PolyCore

BY polymaker

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About Polymaker

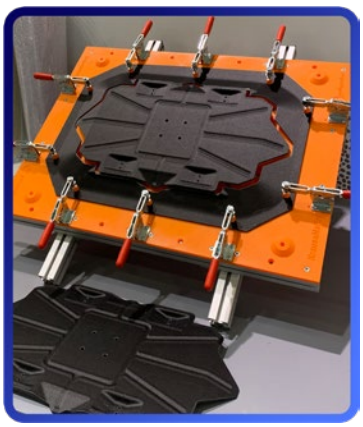
Polymaker is a developer and manufacturer of 3D printing materials committed to innovation, quality and sustainability. Its award-winning product portfolio has enabled numerous individuals and companies to “better create and innovate”. Headquartered in Changshu, China, Polymaker has multiple locations in Shanghai, Utrecht and Houston ready to serve customers across the globe.

About PolyCore™

PolyCore™ is a specialized family of pellet-based 3D printing materials designed for Large Format Additive Manufacturing (LFAM) and Fused Granular Fabrication (FGF). Leveraging Polymaker‘s over a decade of expertise in extrusion-based 3D printing materials, PolyCore™ delivers outstanding printability and broad compatibility with a variety of pellet-extrusion 3D printers. Widely adopted across industries such as architecture, construction, furniture, decorative arts, and mold-making, PolyCore™ enables users to quickly drive innovative breakthroughs.








Our Core Values

End-to-End Technical Support
From material selection to printing and real-world applications, our in-house range of LFAM / FGF systems, comprehensive testing, and expert engineering team ensure every project is implemented smoothly and successfully.

Agile Global Supply Chain
With stock in Europe, Asia, and the Americas, and minimum orders starting at just 25 kg, we make it easy for customers to access the right materials quickly—whether for R&D or full-scale production.

Materials Built for LFAM/FGF
Each material is application-driven and validated for real-world use. Backed by stringent quality control and print processes optimized through thermal history and chracterization, PolyCore delivers reliable and efficient printing performance every time.

Our Partners

ADAXIS · AIM3D · Argenta · CARACOL · CEAD · decibel · SUPER DISCOVERY 3Dprinter · 极筑 Explore Future Habitat · ginger. additive · HELIO ADDITIVE · Holit · HYPERION Dream Big, Print Bigger · Kings 3D Printing · Krauss Maffei Additive · LAMÁQUINA · MD Massive Dimension · Namthaja · PIOCREAT · RAW IDEA · SAFESCAPE Practical Innovation · SCG · SHANZAO · SRG SINERGIA RACING GROUP · StudioArtefact · sugarwave · SunTall 盛泰科技 · Tec3D · TMS TOTAL MACHINING SOLUTIONS · TRASHAUS 樂設科技 · tuanyuan 抟原复材 · YIZUMI · 忠鸿科技 ZHONGHONG

Our Products

ABS-5012	Natural / Black	· 20% GF reinforced · Good heat resistance (HDT 96°C, 1.82 MPa) · Cost-effective solution	· Construction Formworks · Mold & Tooling
ABS-5022	Black	· 20% CF reinforced · Good heat resistance (HDT 98°C, 1.82 MPa) · Outstanding dimensional stability and low CTE	· Composite Curing Molds (Ambient to 80°C)
ASA-3012	Natural	· 20% GF reinforced · Superior weather resistance · Good printability and mechanical strength	· Outdoor Architecture
PETG-1000	Transparent	· Great optical clarity (ASTM D1003) · Easily customizable with color	· Installation Art · Indoor Furniture · Lighting
PETG-1000 R85	Translucent Green	· PETG with 85% post-consumer recycled (PCR) content · Distinctive transparent green tint	· Indoor Furniture · Lighting
PETG-1013	Natural	· 30% GF reinforced · UV resistance · Solution for large parts and assemblies	· Outdoor Furniture · Large parts (over 3m in size)
PETG-1113	Natural / Black	· 30% GF reinforced · Outstanding printablity with minimal warping · Optimized adhesion to standard gel coatings	· Formworks · Tooling · Assembled Components
PETG-1113 Marble	Marble White	· 30% GF Reinforced · Real marble finish straight out of the extruder · Enhanced texture with a smooth CNC milling finish	· Art / Sculpture · Indoor Furniture & Home Accessories · High-End Decoration
PETG-1312	Natural	· 20% GF Reinforced · Optimized for mid-sized pellet printers · Great processability: easy to sand and great adhesion to fillers and coatings	· Sculpture & Entertainment · Sand Casting Pattern
PC-7413	Black	· 30% GF Reinforced · High heat resistance (HDT 136°C, 1.82 MPa) and Good printability · Cost-effective solution	· Composite Curing Molds (80°C to 120°C)

