	ASTM D150	8.0	
Dissipation Factor @ 1 Khz	ASTM D150	0.2	
Specific Gravity	ASTM D792	1.15 g/cm ³	

WhiteSinter (PA12)

White Sinter is a standard white Nylon and it is perfect for design aesthetic evaluations. Because of its snow-white color it's also widely used in the **production of architectural models**. White Sinter is also suitable for applications requiring **good elasticity**.

Mechanical Properties

	Test Method	English	Metric
Tensile Strength	ASTM D638	6,237 psi	43 MPa
Tensile Modulus	ASTM D638	230 ksi	1,586 MPa
Elongation at Break	ASTM D638	14%	14%
Flexural Strength	ASTM D790	6,962 psi	48 MPa
Flexural Modulus	ASTM D790	201 ksi	1,387 MPa
IZOD Impact, notched (Method A, 23°C)	ASTM D256	0.6 ft-lb/in	32 J/m
IZOD Impact, un-notched (Method A, 23°C)	ASTM D256	6.3 ft-lb/in	336 J/m
Gardner Impact	ASTM D5420	2.0 ft-lb	2.7 J

Thermal Properties

	Test Method	English	Metric
Heat Deflection (HDT) @ 66 psi	ASTM D648	356°F	180°C
Heat Deflection (HDT) @ 264 psi	ASTM D648	203°F	95°C
Coefficient Thermal Expansion 0-50 °C	ASTM E831	45.9 µin/in°F	82.6 µm/m°C
Coefficient Thermal Expansion 85-145 °C	ASTM E831	99.6 µin/in°F	179.2 µm/m°C

Other

	Test Method	Value	Available Colors
Shore Hardness (D)	ASTM D2240	73	<input type="checkbox"/> White
Water absorption, % - 24 hours	ASTM D570	0.07 %	
Dielectric Strength	ASTM D149	17.3 kV/mm	
Dielectric Constant @ 1 Khz	ASTM D150	2.73	
Dissipation Factor @ 1 Khz	ASTM D150	0.044	
Specific Gravity	ASTM D792	1.00 g/cm3	

DuraForm EX Black

DuraForm EX is an impact resistant rigid plastic that is ideal for applications where impact resistance is required and functional hinges.

DuraForm EX combines the characteristics of **ABS** with **extraordinary flexural strength**, this combination makes it one of the best rigid materials available for creating functional snaps and hinges.

DuraForm EX can be used for: prototypes that require the toughness and durability of molded polypropylene or ABS; low to mid volume direct manufacturing of end-use parts; complex, thin-walled ducts; aircraft and motorsports parts; enclosures and housings; parts with snap-fits and living hinges; automotive dashboards, grilles and bumpers.

General properties			
Property	Condition	Metric	U.S.
Density	ASTM D792	1.01 g/cm ³	1.01 g/cm ³
Mechanical properties			
Tensile Strength, Yield (MPa/PSI)	ASTM D638	37	5366
Tensile Strength, Ultimate (MPa/PSI)	ASTM D638	48	6961
Tensile Modulus (MPa/KSI)	ASTM D638	1517	220
Elongation at Break (%)	ASTM D638	47	47
Flexural Strength, Yield (MPa/PSI)	ASTM D790	42	6091
Flexural Strength, Ultimate (MPa/PSI)	ASTM D790	26	6672
Flexural Modulus (MPa/KSI)	ASTM D790	1310	190
Hardness, Shore D	ASTM D2240	74	74
Impact Strength (notched Izod, 23°C)	ASTM D256	74 J/m	1.4 ft-lb/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	1486 J/m	27.8 ft-lb/in
Gardner Impact	ASTM D5420	11.8 J	8.7 ft-lb
Thermal properties			
Heat Deflection Temperature	ASTM D648 (@0.45 MPa / @1.82 MPa)	188°C / 48°C	370°F / 118°F
Coefficient of Thermal Expansion (µm/m-°C/in-°F)	ASTM E831 (0-50°C / 85-145°C)	120 / 342	66.7 / 190
Specific Heat Capacity	ASTM E1269	1.75 J/g-°C	0.418 BTU/lb-°F
Thermal Conductivity	ASTM E1225	0.51 W/m-K	3.5 BTUin/hr-ft2-°F
Electrical properties			
Volume Resistivity	ASTM D257	1.3 x 10 ¹³ ohm-cm	1.3 x 10 ¹³ ohm-cm
Surface Resistivity	ASTM D257	4.9 x 10 ¹²	4.9 x 10 ¹²
Dissipation Factor, 1 KHz	ASTM D150	0.050	0.050
Dielectric Constant, 1 KHz	ASTM D150	45	45
Dielectric Strength	ASTM D149	18.5 kV/mm	470 kV/in

