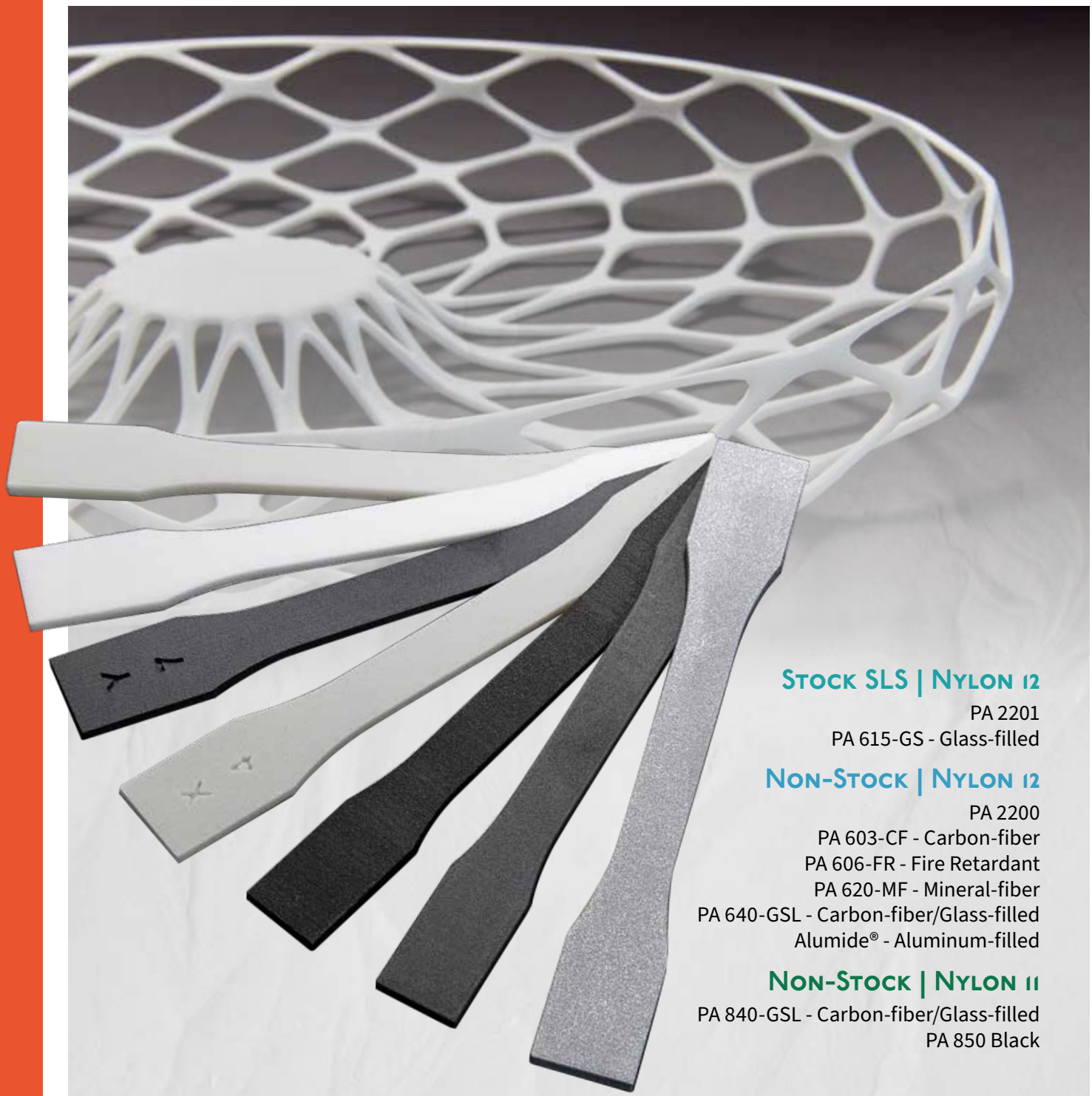
realize the unrealistic

NW RAPID MANUFACTURING

Selective Laser Sintering (SLS) Material Data Sheet



Stock SLS | Nylon 12

PA 2201
PA 615-GS - Glass-filled

Non-Stock | Nylon 12

PA 2200
PA 603-CF - Carbon-fiber
PA 606-FR - Fire Retardant
PA 620-MF - Mineral-fiber
PA 640-GSL - Carbon-fiber/Glass-filled
Alumide® - Aluminum-filled