Architecture & Construction

LFAM / FGF redefines architectural possibilities by enhancing design freedom, efficiency, and sustainability. It empowers architects to create complex geometries that are impractical with traditional methods, offering an unprecedented range of design options. The technology minimizes material waste, accelerates development cycles, and highlights the potential of digital manufacturing for improving building quality control and optimizing lifecycle costs.

‘Liuyun Bridge’ in Chengdu, China

ASA-3012

20% glass fiber reinforced ASA compound

"Liuyun" in Chinese means "flowing clouds". This pedistrian bridge, inspired by the free-flowing shape of the clouds, is the largest 3D printed bridge in the world to date, constructed with approximately 30 tons of 3D printing pellets. It is a masterpiece of engineering and art, only made possible with Large-format additive manufacturing.

The main body of the bridge was printed almost entirely with ASA-3012, a weather-resistant material that incorporates 20% glass fibers. Featuring enhanced dimensional stability and layer adhesion, alongside extensive testing—nearly a hundred print trials and process optimizations—this formulation ensures optimal accuracy and strength of both the segmented parts and the final, complete bridge.

Liuyun Bridge is one of three 3D printed bridges produced with PolyCore materials, including the Shanghai Taopu Central Park Bridge and the Quanzhou Bridge, all of which uniquely demonstrate innovation within the construction field.

Partners: Shanghai Construction Group Co., Ltd.,, Shanghai Kuying Technology Co., Ltd.,
Date: April 2022

Construction of the "Zai Shui Yi Fang" in Shanghai

ABS-5012
20% glass fiber reinforced ABS compound

PETG-1113
30% glass fiber reinforced PETG compound

The 'Zai Shui Yi Fang' Sci-Fi Pavilion is located on the shores of Fish Lake in Shanghai, with a total floor area of more than 29,000 square meters. Its futuristic design—resembling a flying saucer suspended in mid-air—features a distinctive double-shell structure and dramatic cantilevered elements, making it a landmark project in the city's urban development. The pavilion stands as a striking architectural statement in Shanghai's Fengxian district.

For this project, LFAM / FGF was applied on an unprecedented scale to produce architectural formworks, including the pavilion's structural support columns, with approximately 10 tons of material used in total. The primary structural molds were fabricated using ABS-5012 (20% glass fiber–reinforced ABS), a material valued for its exceptional strength and heat resistance, allowing it to withstand the heat generated during concrete curing without deformation, making it an ideal material solution for complex, concrete geometries.

Larger components were additionally produced with PETG-1113 (30% glass fiber–reinforced PETG) This formulation demonstrates its suitability for segmented printing and assembly of intricate formwork designs with its printability, high durability and precision.

Partners: Shanghai Construction Group Co., Ltd.
Date: December 2024

Furniture & Decorative Arts

In the field of furniture and decorative arts, LFAM / FGF is becoming an increasingly popular tool for designers and companies. It significantly shortens traditional prototyping cycles whilst enabling the development of new, complex designs as well as introducing a new, innovative way of manufacturing final products.

By enabling direct fabrication through additive manufacturing, this technology minimizes material waste from the outset, allowing design to drive a products development whilst naturally aligning with sustainability principles. By expanding the pathways for creative realization, it offers a contemporary design solution that is more flexible, responsible, and expressive.