Polypropylene (PP)

Polypropylene (PP) for Selective Laser Sintering. With this material, PP parts can be generated using the selective laser sintering technology. Pre-series parts can thus be produced in the same basic material as large series parts.

Decisive advantages of this material are the **outstanding toughness** and **media resistance**. In addition, **Polypropylene (PP)** is sterilizable (medical technology) and the sealability allows welding with other PP parts.

Mechanical Properties

	Method	Metric
Density (component)	-----	≥ 0.9 g/cm ³
Tensile Modulus	ISO 527-1	≥ 800 MPa
Tensile Strength	ISO 527-1	≥ 18 MPa
Elongation at Break	ISO 527-1	≥ 200 %
Impact resistance	ISO 179-1/1eU	≥ 40 kJ/m ²
Impact Strength	ISO 179-1/1eU	≥ 5 kJ/m ²

Thermal Properties

	Condition	Metric
Melting point	DSC - DIN 53675	≥ 120°C
Crystallization point	DSC - DIN 53675	≤ 90°C
Heat resistance HDT-A	ISO 75-1 (1.82 MPa)	ca. 50°C

TPU

Thermoplastic elastomer material with **rubber-like flexibility and functionality**. Durable with **good tear resistance, surface finish and feature detail**.

Shore A hardness can be varied without changing material. Applications: **consumer goods, exible parts for industrial prints, functional prototypes and footwear, hoses and seals**.

Mechanical Properties

	Condition	Metric
Tensile Strength, Ultimate	ASTM D412	2.1 MPa
Tensile Strength, Break	ASTM D638	2.0 MPa
Tensile Modulus	ASTM D638	5.3 MPa
Elongation at Yield	ASTM D638	220 %
Elongation at Break	ASTM D412	200 %
Flexural Modulus	ASTM D790	6.0 MPa
Hardness, Shore A	ASTM D2240	59.0
Initial Tear Resistance (Die C @ 23 °C)	ASTM D624	15.4 J/m
Abrasion Resistance Taber, CS-17 Wheel, 1 Kg Load D4060	ASTM D4060	97.9 mg/ 1000 cycles

General Properties

	Condition	Metric
Sintered Part Density	Internal	0.78 g/cm ³

Castform™ PS

Styrene-based, expendable pattern casting material, compatible with most standard foundry processes. For prototype metal castings and low to medium production runs without tooling.

Applications include **prototype metal castings**, **low to medium production runs without tooling**, **plaster castings** and **titanium castings**.

Mechanical Properties

	Condition	Metric
Tensile Strength, Ultimate	ASTM D638	2.84 MPa
Tensile Modulus	ASTM D638	5.3 MPa
Impact Strength (notched Izod)	ASTM 256	<11 J/m
Impact Strength (unnotched Izod)	ASTM 256	14 J/m

Thermal Properties

	Condition	Metric
Glass Transition (Tg) - Polystyrene	ASTM D3418	89°C
Melting Point (Mp) - Wax	-----	>63°C
Flash Point (Cleveland Open Cup)	Polystyrene Wax	350°C >200°C
Autoignition Point	Polystyrene	410°C

FlexSinter (Rubber-like)

FlexSinter is a sintered polymer that **simulates the characteristics of the rubber**. Many different colors are available (black, blue, yellow, natural, red) **all with 60ShA of hardness**.

