

JABIL



**JABIL
ENGINEERED
MATERIALS**

Custom additive materials with unique properties
created at unprecedented speeds.

JABIL ENGINEERED MATERIALS

Jabil Additive has created Jabil Engineered Materials to provide customers with a complete end-to-end solution for additive manufacturing. Jabil Engineered Materials fills a gap in the additive manufactured materials market by developing custom additive materials with unique properties that are created at unprecedented speeds. The materials are qualified and certified in an ISO certified facility to meet requirements of high regulated industries.

Additive manufacturing is transforming how things are made at an ever-increasing pace with year-over-year growth rates of more than 20 percent. Amid growing adoption, however, lingering challenges present obstacles when it comes to producing highly functional parts for unique customer applications.



JABIL EXPERTISE

- Over 20+ years of material science experience
- The world's largest US based manufacturer - top 3 worldwide
- Custom materials with unique characteristics

WHY CHOOSE JABIL ENGINEERED MATERIALS?



ISO 9001
Certified Materials



Complete
End-to-End Solution

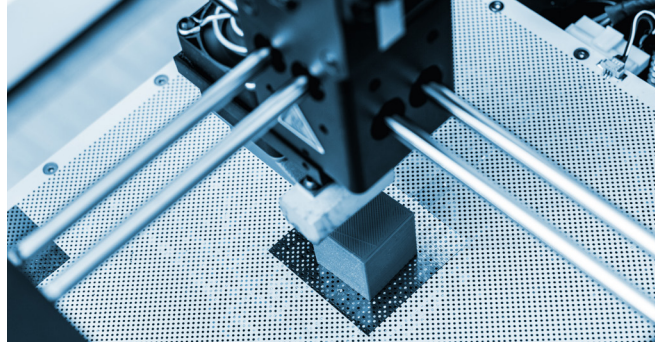


Quick
Turnaround Time



Materials for
Multiple Printers

Made in the USA at our Materials Innovation Center



JABIL ENGINEERED MATERIALS

Jabil understands the outstanding potential of Additive Manufacturing, and is committed to supporting further adoption of 3D printing to produce highly functional parts for diverse and unique customer applications. To help overcome these obstacles and increase adoption of additive manufacturing in production environments, Jabil is taking advantage of its rich history in materials science innovation to advance the entire additive manufacturing market with the introduction of Jabil Engineered Materials.

Jabil has opened a Materials Innovation Center in Minnesota to deliver complete 3D printing solutions under one roof, encompassing polymer formulations, compound development and ISO 9001 Quality Management System (QMS) certification. Additive manufacturing engineers, chemists, materials scientists and production experts consult with customers, leverage Jabil's materials science innovations and oversee each step of making custom powders and filaments. Further, by leveraging its Materials, Processes and Machines (MPM) solution, Jabil will ensure that manufacturing rigor is applied to each specialized material that's custom-developed across its 200-printer Additive Manufacturing Network across the globe.

The rapid iteration and certified production of these engineered materials will provide customers with a faster path from prototyping to production than previously available. Value-added attributes include reinforced, flame retardant, conductive, lubricated, Electrostatic Dissipative (ESD) and other engineered characteristics. And, the new materials are coupled with a full range of services, including compounding, extrusion and powder creation as well as complete system integration on standard, open-source platforms supported by Fused Filament Fabrication (FFF), Selective Laser Sintering (SLS) and High-Speed Sintering (HSS) equipment to enable a powerful breakthrough for Additive Manufacturing in production. Jabil Engineered Materials will be available to Jabil customers through distributor partners, including Chase Plastics and Channel Prime Alliance.

Filling the gap that is hindering mainstream adoption has been a Jabil goal since the inception of its Additive Manufacturing organization. The formation of Jabil Engineered Materials is a tremendous step in the right direction, and Jabil is leading the way.

Learn more at [Jabil.com/additive](https://www.jabil.com/additive)

“Our ability to integrate new engineered materials into our ecosystem of 3D printers and rigorous processes will transform a new generation of additive manufacturing applications, including those for heavily regulated industries, such as aerospace, automotive, industrial and healthcare. – We will be able to produce custom materials in weeks – not months.”