Non-Stock | Nylon 11

PA 840-GSL - Carbon-fiber/Glass-filled
PA 850 Black

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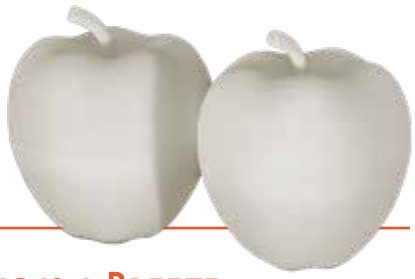
STOCK Nylon 12

Selective Laser Sintering Material Data Sheet



PA 2201: The Overachiever of 3D Printing

Looking for a material that does it all without throwing a tantrum? Meet **PA 2201**, a polyamide 12 powder that refuses to compromise. It strikes a perfect balance between strength and flexibility. When printed, your parts will have a clean, whitish look with a hint of translucency—perfect for when you want your prototypes to look as sharp as your ideas.

Medical-Grade Muscle

Don't let the sleek look fool you. This material shares the same legendary DNA as PA 2200, meaning it packs serious strength, rigidity, and chemical resistance. In fact, it is tough enough to earn a stamp of approval for medical applications.

Just a heads-up: it develops a slight patina over time when exposed to air. Think of it like a fine leather jacket or a George Clooney hairstyle—it adds character, but the underlying performance never changes.

Post-Processing is a Breeze

Some 3D printing materials act like divas when you try to modify them after printing. Not this one. **PA 2201** is basically a mechanic's best friend. You can tumble, dye, paint, or glue it. Need to make an adjustment? Go ahead and drill, tap, or machine it. It handles post-processing like a champ, making your post-print workflow incredibly smooth.

Where It Shines Best

This isn't a one-trick pony. It is a true multipurpose workhorse built for demanding environments.

- **Medical Marvels:** Ideal for surgery cutting guides and precise bone models.
- **Functional Prototypes:** Tough enough for moving parts, living hinges, and threaded connections.

MECHANICAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
TENSILE MODULUS X/Y Orientation	1700 / -	MPa	ISO 527-1/-2
TENSILE STRENGTH X/Y Orientation	48 / -	MPa	ISO 527-1/-2
NOMINAL STRAIN AT BREAK X Orientation	15 / -	%	ISO 527-1/-2
FLEXURAL MODULUS X Orientation	1500 / -	MPa	ISO 178
FLEXURAL STRENGTH X Orientation	58 / -	MPa	ISO 178
CHARPY IMPACT STRENGTH (+23°C) X Orientation	53 / -	kJ/m^2	ISO 179/1eU
CHARPY IMPACT STRENGTH (+23°C) - NOTCHED X Orientation	4.4 / -	—	ISO 179/1eA
IZOD IMPACT STRENGTH (+23°C) X Orientation	33 / -	kJ/m^2	ISO 180/1U
IZOD IMPACT STRENGTH (+23°C) - NOTCHED X Orientation	4.4 / -	kJ/m^2	ISO 180/1A
SHORE D HARDNESS X Orientation	75 / -	—	ISO 7619-1
BALL INDENTATION HARDNESS X Orientation	78 / -	MPa	ISO 2039-1

THERMAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
MELTING TEMPERATURE	176	°C	ISO 11357-1/-3
VICAT SOFTENING TEMPERATURE X Orientation	163	°C	ISO 306/B50

OTHER PROPERTIES	VALUE	UNIT	TEST STANDARD
DENSITY	0.93	g/cm^3	EOS Method
POWDER COLOR	Natural	—	—
COMPONENTS COLOR	Natural	—	—

Safety Data Sheet

The material properties provided herein are for reference purposes only. Actual values may vary significantly as they are dramatically affected by part geometry and process parameters. Material specifications are subject to change without notice. Full disclosure on page 11 of the NW Rapid Manufacturing SLS Materials Data Sheet.

STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 615-GS: Your Next Manufacturing Powerhouse

Think of **PA 615-GS** as the overachiever of the Nylon 12 world. This rugged Nylon 12 base is packed it with **50% glass spheres**.

Why? Because you deserve a material that works as hard as you do.

Even better, it is a **seamless drop-in replacement** for your current glass-sphere-filled Nylon 12. No drama. No complicated setup. Just swap it out and keep creating.

Precision You Can Actually See

Nobody likes a rough finish. That is why this powder has tightly controlled glass particles sizes.

By keeping the spheres perfectly uniform, this material delivers an **incredibly smooth surface finish** and sharper details. Your complex geometries will look less like a rough prototype and more like a refined, shelf-ready product.

Toughness Under Pressure

If your parts need to survive heat waves and heavy stress, this is your solution.

The glass spheres inside PA 615-GS do not just look good—they provide **excellent stiffness** and stellar dimensional stability. Your parts will hold their exact shape, even in high-temperature environments where lesser materials start to warp and complain.

Built for Real-World Demands

Where does PA 615-GS shine brightest? Put it to work in environments that demand absolute reliability.

- **Automotive Engine Components:** Built to withstand the heat and vibration under the hood.
- **Molds and Tooling:** Sturdy enough to handle repetitive, high-pressure manufacturing cycles.
- **Rugged Applications:** Ideal for complex, high-wear parts that simply cannot afford to fail.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation	857,172 psi	5,910 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation	5,500 psi	38 MPa	ASTM D638
ELONGATION AT BREAK X/Y Orientation	2%	2%	ASTM D638
FLEXURAL MODULUS X/Y Orientation	478,624 psi	3,300 MPa	ASTM D790
IZOD IMPACT STRENGTH — NOTCHED X/Y Orientation	1.8 ft-lb/in	96 J/m	ASTM D256
IZOD IMPACT STRENGTH — UNNOTCHED X/Y Orientation	2.3 ft-lb/in	120 J/m	ASTM D256

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	273°F at 264 psi	134°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	354°F at 66 psi	179°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Light Gray	Light Gray	Visual
BULK DENSITY	0.387 oz/in^3	0.67 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	55 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.004 inches	35-100 microns	Laser Diffraction
SINTERED PART DENSITY	0.861 oz/in^3	1.49 g/cm^3	ASTM D792
DIELECTRIC CONSTANT	3.7	3.7	ASTM D150
CHEMICAL RESISTANCE	—	—	Alkalines, hydrocarbons, fuels, solvents

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 2200: Your All-Rounder Manufacturing Ally

Think of **PA 2200** as the ultimate multi-tool for your production needs. Optimized at a 120µm layer thickness, this material strikes a perfect balance between production costs, raw strength, and a clean surface finish.

No matter how complex your geometries or changing your dimensions, this material adapts without breaking a sweat.

Built to Last (And Safe for Living)

What do you get with PA 2200? Durable, bright white parts that don't just look good—they perform.

- **The Breakdown:** It delivers excellent rigidity, high strength, and serious chemical resistance.
- **The Certification:** It is USP Class VI certified for bio-compatibility. Yes, it's safe enough to pass strict medical-grade standards.

It is economical, rugged, and built for the long haul.

From Concept to Final Polish

Need to tweak your parts after they print? Go ahead. This material loves secondary operations. You can tumble, dye, paint, glue, drill, tap, or machine it exactly how you need.

The Go-To Choice for Every Stage

Because it is cost-efficient and incredibly versatile, PA 2200 is a staple across multiple industries. Use it to build functional prototypes that mimic real-world performance, or scale up to fully qualified series production parts.

Quick Specs

This isn't a one-trick pony. It is a true multipurpose workhorse built for demanding environments.

- **Color:** Bright White (enhanced with a Titanium Dioxide whitener).
- **Finish:** Highly workable and ready for post-processing.

MECHANICAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
TENSILE MODULUS X/Y/Z Orientation	1650 / -	MPa	ISO 527-1/-2
TENSILE STRENGTH X/Y Orientation Z Orientation	48 / - 42 / -	MPa MPa	ISO 527-1/-2
STRAIN AT BREAK X/Y Orientation Z Orientation	18 / - 4 / -	% %	ISO 527-1/-2
FLEXURAL MODULUS X Orientation	1500 / -	MPa	ISO 178
CHARPY IMPACT STRENGTH (+23°C) X Orientation	53 / -	kJ/m^2	ISO 179/1eU
CHARPY IMPACT STRENGTH (-30°C) - NOTCHED X Orientation	4.8 / -	kJ/m^2	ISO 179/1eA
IZOD IMPACT STRENGTH (+23°C) - NOTCHED X Orientation	4.4 / -	kJ/m^2	ISO 180/1A
SHORE D HARDNESS X Orientation	75 / -	—	ISO 7619-1

ELECTRICAL PROPERTIES	VALUE	UNIT	TEST STANDARD
COMPARATIVE TRACKING INDEX CTI X/Y/Z Orientation	≥600 / -	—	IEC 60112

THERMAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
MELTING TEMPERATURE	176	°C	ISO 11357-1/-3
TEMPERATURE OF DEFLECTION UNDER LOAD 1. X Orientation Z Orientation	64 57	°C °C	ISO 75-1/-2
TEMPERATURE OF DEFLECTION UNDER LOAD 0. X Orientation Z Orientation	157 145	°C °C	ISO 75-1/-2
VICAT SOFTENING TEMPERATURE X Orientation	176	°C	ISO 306/B50
BURNING BEHAVIOR THICKNESS TESTED	HB, Test Passed 0.5	Class mm	UL 94
BURNING BEHAVIOR THICKNESS TESTED	HB, Test Passed 1.6	Class mm	UL 94
BURNING BEHAVIOR THICKNESS TESTED	HB, Test Passed 3.2	Class mm	UL 94

OTHER PROPERTIES	VALUE	UNIT	TEST STANDARD
DENSITY	0.93	g/cm^3	EOS Method
POWDER COLOR	White	—	—
COMPONENTS COLOR	White	—	—

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 603-CF: Brute Force Meets Fine Detail

Let's be honest: usually, when you pack a material full of carbon-fiber, it comes out looking like it survived a rough night in a rock tumbler. Not this one. **PA 603-CF (Nylon 12)** is the rare overachiever that gives you incredible strength without sacrificing the fine details.

It handles easily during production, stays exactly the size it's supposed to, and doesn't warp when things get hot. Think of it as the reliable powerhouse your workshop has been missing.

Upgrade Your Output: Here's What You'll Achieve

We know you just want results. Here is how this material makes your job easier:

- **Flawless Aesthetics:** Achieve smooth, premium dark gray surfaces with sharp, clean lines every time.
- **Unmatched Reliability:** Structural stiffness and mechanical strength you can lean on for your toughest jobs.
- **Perfect Thermal Stability:** Save time and material with a formula that resists warping in high temperatures.

Where to Put It to Work

If you are building things that need to survive real-world stress, this is your go-to material. It is ideal for:

- **High-Speed Action:** Perfect for high-performance impact sports equipment and racing gear.
- **Industrial Muscle:** Built for demanding industrial parts that face heat up to 177°C.
- **Aerodynamic Testing:** Reliable enough for precise wind tunnel model testing.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation	1,145,797 psi	7,900 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation	12,328 psi	85 MPa	ASTM D638
ELONGATION AT BREAK X/Y Orientation	4%	4%	ASTM D638
FLEXURAL MODULUS X/Y Orientation	1,329,995 psi	9,170 MPa	ASTM D790
IZOD IMPACT STRENGTH — NOTCHED X/Y Orientation	1.58 ft-lb/in	84 J/m	ASTM D256
IZOD IMPACT STRENGTH — UNNOTCHED X/Y Orientation	3.03 ft-lb/in	161 J/m	ASTM D256

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	343°F at 264 psi	173°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	354°F at 66 psi	179°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Dark Gray	Dark Gray	Visual
BULK DENSITY	0.237 oz/in^3	0.41 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	50 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.004 inches	35-100 microns	Laser Diffraction
SINTERED PART DENSITY	0.634 oz/in^3	1.10 g/cm^3	ASTM D792

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 606-FR: The Ultimate Flame-Retardant Heavyweight

Let's face it: finding a material that survives both intense heat and strict regulation is a nightmare. Enter **PA 606-FR (Nylon 12)**. This isn't just another 3D printing plastic. It is the only commercially available Nylon 12 on the market that passes the grueling FAR 25.853 60-second burn specifications. When the heat is literally on, this material keeps its cool.