This material has good **flexibility**, good **elastic recovery** and it's more durable than most other 3D printed rubbers. Very suitable for applications in the **lighting and automotive industry**.

Mechanical Properties

	Test Method	English	Metric
Tensile Strength	ASTM D638	335 psi	2.3 MPa
Tensile Modulus	ASTM D638	1,340 psi	9,2 MPa
Elongation at Break	ASTM D638	151 %	151 %
Flexural Modulus @ 23°C	ASTM D790	1,130 psi	7,8 MPa
Initial Tear Resistance Die C @ 23°C (73°F)	ASTM D624	88 lb/lin	15,4 kN/m
Bursting Strength (Straight) @ 23°C	-----	11 psi	0.076 MPa

Thermal Properties

	Test Method	Value	Available Colors
Shore Hardness (A) 23°C	D2240 Scale A	55-80	<div style="display: flex; flex-direction: column; gap: 5px;"> <div> Black</div> <div> Red</div> <div> Blue</div> <div> Ivory</div> <div> Yellow</div> </div>
Abrasion Resistance Taber, CS17 wheel, 1Kg (2.2lb) load	ATSM D4060	-----	

AlluSinter (PA+Alluminio)

AlluSinter is a structural material made of **Nylon filled with aluminum**; excellent for applications which require **good mechanical and thermal characteristics**. The reduced grain size allows an excellent detail. AlluSinter results an ideal material for both **structural and aesthetic applications**.

Because of its excellent workability AlluSinter is particularly suitable for **post-process treatment** like **painting, vacuum metallization**, etc.

Mechanical Properties

	Test Method	English	Metric
Tensile Strength X direction	ISO 527-1/-2	-----	48 MPa
Tensile Strength Y direction	ISO 527-1/-2	-----	48 MPa
Tensile Modulus X direction	ISO 527-1/-2	-----	3,800 MPa
Tensile Modulus Y direction	ISO 527-1/-2	-----	3,800 MPa
Strain at Break X direction	ISO 527-1/-2	-----	4 %
Charpy Impact Strength (+23°C X Direction)	ISO 179/1eU	-----	29 KJ/m ²
Charpy Notched Impact Strength (+23°C X Direction)	ISO 179/1eA	-----	4.6 KJ/m ²
Flexural Modulus (23°C, X Direction)	ISO 178	-----	3,600 MPa
Flexural Strength (X Direction)	ISO 178	-----	72 MPa
Volume resistivity (X Direction)	IEC 60093	-----	3E12 Ohm*m

Thermal Properties

	Test Method	English	Metric
Temp. of Deflection under load (1.80 MPa, X Direction)	ISO 75-1/-2	-----	144°C
Temp. of Deflection under load (0.45 MPa, X Direction)	ISO 75-1/-2	-----	175°C
Vicat Softening Temperature (50°C/h 50N)	ISO 306	-----	169°C
Melting Temperature (20°C/min)	ISO 11357-1/-3	-----	176°C

Other

	Test Method	Value	Available Colors
Density	-----	1.360 Kg/m ³	<input type="checkbox"/> Light Gray
Relative Permittivity (100Hz)	IEC 60250	13	
Relative Permittivity (1MHz)	IEC 60250	10	
Dissipation Factor (1MHz)	IEC 60250	180 E-4	
Surface Resistivity	IEC 60093	5E14 ohm	
Electric Strength	IEC 60243-1	0.1 kV/mm	
Shore D Hardness (15s)	ISO 868	76	