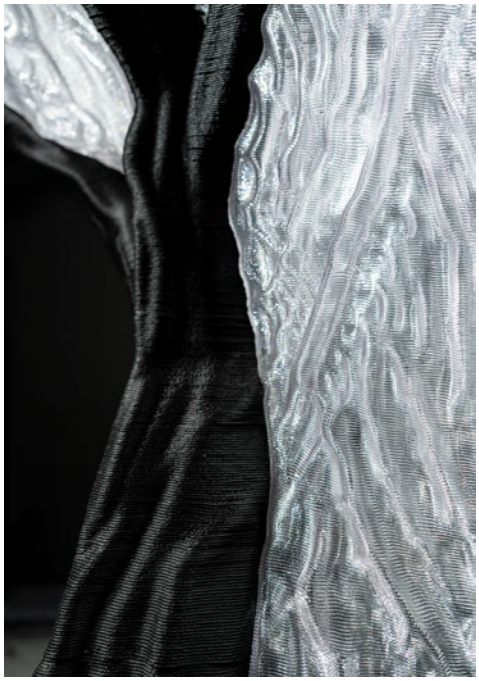
MORPHUSION: Phantasmal Tectonic

PETG-1000
PETG compound with good optical clarity

PETG-1013
30% glass fiber reinforced PETG compound

This AI-generated, robotic-formed tree stands 2.2 meters tall, showcasing a seamless integration of digital fabrication and natural aesthetics. The project transforms algorithmically created organic forms into physical structures through generative AI and LFAM / FGF.

The tree trunk is printed with PETG-1013 (30% glass fiber reinforced PETG), providing exceptional dimensional stability that supports complex non-planar structures. Meanwhile, the "canopy" components, crafted from optical-grade PETG-1000, create stunning light-refraction effects. This innovative material combination, alongside a proprietary discontinuous printing algorithm, enables robotic arms to efficiently achieve biomimetic textures that go beyond traditional manufacturing capabilities.