High-Flyer Performance (Without the Drama)

You don't have to sacrifice strength just to get fire safety. PA 606-FR matches the tough mechanical properties of standard Nylon 12, but adds a built-in fire extinguisher mentality. It is the go-to choice for aircraft interiors, automotive components, and commercial transit systems where safety certification isn't optional—it's the law.

Precision Engineering That Actually Looks Good

Nobody wants ugly prototypes or rough production parts. Fortunately, this material delivers a remarkably smooth surface finish and incredibly sharp feature details. Your parts will print accurately and repeatedly, every single time. It is also a stellar choice for laboratory ventilation and air handling systems where precision and safety must coexist.

Where It Thrives

Think of this as your utility player for high-stakes engineering. It excels in:

- **Aerospace and automotive ducting** that must handle airflow and strict safety codes.
- **Snap-fit assemblies** and complex, multi-sectional bonded components.
- **Functional prototypes** that need to endure real-world stress tests, not just sit on a shelf.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation	247,000 psi	1,700 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation	6,962 psi	48 MPa	ASTM D638
ELONGATION AT BREAK X/Y Orientation	24%	24%	ASTM D638
FLEXURAL MODULUS X/Y Orientation	217,000 psi	1,500 MPa	ASTM D790
IZOD IMPACT STRENGTH — NOTCHED X/Y Orientation	0.6 ft-lb/in	32 J/m	ASTM D256
IZOD IMPACT STRENGTH — UNNOTCHED X/Y Orientation	6.3 ft-lb/in	336 J/m	ASTM D256
FLAMMABILITY 60 SECOND BURN	PASS	PASS	FAR 25.853
SHORE D HARDNESS	73	73	Pass

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	203°F at 264 psi	95°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	356°F at 66 psi	180°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Dark Gray	Dark Gray	Visual
BULK DENSITY	0.266 oz/in^3	0.46 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	55 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.004 inches	30-100 microns	Laser Diffraction
SINTERED PART DENSITY	0.590 oz/in^3	1.02 g/cm^3	ASTM D792

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 620-MF: The Strong, Silent Type

Looking for a material that works hard without making your life complicated? **PA 620-MF** is a 25% mineral-filled Nylon 12 engineered to be a seamless, drop-in replacement for standard fiber-filled options. It gives you the structural integrity you need, minus the manufacturing headaches.

Why You'll Love It

This material is a true workhorse that won't weigh you down. It delivers robust, long-lasting parts that are significantly lighter than traditional glass-filled options, holding its shape beautifully under pressure without the brittleness of carbon-fiber. Consider it the ultimate sweet spot: you get far greater mechanical stability than standard unfilled materials, reliable thermal resistance for hot environments, and a crisp, high-detail surface finish straight out of the machine.

Where to Use It

Think of this as your go-to rugged performer. It is ideal for **housings and enclosures** that need to protect internal components, **rapid tooling** when you need tough molds fast, and high-stakes parts for **aerospace and motor-sports**.

The Quick Specs

- **Material Base:** Nylon 12
- **Composition:** 25% Mineral-Filled
- **Color:** Off-white
- **Behavior:** Directional (Anisotropic) mechanical properties

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation Z Orientation	 831,000 psi 434,000 psi	 5,725 MPa 3,000 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation Z Orientation	 7,350 psi 4,900 psi	 51 MPa 34 MPa	ASTM D638
ELONGATION AT BREAK X/Y Orientation Z Orientation	 5% 3%	 5% 3%	ASTM D638
FLEXURAL MODULUS X/Y Orientation Z Orientation	 660,000 psi 381,000 psi	 4,550 MPa 2,825 MPa	ASTM D790