John Dulchinos, Vice President of Digital Manufacturing, Jabil

MATERIALS

Jabil can align materials to meet your requirements, and work with you to validate how they are applied for specific industries and applications. Every material—from filaments to powders whether it be polymer or metal—has a wide range of properties to meet your demands. Our material experts understand which materials will meet the product requirements as well as maintain industry certifications.

When it comes to additive manufactured materials, they perform best when they are made with applications in mind. Many of the polymers used in volume for injection molding were formulated to work well for that manufacturing process (for example: flow, mold release, shrinkage) and then for the more important mechanical properties such as tensile or impact strength. For additive, materials are formulated in a similar manner—process then function.

The capability of using more than one additive material in printing parts—creates a tremendous advantage over traditional manufacturing methods. It's especially helpful when designing prototype parts that will transition to full-scale production. Different colored and textured materials can be used to create products and enable companies to more rapidly define the assembly, viability, and even durability of their final products. And as the technology continues to mature and scale, the portfolio of materials will continue to grow, expanding to better match the functional needs of designers, engineers, regulators and ultimately end-users.



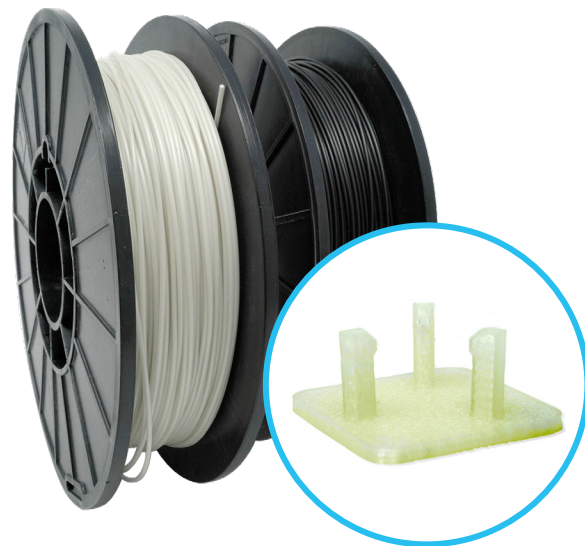
ABS 1400 LW

DESCRIPTION

Jabil's ABS 1400 LW is easy to print with balanced properties that consistently lay flat. It has minimal warping when printed with 100% infill in a non-heated chamber system. It also maintains good layer-to-layer adhesion from the bottom of the build to the top, with excellent surface appearance. The ABS 1400 LW is great for applications where the properties of ABS are wanted, but low warp is required.

Jabil's ABS 1400 LW is more durable and heat resistant to parts printed with PLA and can be used with Direct Drive or Bowden Tube 3D printers. The material also can stand up to several finishing processes such as vapor polish, sanding, dyeing, painting, and adding a gloss finish. The 1400 LW material is a great option for prototypes and parts that require the ability to stand up to a lot of wear and tear, particularly given its multiple finishing processes.

[Learn more](#)



ADVANTAGES

- Excellent bed adhesion
- Stiffer than most ABS filament
- Reduce CLTE
- Improved dimensional stability
- Consistent lot-to-lot print properties
- Good chemical resistance to most fluids

APPLICATIONS

- Brackets
- Housings
- Jig, Fixtures, and Tooling to aid in manufacturing



PC 1500 FR

DESCRIPTION

Jabil's PC 1500 FR is a flame-retardant, easy printing polycarbonate manufactured with FR UL V-0 material for durable parts. The material is perfect for parts that require strength, stiffness and impact resistance with flame retardancy. The PC 1500 FR testing performed in a qualified lab demonstrates V-0 burn properties on a printed part down to 1mm thickness when printed with the correct design and print parameters.*

Made from UL V-0 Yellow Card certified raw materials, Jabil's PC 1500 FR can be printed on Direct Drive and Bowden Tube 3D printers. This material, with its flame-retardant properties, is used in the aerospace and automotive industries.

[Learn more](#)

*Jabil is not responsible for UL certification of parts printed by any third-party. Finished part testing and certification is the responsibility of the user/fabricator.



ADVANTAGES

- Stiff with excellent impact strength and ductility
- Maintains impact resistance while having very good flame retardancy and self-extinguishing properties.