Partners: Architectural Computing Lab, Southeast University
Date: June 2025

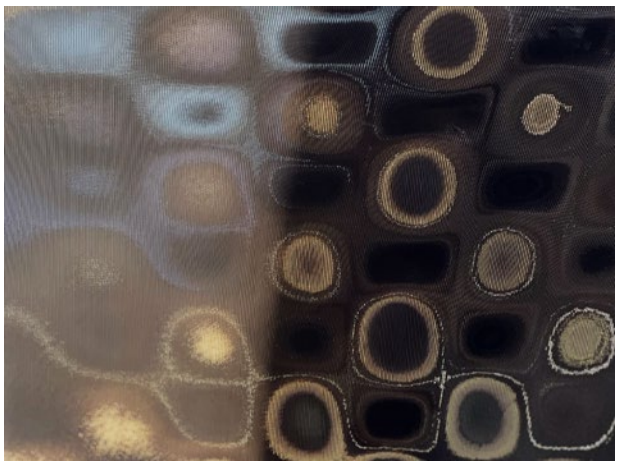
Flowing Zen Garden

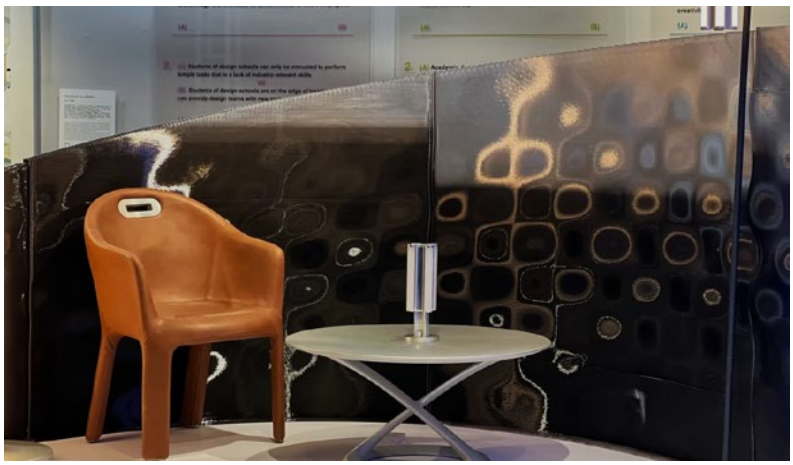
PETG-1000

PETG compound with good optical clarity

The "Flowing Zen Garden" art piece masterfully fuses Eastern philosophy with modern technology, utilizing 3D printing to capture the fluid essence of water in timeless, curved forms. Designed by Xi'an Jiaotong-Liverpool University and crafted with PETG-1000 using LFAM / FGF, it illustrates the artistic potential of digital fabrication.

The exceptional optical clarity of PETG-1000 creates subtle interactions of light across its surfaces, allowing for organic curvatures that transcend traditional methods. As light filters through the intricately designed rippling surfaces, the piece offers an ethereal visual experience that immerses viewers in a contemplative atmosphere.





Partners: XJTLU Design School, Geobuild, KMUST 3D Printing Lab
Date: June 2025

Fuyao Chair

PETG-1113 Marble

30% glass fiber reinforced PETG compound

The Fuyao Chair exemplifies modern furniture design by reinterpreting a standard seating design to reference other organic forms such as Seashells. Coupled with the repeating texture and finish from PolyCores PETG-1113 Marble, this design highlights the possibilities of digital design and large-scale manufacturing.

PETG-1113 Marble not only enhances the Fuyao Chair's aesthetic but also ensures excellent mechanical performance and dimensional stability due to its 30% glass fiber reinforcement. As an ergonomic seat or a visual centerpiece, it embodies a blend of natural inspiration and modern technology.

Additionally, the material offers impressive CNC milling capabilities, allowing for precise post-processing. The result is a smooth, polished surface that showcases the marble effect, meeting the high standards for premium interior decorations.

Partners: Geobuild
Date: March 2025

Unique-Shaped Table - Ontigo T10

PETG-1000

PETG compound with good optical clarity

The Ontigo T10 table is a stunning example of innovative design that highlights the capabilities of FGF/LFAM. With its complex and artistic shape, this table serves not only a functional purpose but also acts as a captivating indoor decorative piece.

This impressive creation is made from PETG-1000, an optically clear material designed for indoor applications such as furniture and decorative items. The use of this translucent material allows light to shine through the layers, creating effects that enhance its overall aesthetic appeal.

The utilization of LFAM / FGF for this application enables the realization of complex designs that traditional manufacturing methods often struggle to achieve, thus igniting innovation in modern furniture design.

Partners: Adaxis, CEAD, and Studiobenkert
Date: November 2024

Geometric Flora Collection

PETG-1000 R85

Eco-friendly PETG containing 85% post-consumer recycled (PCR) content

This collection of vases reinterprets traditional vessel forms through digital manufacturing processes, with each piece exploring the possibilities of shape through a unique geometric language.

The vases are crafted using PETG-1000 R85 — a sustainable material composed of 85% post-consumer recycled (PCR) content — achieving shapes that are difficult to attain through conventional techniques. This semi-transparent green finish, derived from recycled water bottles, not only maintains PETG's excellent mechanical properties and printability but also lends the vases an elegant, organic aesthetic that perfectly embodies the fusion of sustainable design and high-end artistry.

With their minimalist yet detailed design language, these vases not only showcase the artistic potential of recycled materials but also serve as a stylish and eco-conscious decorative option for modern living spaces, highlighting the application possibilities of circular economy principles in design.

Partners: TRASHAUS
Case Date: July 2025

FlowBend Bench

PETG-1013

30% glass fiber reinforced PETG compound

The FlowBend bench features flowing lines and an ergonomic design that make it not only eye-catching but also incredibly comfortable and durable. Its organic shapes, which are challenging to produce with traditional manufacturing methods, are made possible through advanced FGF/LFAM technologies. This modular bench allows each segment to be placed individually or assembled using stainless steel, enabling it to seamlessly fits into any space and making it an ideal addition for both commercial and residential environments.