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	355°F at 264 psi	179°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	363°F at 66 psi	184°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	White	White	Visual
BULK DENSITY	0.266 oz/in^3	0.46 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	55 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.004 inches	30-100 microns	Laser Diffraction
SINTERED PART DENSITY	0.694 oz/in^3	1.20 g/cm^3	ASTM D792

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

PA 640-GSL: Your New Secret Weapon

Let's be honest: in manufacturing, you usually have to choose between a part being lightweight or being incredibly stiff. **PA 640-GSL** is here to end that compromise. By infusing premium Nylon 12 with hollow glass spheres, this is a material that delivers incredible stability and stiffness without weighing your project down. Even better? It's highly recyclable, keeping both your conscience and your budget clear.

The Tech (Without the Boring Jargon)

A great material and made better. Here is what's happening under the hood:

- **Featherlight Durability:** Hollow glass beads add serious toughness while slashing total weight.
- **Rock-Solid Stability:** Built-in carbon-fiber ensures your parts hold their exact shape under pressure.
- **Stunning Aesthetics:** Yields a high-detail, sleek dark gray surface finish straight out of the machine.
- **Less Waste:** Uses roughly 10% less material per build compared to similar Nylon 12s.

Where It Shines

This material was born ready for demanding, high-stakes industries. If you are building for the following sectors, PA 640-GSL is your perfect match:

- **Aerospace & UAVs**
  Engineered specifically to meet the strict demands of the drone and aviation industry. You get the strength you need without wasting a single gram.
- **Motor-sports & Racing**
  When milliseconds matter, weight matters. Use this to shave off precious ounces on the track while maintaining structural integrity.
- **High-End Athletic Equipment**
  Perfect for gear that needs to take a beating, perform flawlessly, and feel weightless to the athlete.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation Z Orientation	 554,000 psi 282,000 psi	 3,816 MPa 1,945 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation Z Orientation	 7,170 psi 4,835 psi	 49 MPa 33 MPa	ASTM D638
ELONGATION AT BREAK X/Y/Z Orientation	 3%	 3%	ASTM D638
FLEXURAL MODULUS X/Y Orientation Z Orientation	 731,000 psi 626,000 psi	 5,040 MPa 4,313 MPa	ASTM D790

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	338°F at 264 psi	170°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	356°F at 66 psi	180°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Dark Gray	Dark Gray	Visual
BULK DENSITY	0.214 oz/in^3	0.37 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	55 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.004 inches	35-100 microns	Laser Diffraction
SINTERED PART DENSITY	0.474 oz/in^3	0.82 g/cm^3	ASTM D792

Safety Data Sheet

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NON-STOCK Nylon 12

Selective Laser Sintering Material Data Sheet

Alumide®: The Metal-Nylon Maverick

Alumide is a blend of Nylon 12 powder mixed with 50% aluminum dust. The result? A metallic silver finish that looks sharp and behaves beautifully on the workbench. It is the perfect choice when you need your prints to look like metal without the heavy lifting or the heavy price tag.

The Good Stuff: Why You'll Love It

Alumide is not just a pretty face. It brings some serious muscle to your projects.

- **Rock-Solid Stiffness:** This blend is rigid, making it excellent for parts that need to hold their shape under pressure.
- **Spot-on Precision:** What you design is what you get. It keeps its shape and dimensions perfectly.
- **A Machinist's Dream:** Thanks to that aluminum blend, this material chips cleanly during post-processing. You can grind, mill, and polish it with ease.

Speaking of polishing, a quick secondary buffing gives Alumide a stunning, realistic metallic sheen that will make people do a double-take.

The Catch: Where It Fails (Gracefully)

We believe in full disclosure, so let's talk about its limitations. Aluminum makes the material stiff, but it also makes it **brittle**.

If you are looking to build a heavy-duty structural bracket that takes a beating, look elsewhere. It also has limited thermal conductivity, but do not expect it to act like a pure metal heat sink.

⚠ **Important:** Keep Alumide out of the kitchen. This material is **not food-safe**. Do not use it for anything that touches what you eat or drink.