THE AM PRODUCTION FACTORY

GUIDE Material Selection

01

	MATERIAL	DESCRIPTION	PROTOTYPES			Color
			Functional	Aesthetic	Stiffness	
DMLS / SLM	Scalmalloy®	This material is corrosion-resistant and combines the low weight of aluminium with almost the specific strength of titanium.				
	Aluminium HTA	Aluminium HTA - High Temperature Aluminium – is a material developed with the objective of ensuring high performance even at 190—200°C.				
	Alloy 263	Alloy 263 is a nickel-cobalt-chromium-molybdenum alloy designed specifically to combine very good strength properties with excellent fabrication characteristics in the annealed condition. The alloy is also age hardenable.				
	Böhler M789	The M789 Böhler material combines the easy printability of a Maraging Steel with the corrosion resistance of a 17-4PH (Stainless Steel AISI630).				
	Böhler W360	The W360 Böhler material is an hot work tool steel with high hardness, specially developed for use in warm forging applications or for forging dies.				
	Böhler E185	The E185 Böhler material is a low alloyed steel with easy printability and the possibility for surface treatment like case hardening or nitriding.				
	Aluminium AISi7Mg 0.6 (A357)	Definitive aluminum, very workable and extremely resistant. Very low specific weight (light). AISi7Mg is an alloy for aerospace applications.				
	Aluminium AISi10Mg					
	Titanio Ti6Al4V (Grade 23 ELI)	Titanium grade 23, ideal for use in automotive, medical and jewelry applications according to ASTM F136-02a.				
	Inconel 718	Nickel based alloy for the production of components for high temperatures applications.				
	Inconel 625					
	Stainless Steel AISI 316L	It's an austenitic stainless steel for the production of functional parts or components for pre-production moulds.				
	Stainless Steel 17-4ph	It's a precipitation hardening stainless steel for the production of functional parts or medical instruments.				
	Stainless Steel 15-5PH	15-5 PH Stainless Steel is a martensitic precipitation-hardening stainless steel that provides an outstanding combination of high strength, good corrosion resistance, good mechanical properties at temperatures up to 600 °F (316 °C).				
	Cobalt-Chrome F75	Material with high mechanical and thermal resistance, ideal for models with thin walls and subjected to high temperatures.				
	Remanium® Star CL	Cobalt Chrome for dental applications.				
	Bronze	It's a material whose melting properties make it outstandingly suited to generative processing.				
	Copper Alloy CuNi2SiCr	Material with favorable combination of electrical and thermal conductivity accompanied by high stiffness.				
	Maraging Steel 1.2709	Material for the production of components for tool inserts with conformal cooling and production of functional components.				
	NickelAlloy HX	NickelAlloy HX is a nickel-chromium-iron-molybdenum alloy in fine powder form. This type of alloy is characterized by having high strength and oxidation resistance also at elevated temperatures and is often used up to 1200°. Therefore, its applications can be found in aerospace technology, Oil & Gas and gas turbine parts.				
Alloy 282	Alloy 282 is a superalloy suitable for the aerospace and Oil & Gas industries developed for use in critical applications at temperatures close to 1000 °C as turbine parts and exhausts.					
AISI 420	The AISI 420 is a self-hardening martensitic steel which has complementary characteristics to ferritic and austenitic steels. The hardening process to which it is subjected makes it very useful for cutlery, structural parts, surgical and dental instruments, parts of valves.					
Tungsten	Tungsten is a material with high wear resistance used for the production of tools for the metalworking, mining, petroleum and construction industries. Tungsten is radiation-resistant and is widely used for aerospace applications.					
SLS	PA 603-CF	PA 603-CF is a carbon fiber filled nylon 12 easy to process, strong, light weight filled material. Its peculiarities are: low specific weight, good dimensional stability, excellent mechanical properties and excellent resistance to warping.	✓	✓	Rigid	Black
	PA 620-MF	PA 620-MF is a mineral fiber filled nylon 12 easy to process, performing and heavier weight filled material. Fibers have been optimized to produce a smooth surface finish without sacrificing feature detail for mechanical properties. The material boasts isotropic mechanical properties, excellent combination of strength and resistance to high temperatures.	✓	✓	Rigid	White, Black
	PA6GB40	The PA6GB40 material is a glass filled polyamide widely used in all those applications where the components are subject to wear or friction. Compared to PA12, it has superior mechanical properties.	✓		Semi-Rigid	White
	WhiteSinter	Standard white nylon (PA12) with good characteristics of flexibility and elasticity.		✓	Semi-Rigid	White
	DuraForm EX Black	DuraForm EX is an impact resistant rigid plastic that is ideal for applications where impact resistance is required and functional hinges. DuraForm EX combines the characteristics of ABS with extraordinary flexural strength and it is perfect for creating functional snaps and hinges.	✓	✓	Rigid	Black
	Polypropylene (PP)	Polypropylene (PP) for Selective Laser Sintering. With this material pre-series parts can thus be produced in the same basic material as large series parts. Decisive advantages of this material are the outstanding toughness and media resistance.	✓	✓	Semi-Rigid	White