APPLICATIONS

- Housings (including battery housings)
- Welding fixtures
- Brackets
- Motor mounts
- Parts for aerospace or automotive applications



PETg

DESCRIPTION

Jabil Engineered Materials PETg is an easy processing, standard product for printing jobs requiring good strength and stiffness with a good balance of properties in XY and XYZ directions. PETg has good strength and stiffness with an operating temperature range of -40 °C to °80 C.

PETg filament is stronger than PLA and it's toughness and broad operating temperature range makes it a dependable material for a multitude of projects. In post-processing, the PETg can be sanded, cut, or drilled without compromising the integrity of the printed part. PETg is ISO 9001 certified material.

[Learn more](#)



ADVANTAGES

- Easy Printability
- Low shrinkage and warpage
- Good continuous use temperature
- Excellent chemical resistance
- Good stiffness and strength
- Very consistent lot to lot print properties with a ISO 9001 Certificate of Analysis with every spool

APPLICATIONS

- Jigs, fixtures, and tooling
- Housings
- Cosmetics
- Brackets



PETg 0800 ESD

DESCRIPTION

Jabil Engineered Materials PETg 0800 ESD is an easy processing, Electrostatic Dissipative (ESD) product for printing parts that meet sensitive electronics and could be damaged by electrostatic discharge. These products have good strength and stiffness with a good balance of properties in XY and XYZ directions and the added benefit of ESD for Jigs, Fixtures & Tooling that needs to safely handle electronic components.

[Learn more](#)



ADVANTAGES

- ESD properties - ESD of 10E5-10E9
- Easy printability
- Low shrinkage and warpage
- Good continuous use temperature
- Excellent chemical resistance
- Good stiffness and strength
- Very consistent lot to lot print properties with a ISO 9001 Certificate of Analysis with every spool

APPLICATIONS

- Jigs, fixtures, and tooling
- Housings
- End of arm tooling
- Brackets



TPE SEBS 1300 85A

DESCRIPTION

TPE SEBS 1300 85A 3D printing filament is a Shore 85A elastomer that does not require drying to process and has excellent bed adhesion and ease of printing. TPE SEBS 1300 85A has low moisture absorption and has better elasticity for applications that require high flexibility and durability. It works on all open-platform direct drive 3D printers and can be run on desktop 3D Printers with PTFE Bowden Tubes. TPE SEBS can stretch over 600% and is much easier to print than TPU filaments.

TPE SEBS 85A can be used for parts that need elastomeric properties that can bend, flex and stretch without the need for a heated print bed and has demonstrated a very high success rate in printing complex geometries. TPE SEBS is similar to rubber and other thermoplastic elastomers in its properties, soft to the touch while still being strong and flexible. It is well suited to printing parts that need to dampen vibrations or products that need to retain flexible properties under weather or heat exposure while still maintaining good elastic properties.

[Learn more](#)



ADVANTAGES

- Low moisture absorption
- High flexibility
- Less visible layer lines
- Higher success print rate

APPLICATIONS

- Seals
- Gaskets
- No skid / No mark feet
- Soft touch grip for power tools
- No slip mats for auto interiors



TPE SEBS 1300 95A

DESCRIPTION

TPE SEBS 1300 95A 3D printing filament is a Shore 95A elastomer that does not require drying to process and has excellent bed adhesion. It also enables printing ease. TPE SEBS 1300 95A has better elasticity for applications that require flexibility and durability with the added benefit of excellent processability and no required drying. TPE SEBS 1300 95A is slightly firmer than the 85A product to meet application requirements that call for flexibility but also need more rigidity to achieve the finished part performance. TPE SEBS 1300 95A works on all open-platform desktop printers and can be ran on direct drive configurations.

TPE SEBS 95A can be used for parts that need elastomeric properties that can bend, flex and stretch and has demonstrated a very high success rate in printing complex geometries. TPE SEBS 1300 95A is similar to rubber and other thermoplastic elastomers in its properties. This material has a similar feel to harder grades of TPU and TPO products with less warp, more bed adhesion and less printing issues. TPE SEBS 1300 95A is well suited to printing parts that require toughness, and resilience as well as some flexibility and fatigue resistance. This material is non-hygroscopic and can be printed without drying.