Best Roles for Alumide

So, where does this material shine? It is a rock-star in a few specific areas:

- **Showstopper Prototypes:** Perfect for design models that need a premium, metallic look.
- **Shop Floor Helpers:** Great for custom manufacturing jigs and fixtures that need rigid precision.
- **Rapid Tooling:** Use it to create injection molds for small, low-volume production runs.

MECHANICAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
TENSILE MODULUS X/Y Orientation	3800 / -	MPa	ISO 527-1/-2
TENSILE STRENGTH X/Y Orientation	48 / -	MPa	ISO 527-1/-2
STRAIN AT BREAK X Orientation	4 / -	%	ISO 527-1/-2
FLEXURAL MODULUS X Orientation	3600 / -	MPa	ISO 178
FLEXURAL STRENGTH X Orientation	72 / -	MPa	ISO 178
CHARPY IMPACT STRENGTH (+23°C) X Orientation	29 / -	kJ/m²	ISO 179/1eU
CHARPY IMPACT STRENGTH (+23°C) - NOTCHED X Orientation	4.6 / -	kJ/m²	ISO 179/1eA
SHORE D HARDNESS X Orientation	76 / -	—	ISO 7619-1

OTHER PROPERTIES	VALUE	UNIT	TEST STANDARD
DENSITY	1.36	g/cm³	EOS Method
POWDER COLOR	Gray	—	—
COMPONENTS COLOR	Gray	—	—

THERMAL PROPERTIES	DRY / CONDITIONED	UNIT	TEST STANDARD
MELTING TEMPERATURE	176	°C	ISO 11357-1/-3
TEMPERATURE OF DEFLECTION UNDER LOAD 1. X Orientation	144	°C	ISO 75-1/-2
TEMPERATURE OF DEFLECTION UNDER LOAD 0. X Orientation	175	°C	ISO 75-1/-2
VICAT SOFTENING TEMPERATURE X Orientation	169	°C	ISO 306/B50

ELECTRICAL PROPERTIES	VALUE	UNIT	TEST STANDARD
VOLUME RESISTIVITY X Orientation	3E12 / -	Ohm·m	IEC 62631-3-1
SURFACE RESISTIVITY X Orientation	5E14 / -	Ohm	IEC 62631-3-2
RELATIVE PERMITTIVITY 100 Hz X Orientation	13 / -	—	IEC 62631-2-1
RELATIVE PERMITTIVITY 1 MHz X Orientation	10 / -	—	IEC 62631-2-1
DISSIPATION FACTOR 1MHz X Orientation	180 / -	E-4	IEC 62631-2-1
ELECTRICAL STRENGTH X Orientation	0.1 / -	kV/mm	IEC 60243-1

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Safety Data Sheet

NON-STOCK Nylon 11

Selective Laser Sintering Material Data Sheet

PA 840-GSL: Peak Performance Shouldn't Weight You Down

Think you can't have it all? Think again. The **PA 840-GSL** Nylon 11 is engineered for jaw-dropping part definition and a flawless surface finish. Even better, it's chemically stabilized to resist heat damage.

Why This Material Spells Trouble for Your Competitors

Every ingredient in this blend serves a serious purpose:

- **Carbon Infused:** Delivers incredible dimensional stability and builds in built-in electrical conductivity.
- **Hollow Glass Beads:** Boosts toughness way past standard, unfilled Nylon 11 options.
- **Featherlight Build:** It is ridiculously light compared to standard alternative materials.
- **Extra Flex:** You get the trusted elasticity of a premium Nylon 11 base.

The Heavyweight Champion (Without the Weight)

This powerhouse material was originally developed specifically for the high-stakes UAV industry, but it refuses to stay in one lane. It is the perfect fit for:

- **Aerospace & Drone Components:** High-flying performance requires zero compromises.
- **Motor-sports & Racing:** Because second place isn't an option.
- **Extra Flex:** Built to survive whatever mother nature throws its way.