Suitable materials for definitive parts.
All functional tests can be performed on prototype parts as they were the final product.
Suitable for finishes and surface treatments.
Ideal for rapid manufacturing products.

	MATERIAL	DESCRIPTION	PROTOTYPES		Stiffness	Color
			Functional	Aesthetic		
SLS	TPU	Thermoplastic elastomer material with rubber-like flexibility and functionality for use with sPro 60 HD-HS.	✓	✓	Elastic	Ivory, Yellow, Black, Red, Blue
	Castform™ PS	Castform™ PS is a Styrene-based, expendable pattern casting material, compatible with most standard foundry processes. For prototype metal castings and low to medium production runs without tooling.	✓			Red
	FlexSinter-Infiltrated	Very tough elastomer, available in various colors; aesthetic quality lower than that of polyjet rubber.	✓		Elastic	Ivory, Yellow, Black, Red, Blue
	Allusinter	Nylon reinforced with aluminum. Structural material, rigid and with high mechanical strength. Excellent reproduction of details.	✓	✓	Rigid	Light Gray
FDM	ASA	It's similar to ABS M30, but is UV resistant. It's ideal for end use parts.	✓		Rigid	Ivory, Black, Light Gray, Dark Gray, White, Dark Blue, Green, Yellow, Orange, Red
	ABS M30	Standard ABS created with FDM systems. Properties are identical to ABS injection molded.	✓		Rigid	Ivory, Dark Gray, White, Black, Red, Blue
	ABS-ESD7	ABS thermoplastic with static dissipative properties: prevents static charges from damaging products, or impair their performance.	✓		Rigid	Black
	ABSi	Components made from translucent Absi are penetrable by light. Monitoring of inside fluid movement is allowed.	✓		Rigid	Translucent Natural-Amber-Red
	PC	Polycarbonate. Material with high mechanical resistance, it is suitable for the creation of very strong and definitive models.	✓		Rigid	White
	PC-ISO	Polycarbonate ISO is an ideal material for the food, packaging and medical (certified for medical use) industry.	✓		Rigid	Translucent Natural, White
	PC-ABS	ABS and polycarbonate. Material that combines mechanical and thermal properties of the PC and the flexibility of ABS.	✓		Rigid	Black
	NYLON 12	Nylon 12 has an elongation at break greater than 100-300%. It has high impact resistance and excellent chemical resistance.	✓		Rigid	Black
	NYLON 6	Nylon 6 combines strength and toughness superior to other FDM Thermoplastics, for applications that require strong, customized parts and tooling that lasts longer and withstands rigorous functional testing.	✓		Rigid	Black
	NYLON 12CF	FDM Nylon 12CF™ is a carbon-filled thermoplastic with excellent structural characteristics. The material is comprised of a blend of Nylon 12 resin and chopped carbon fiber, at a loading of 35% by weight.	✓		Rigid	Black
	PPSF	Polyphenylsulfone. Material highly resistant to heat, it can be used in autoclave and it can be sterilized with various methods.	✓		Rigid	Tan
	ULTEM® 9085	Thermoplastic resin with high mechanical and thermal properties. Ideal for parts subject to high stress. Flame retardant.	✓		Rigid	Tan, Black
	ULTEM® 1010	Offering excellent strength and thermal stability with food contact and bio-compatibility certifications; it's ideal for food production tools, custom medical devices, aerospace and automotive applications.	✓		Rigid	Tan
