



SELECTIVE LASER SINTERING POWDERS



ProMaker **P SERIES** compatible powders **2019**

A WIDE RANGE OF POSSIBILITIES

Our thermally-stable selective laser sintering technology is designed to work with premium powders allowing for access to new applications with great promise for your industry and with impressive performance with regards to mechanical, physical and aesthetic properties.

INNOVATION AND EXPERTISE

Prodways has a team of experts with the knowledge and experience to push materials technology into new territory. In addition, strong partnerships with established materials developers has allowed Prodways to be even more effective at providing innovative solutions for rapid manufacturing applications.

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Laser sintering materials have been developed by Prodways and our partners to work in combination with ProMaker printers, offering an effective additive manufacturing solution for many applications, including functional prototyping and industrial needs.

	TPU-70 A ⁽¹⁾	PP 1200 ⁽¹⁾	PA12-L 1600 ⁽¹⁾⁽³⁾	PA12-S 1550 ⁽¹⁾	PA12-GFX 2550 ⁽¹⁾
Specification	<ul style="list-style-type: none"> Elastomeric material with 70 shore A Elongation at break > 300% No need for infiltration Possibility to adjust shore based on energy input High resolution 	<ul style="list-style-type: none"> Bringing the Polypropylene mechanical characteristics to the SLS® market, allowing the development of new applications Easy to process and with a 30% Refresh rate 	<ul style="list-style-type: none"> General purpose material with excellent mechanical properties and high elongation at break Low water absorption and easy to process Good recyclability 	<ul style="list-style-type: none"> Fine granulometry for excellent outline and surface quality Low porosity, UV stable High recyclability for lower operating costs 	<ul style="list-style-type: none"> Glass beads & aluminium filled nylon for reinforced strength Excellent behavior in temperature and good chemical resistance Similar to PP20% injected parts Low and homogeneous shrinkage High recyclability for lower operating costs
Typical Application Examples	Prototypes and final parts for elastic structures, hoses, grips, bellows, bumpers, gaskets and seals, tubes, toys and modeling for Footwear, Automotive, Aerospace and Luxury	Parts that need ductility, Living hinges, Low friction elements, Chemical resistant needs, Low density parts (lighter)	Wide range of prototyping and rapid manufacturing applications	Prototyping and small series for a wide range of applications including Formula 1, Automotive, Medical, Aerospace, Military, Luxury industry	Mechanical parts in engine resisting temperature, parts for pumps, complex end-use parts with improved strength properties for a wide range of applications.
Appearance or grades	White Glow in the dark Green/Blue	White/translucent	White	Natural + mass coloring Black/Blue/Red/Grey	Grey
Average particle size	62 µm	70 µm	N.A	42 µm	46 µm
Bulk Density	1.2 g/cm ³	0.33 g/cm ³	0.48 g/cm ³	0.50 g/cm ³	1.05 g/cm ³
Density of parts	1.12 g/cm ³	0.89 g/cm ³	0.95 g/cm ³	0.98 g/cm ³	1.35 g/cm ³
Moisture absorption	N.A	N.A	N.A	0.50% (ASTM D570)	0.33% (ASTM D570)
Melting Point	105 °C to 122°C	136°C	183°C	181°C - 183 °C	181°C - 183 °C
Heat Deflection 1.8 MPa	N.A	53°C	83.5°C	86°C	116°C
Tensile Strength	7 MPa	28 MPa	46 MPa	44 MPa	30 MPa
Tensile Modulus	65 MPa	1250 MPa	1602 MPa	1550 MPa	2550 MPa
Elongation @ break	350%	25%	36%	15%	8%
Flexural Strength	21%	/	46.3 MPa	N.A	N.A
Flexural Modulus	N.A	1150 MPa	1300 MPa	1350 MPa	2275 MPa
Impact Strength (unnotched Izod)	No break	25 KJ/m ²	13.2 KJ/m ²	68 KJ/m ²	80 KJ/m ²
Shore Test	70 Shore A	72 Shore D	N.A	68 Shore D	77 Shore D
Resistivity domain	Insulator	/	Insulator	Insulator	Antistatic
Upper facing processed & blasting, Surface Ra	N.A	/	N.A	7 µm	8 µm
Upper facing after Finishing, Surface Ra	N.A	/	N.A	7 µm	1 µm
Testing standard / Certification	ISO	ISO	GB/T	ISO	ISO
By	Prodways Materials	Prodways Materials	Prodways Materials by Farsoon	Prodways Materials	Prodways Materials