[Learn more](#)



ADVANTAGES

- No drying required
- High flexibility
- Less visible layer lines
- Very low warpage and curl
- Higher success print rate

APPLICATIONS

- Automotive interior trim components
- Packaging closures
- Covers and housings
- Grips
- No slip feet for electronic and mechanical components
- Gap seals



TPU 90A

DESCRIPTION

Jabil Engineered Materials, TPU 90A is an easy processing, standard product for printing jobs requiring elastomeric properties. This filament is ideal when low scratch and mar or soft touch feel are needed and improved impact strength. TPU materials have good chemical resistance and an operating temperature range of -40°C to 95°C.

TPU 90A delivers a rubber-like elasticity, which is resistant to abrasions and performs well even at low temperatures. This filament can be used for parts that need to maintain flexibility and or require a resistance to oils, greases, and other solvents. TPU 90A is ISO 9001 certified material.

[Learn more](#)



ADVANTAGES

- Easy Printability – low shrinkage and warpage
- Excellent elastomeric properties and impact strength
- Abrasion resistance and soft touch properties
- Very consistent lot to lot print properties with a ISO 9001 Certificate of Analysis with every spool

APPLICATIONS

- Jigs, fixtures, and tooling
- Touch pads
- Grips
- Soft feet with low CoF
- Seals



PA 4035 CF

DESCRIPTION

PA 4035 CF is a carbon fiber PA12 copolymer which provides greater stiffness, strength and toughness over similar products on the market. The high carbon fiber loading provides superior tensile strength and modulus while the PA12 base promotes relatively high ductility and ease of handling. Special formulation and processing reduce filament breakage during loading and printing. PA 4035 CF prints on any open-source desktop filament 3D printer.

PA 4035 CF is well suited for printing ducting in automotive and aerospace applications, casting patterns, composite tooling and prosthetics. For demanding applications within the aerospace and automotive industries, the filament provides high heat deflection temperatures. The dimensional stability also increases compared to standard nylon due to the additional of carbon fiber. In addition, PA 4035 CF increases stiffness and strength in load bearing orientations while showing less warping than standard nylon.

[Learn more](#)



ADVANTAGES

- High strength, stiffness and toughness
- Mechanical properties can be tailored by adjusting fill orientation
- Superior printed part surface finish quality
- Ease of handling filament during loading and printing
- Surface resistivity of $\leq E9$ for ESD sensitive applications
- Low print temperature enables the use on more machines

APPLICATIONS

- Ducting for automotive and aerospace
- Casting patterns
- Composite tooling
- Prosthetics
- Seals



PA 4000

DESCRIPTION

A very durable nylon powder, PA 4000 has well-balanced material characteristics that are ideal for a wide variety of applications. The detail resolution, excellent surface finish, and 34% elongation at break ensures this bright white material meets your product requirements. The chemical resistance and various finishing possibilities make PA 4000 ideal for open-sourced laser sintering 3D printers.

Similar to a PA 12, PA 4000 P should be selected for applications that require functional testing, low to mid-volume production runs or prototyping. Even though this material should be processed in an inert environment, PA 4000 does not need to be dried prior to processing which adds to the convenience of use.

[Learn more](#)



ADVANTAGES

- Excellent tensile elongation and impact strength
- Exceptional powder flowability and melt wet-out
- Produces dense parts with an excellent surface finish
- Material has potential for high recyclability
- Color stability

APPLICATIONS

- Functional prototypes
- Complex geometries
- Low temperature duct work
- Caster housings
- Housings and enclosures
- Parts with snap-fit features



PA 4050 GB

DESCRIPTION

PA 4050 GB has well-balanced material characteristics that are ideal for applications that require durable, high-quality parts. The detail resolution and excellent surface finish allow for solid-built parts. Multiple finishing possibilities make PA 4050 GB ideal for open-sourced laser sintering 3D printers.

Similar to a PA 12 GB, PA 4050 GB should be selected for applications that require functional testing, durable prototyping, or low-volume builds. With increased dimensional stability, this material holds up to heavy-duty part requirements. Some common applications include (but are not limited to): functional prototypes, complex geometries, low temperature duct work, caster housings, and other housings and enclosures.