If your project demands an impossible balance of high strength, low weight, and serious flexibility without warping or looking rough around the edges, you just found your match.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation Z Orientation	 490,000 psi 310,000 psi	 3,378 MPa 2,137 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation Z Orientation	 7,000 psi 5,400 psi	 48 MPa 37 MPa	ASTM D638
ELONGATION AT BREAK X/Y/Z Orientation	 4%	 4%	ASTM D638

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Black	Black	Visual
BULK DENSITY	0.243 oz/in^3	0.42 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	50 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.003 inches	38-78 microns	Laser Diffraction
SINTERED PART DENSITY	0.503 oz/in^3	0.87 g/cm^3	ASTM D792

Safety Data Sheet

The material properties provided herein are for reference purposes only. Actual values may vary significantly as they are dramatically affected by part geometry and process parameters. Material specifications are subject to change without notice. Full disclosure on page 11 of the NW Rapid Manufacturing SLS Materials Data Sheet.

NON-STOCK Nylon 11

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PA 850 Black: The Material That Doesn't Know How to Quit.

Think of this as your go-to material when failure isn't an option. Premium Nylon 11 and melt-mixed it into a sleek black formula designed to flow perfectly in our machines. Thanks to a tightly controlled particle size, your parts will come out with razor-sharp details and a smooth surface finish right off the bed—no complex tricks required.

Built to Take a Beating

This material doesn't care about the weather forecast. It thrives in extreme heat and refuses to crack under pressure in freezing sub-zero temperatures. If your project demands high tensile strength and serious flexibility before it even thinks about breaking, you just found your match. Plus, it features a remarkably low coefficient of friction. Just a quick heads-up, though: it is definitely **not** bio-compatible, so let's keep it out of medical implants.

Print Smarter, Not Harder

Time is money, and we respect both. It processes beautifully, consistently reaching its peak mechanical properties, meaning fewer failed builds, less wasted powder, and more high-performance parts in your hands faster.

Where It Shines

If it needs to survive real-world chaos, use this. It is the ideal choice for:

- **Athletic Gear:** Think rugged, flexible cleated footwear.
- **Automotive Projects:** Tough housings, secure enclosures, and durable connectors.
- **Functional Prototypes:** Perfect for parts facing rigorous, aggressive stress testing.

MECHANICAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
TENSILE MODULUS X/Y Orientation Z Orientation	 213,931 psi 206,969 psi	 1,475 MPa 1,427 MPa	ASTM D638
ULTIMATE TENSILE STRENGTH X/Y Orientation Z Orientation	 6,961 psi 6,092 psi	 48 MPa 42 MPa	ASTM D638
ELONGATION AT BREAK X/Y Orientation	 51%	 51%	ASTM D638
FLEXURAL MODULUS	190,000 psi	1,310 MPa	ASTM D790
IZOD IMPACT STRENGTH -NOTCHED	1.4 ft-lb/in	74 J/m	ASTM D256
HARDNESS (SHORE D)	74	74	ASTM D2240

THERMAL PROPERTIES	IMPERIAL	METRIC	TEST METHOD
HEAT DEFLECTION TEMPERATURE	118°F at 264 psi	48°C at 1.82 MPa	ASTM D648
HEAT DEFLECTION TEMPERATURE	370°F at 66 psi	188°C at 0.45 MPa	ASTM D648

OTHER PROPERTIES	IMPERIAL	METRIC	TEST METHOD
COLOR/APPEARANCE	Black	Black	Visual
BULK DENSITY	0.289 oz/in^3	0.50 g/cm^3	ASTM D1895
AVERAGE PARTICLE SIZE (D50)	0.002 inches	50 microns	Laser Diffraction
PARTICLE SIZE RANGE (D10-D90)	0.001-0.003 inches	38-78 microns	Laser Diffraction
SINTERED PART DENSITY	0.595 oz/in^3	1.03 g/cm^3	ASTM D792

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NORTHWEST RAPID MANUFACTURING

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Post Processing and Finishing | Design and Engineering Services
Design Consultation for Additive Mfg.

SLS PRINTERS – PRINTER CHAMBER SIZE AND THICKNESS

P730 / P760: 700 x 380 x 580 mm (27.5" x 14.9" x 22.8") – **P730:** 0.12 mm / **P760:** 0.06-0.10-0.12-0.15-0.18 mm
P390: 340 x 340 x 620 mm (13.3" x 13.3" x 24.4") – 0.1-0.15 mm

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