	PA11-SX 1350 ⁽¹⁾	PA11-SX 1450 ⁽¹⁾	PA11-GF 3450 ⁽¹⁾	STARK 3200 ⁽¹⁾	Ultrasint PA6 line
Specification	<ul style="list-style-type: none"> Fine granulometry Ductility, elongation and impact resistance Resistance in extreme low and high temperatures Possible use in continuous-shifting regenerating cycles 	<ul style="list-style-type: none"> Medical grade USP Class VI ** Fine granulometry Ductility, elongation and shock resistance Refresh rate at 50% for medical applications, limited to 8-10 cycles 	<ul style="list-style-type: none"> Fine granulometry Similar to injected PA6-MD30 or PP-GB Resistance in extreme temperat. Low shrinkage, ideal for big parts Refresh rates at 50% (limited to 8-10 cycles) for lower operating costs 	<ul style="list-style-type: none"> High performance isotropic properties Not sensible to moisture Smooth surfaces Highly resistant to compression Lightweight material 	<ul style="list-style-type: none"> Excellent thermal distortion stability High tensile modulus and strength Friction and torque resistance High burst resistance Precise feature control Processing at 220°C on Prodways high temperature printers
Typical Application Examples	Mechanical parts in engine, fuel or oil tanks, complex end-use parts with snap fit and living hinges for a wide range of applications from Aerospace to Automotive industry	End-use parts for Medical and Dental industry: orthotics, prosthetics, surgical tools, drill guides, etc...	Mechanical parts in the engine compartment, complex end-use parts for a wide range of applications from Automotive, Aerospace to Military industries	<ul style="list-style-type: none"> Functional parts resistant to friction and wear under severe conditions (moisture, sliding on metal or ceramic parts). Sealing under pressure and temperature: ducts, pipes, turbines, fittings The final parts are easily machinable Assembly by bonding possible 	High performance functional parts parts requiring accuracy, strength and thermal distortion stability in automotive or industrial sector: motor components, air intake systems, etc. Standard, mineral in-particle filled and fire retardant (UL94 V-2 @0.8mm) grades
Appearance or grades	Matte black	Natural + mass coloring Black/Blue/Red/Grey	Light grey	Black	PA6 / PA6 MF / PA6 FR (natural & black / black / black)
Average particle size	50 µm	50 µm	55 µm	55 µm	65-75 µm
Bulk Density	0.55 g/cm ³	0.55 g/cm ³	0.95 g/cm ³	0.6 g/cm ³	0.52 / 0.60 / 0.55 g/cm ³
Density of parts	1.02 g/cm ³	1.02 g/cm ³	1.40 g/cm ³	1.28g/cm ³	1.15 / 1.44 / 1.30 g/cm ³
Moisture absorption	1.12% (ASTM D570)	1.12% (ASTM D570)	0.85% (ASTM D570)	0.25% (ISO 1110)	-
Melting Point	199 °C	200 °C	200 °C	> 199 °C	> 218 °C
Heat Deflection 1.8 MPa	46°C (ASTM D648)	47°C (ASTM D648)	133°C (ASTM D648)	> 75 °C	103 / 121 / 113 °C
Tensile Strength	45 MPa	45 MPa	33 MPa	> 35 MPa	66 / 91 / 56 MPa
Tensile Modulus	1350 MPa	1450 MPa	3450 MPa	> 3200 MPa	3700 / 6250 / 4750 MPa
Elongation @ break (XY)	45%	45%	12%	> 1.2%	2 / 2.1 / 1.4 %
Elongation @ break (Z)	21%	21%	9%	> 1.2%	1.6 / 0.9 / 0.8 %
Flexural Strength	N.A	N.A	N.A	N.A.	-
Flexural Modulus	1250 MPa	1300 MPa	2300 MPa	> 3000 MPa	3350 / 6000 / 4400 MPa
Impact Strength (unnotched Izod)	No break	No break	N.A	> 14 KJ/m ²	7.5 / 13.2 / 4.8 kJ/m ²
Shore Test	75 Shore D	74 Shore D	N.A	N.A.	N.A
Resistivity domain	Insulator	Insulator	Antistatic	N.A.	N.A
Upper facing processed & blasting, Surface Ra	9 µm	10 µm	11 µm	N.A.	N.A
Upper facing after Finishing, Surface Ra	7 µm	8 µm	8 µm	N.A.	N.A
Testing standard / Certification	ISO	ISO / USP Class VI certification ⁽²⁾	ISO	N.A.	ISO
By	Prodways Materials	Prodways Materials	Prodways Materials	Prodways Materials	Powered by BASF

⁽¹⁾ Performance characteristics of these materials may change according to product application, operating conditions, material combined or end use.

⁽²⁾ Under reference innovPA 1450 from ExcelTec

⁽³⁾ Polyamid composite simulating PA12 mechanical properties

Essential materials
Advanced materials

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