[Learn more](#)



ADVANTAGES

- Higher stiffness than PA 4000
- Produces dense parts with an excellent surface finish
- Color stability
- Relatively isotropic performance

APPLICATIONS

- Functional prototypes
- Complex geometries
- Low temperature duct work
- Caster housings
- Housings and enclosures



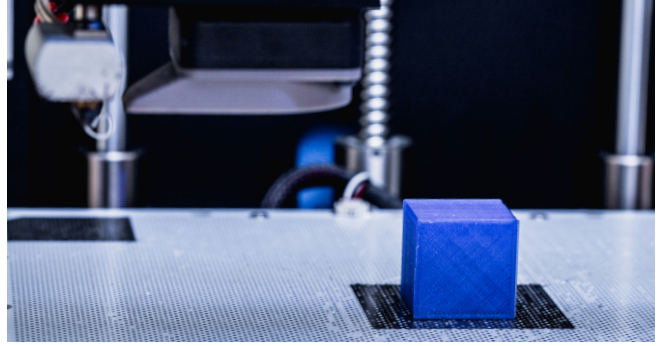
WHITE LABEL

Customers are asking more and more for expanded applications across 3D printers. Jabil Engineered Materials fills a gap in the additive manufacturing materials market for filaments and powders. White labeling our custom engineered materials help your customers expand applications using your 3D printers – both for desktop and industrial.

By expanding additive manufacturing applications across desktop and industrial 3D printers, more customers can meet their low-volume production needs while meeting the requirements they seek. Contact us to find out more about our white labeling opportunities.

For more information about white labeling custom-engineered material, please send us an e-mail additive@jabil.com





THE BENEFITS OF FIXTURELESS MANUFACTURING

For designers and engineers, there is nothing worse than being limited and boxed-in by manufacturing rigidity. All too often, designers are forced to design for manufacturing rather than designing for optimal outcomes.

This is how additive manufacturing is so beneficial to the design, manufacturing and production process. Companies need to remain competitive, and this comes with shortened lead times, the ability to differentiate in the industry, and a reduction in manufacturing waste.

Traditional manufacturing cannot deliver these competitive advantages. Additive manufacturing takes advantage of the latest in technology, software, hardware, design ethos, and materials and makes it possible for companies to overcome traditional barriers in product development and manufacturing. In fact, many believe that 3D printer access has stimulated the growth of new product innovation and raises the success factor across all industries.

Whether you specialize in custom medical orthotics or design heavy equipment, fixtureless manufacturing gives you distinct advantages and benefits.

DESIGN COMPLEXITY AND FREEDOM

Create and effectively use intricate designs such as lattice structures and other complex geometries.

NO TOOLING

With injection molding, the tooling can cost hundreds of thousands of dollars for a complex design. This means that companies must manufacture at high production volumes to reduce the cost of production. In addition, the cost associated with maintaining and updating tooling can be limiting.

The elimination of tooling means that companies can produce more complicated parts faster and greatly reduce manufacturing costs. As

an extra bonus, it is now possible to realistically support low- and mid-volume production batches of customized parts and products.

ACCELERATE TIME TO MARKET

With no tooling demands, the time it takes to go from design to local customer delivery is minimal. Get your products to market faster and in the hands of the consumers who want them more easily.

PART CONSOLIDATION

Designers can revolutionize product design by combining the number of individual parts from multiples to just one part.

Additive manufacturing also allows designers to create more complex

parts that eliminate possible failure points that come with assembly and managing multiple pieces. In one healthcare example, a cooling fan with 73 metal parts that required hand assembling was reduced to just one additive manufactured part. Now, the customer has gone from hand assembling three fans a week to manufacturing 150 fans in a 12-hour window.

IMPROVED WORKFLOWS

Creating parts with additive manufacturing quickly gets products from design to production quicker by reducing the wait time that jigs, fixtures, and tooling require. With fixtureless manufacturing, once a design is approved, it can go straight into production.



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Contact Jabil Additive to Learn More
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Jabil (NYSE: JBL) is a manufacturing solutions provider that delivers comprehensive design, manufacturing, supply chain and product management services. Leveraging the power of over 200,000 people across 100 sites strategically located around the world, Jabil simplifies complexity and delivers value in a broad range of industries, enabling innovation, growth and customer success. For more information, visit jabil.com.