	Antero 800NA	Antero™ 800NA is a PEKK-based FDM® thermoplastic. It combines FDM's design freedom and ease of use with the excellent mechanical properties and low outgassing characteristics of the PEKK material.	✓		Rigid	Tan
	HP	HP 3D PA 12	The HP 3D PA 12 material is a highly optimized 3D thermoplastic for high reusability. It allows you to get high-precision models with dimensional tolerances.	✓	✓	Rigid
PA12 FDA (Food Grade)		The characteristics of PA12 FDA are: high resistance to fats, oils, water, saline solutions and solvents. It is a material suitable for the production of objects that need to come into contact with food (after certification of the process).	✓	✓	Rigid	Black
HP 3D PA11		PA11 is a thermoplastic material which offers optimal mechanical properties and provides excellent corrosion resistance. Its ductility makes it suitable for the production of components with snap insertions.	✓	✓	Rigid	Gray
HP 3D PA12 Glass Beads		PA12 Glass Beads material is 40% glass filled and is ideal for applications requiring high stiffness like enclosures, housing and tooling.	✓	✓	Rigid	Black
POLYJET	Vero Family	Durable and strong, this family of Rigid Opaque photopolymers provides excellent detail visualization and is available in a variety of colors: gray, black, white and blue.		✓	Rigid	Gray, Black, White, Blue
	Vero Clear	Transparent photopolymer, ideal for simulating PMMA, PC models or transparent methacrylate.		✓	Rigid	Transparent, Opal
	ABS-Like 2	Pigmented photopolymer particularly suitable for functional models (excellent stability), not suitable for walls <0.8 mm.	✓		Rigid	Light Green
	Helios RGD 525 HT	Very rigid pigmented photopolymer, suitable for applications where thermal stability and extreme detail are required.	✓	✓	Rigid	Ivory
	Full Cure 720	Translucent photopolymer with high accuracy and excellent surface smoothness (certified for medical use).		✓	Rigid	Translucent Amber
	Tango Family	The family of Rubber-like materials offers a variety of elastomer characteristics including Shore scale A hardness, elongation at break, tear resistance and tensile strength.		✓	Elastic	Translucent Amber, Black, Light Gray
	Endur RGD 450	Endur RGD 450 is a tough and flexible photopolymer. It enables you to 3D print precision prototypes that look and behave like injection-molded polypropylene.		✓	Rigid	Ivory
SLA	Accura® 25	Flexible plastic to simulate and replace CNC machined white polypropylene articles.	✓		Semi-Rigid	White
	Somos® GP Plus 14122	Somos® GP Plus 14122 is a low-viscosity stereolithography resin with an opaque white appearance. This material mirrors production plastics like ABS and PBT and it is easily integrated in production cycles. Somos® GP Plus 14122 is a very versatile material.		✓	Rigid	White
	Accura® ClearVue™	High clarity plastic (transparent) for a multitude of applications.		✓	Rigid	Transparent
	Accura® Xtreme™	Ultra tough grey plastic to replace CNC-machined polypropylene and ABS articles.		✓	Rigid	Gray
	Somos® PerFORM	Somos® PerFORM produces strong, stiff, high temperature resistant composite parts that are ideal for tooling and wind tunnel testing applications.	✓		Rigid	White