The choice of PETG-1013 for the FlowBend bench is driven by its exceptional dimensional stability, making it particularly suitable for large parts and projects that require assembly from multiple printed components. Additionally, its good weather resistance effectively ensures the bench's durability and longevity in various outdoor environments.

Partners: Adaxis, CEAD, and Studiobenkert
Date: November 2024

Ambient Lighting - Glim

PETG-1000 R85

Eco-friendly PETG containing 85% post-consumer recycled (PCR) content

The GLIM Lamp is a clear example of how contemporay furniture design is exploring more sustainable manufacturing practices. For TRASHAUS, a company comitted to developing innovative solutions to re-purpose post-consumer waste, PETG-1000 R85 was an ideal choice. Featuring 85% post-consumer recycled content alongside a unique, translucent green finish, the formulation not only contributes to the design by creating a unqiue, light-transmitting quality, but it also demonstrates the advantages when using recycled materials in furniture LFAM / FGF.

Leveraging these properties, the designer cleverly utilized the coil-layering capabilities of this printing process to build the lampshade with a natural, flowing texture. When illuminated, light filters through layered semi-transparent contours, casting soft, multidimensional halos that create a warm and tranquil ambiance. This piece exemplifies how sustainable materials can harmoniously blend functionality and artistry through innovative manufacturing techniques.

Partners: TRASHAUS
Date: June 2025

Mold and Tooling

LFAM / FGF have emerged as a highly advantageous solution in the mold and tooling industry. By printing high-performance engineering materials layer by layer, it enables the direct fabrication of composite forming molds, as well as jigs and assembly tools throughout the various production stages.

Compared with traditional CNC milling or manual fabrication,this technology demonstrates significant advantages in the production of large-size, small-batch molds and tooling: it can reduce lead times from several weeks to just a few days, lower manufacturing costs, and, at the same time, offer new advantages such as fast iteration and resource efficiency during the design and manufacturing processes—further improving production and product quality.

Today, LFAM / FGF is widely applied in composite autoclave molds, aerospace assembly fixtures, automotive welding jigs, and master patterns, making it an essential process for accelerating product development and manufacturing.

Tongji Racing Car

ABS-5022

20% carbon fiber reinforced ABS compound

The Tongji University racing team engineered a high-precision mold for the racing car's front nose using ABS-5022, an advanced polymer composite reinforced with 20% carbon fibers.

In the mold fabrication process, the composite is placed in an autoclave and undergoes precise heating, pressure maintenance, and controlled cooling to achieve the desired shape. This process requires a high degree of thermal resistance and dimensional stability.

ABS-5022 meets these stringent requirements, demonstrating enhanced strength through its fiber reinforcement while minimizing the coefficient of linear thermal expansion. It also utlizes its mechanical performance and thermal conductivity, ensuring exceptional stability during production. The mold has proven reliable, maintaining structural integrity under pressures up to 80°C and achieving a dimensional accuracy of 30.01 mm for the carbon fiber front nose component.

Partners: Tongji University Racing Team, Shanghai Tianshu Technology Co., Ltd.
Date: November 2021

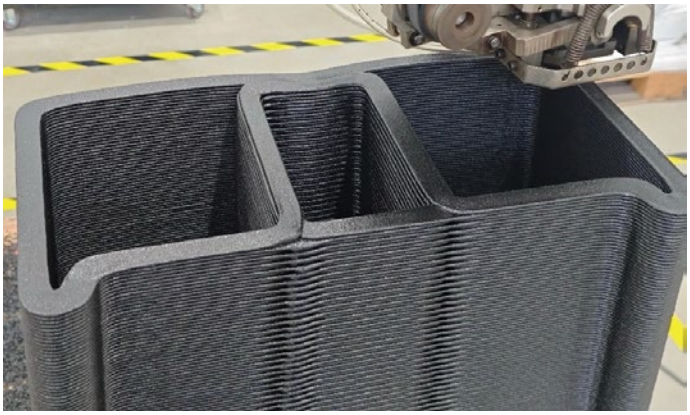
Medium Temperature Molds for Areospace

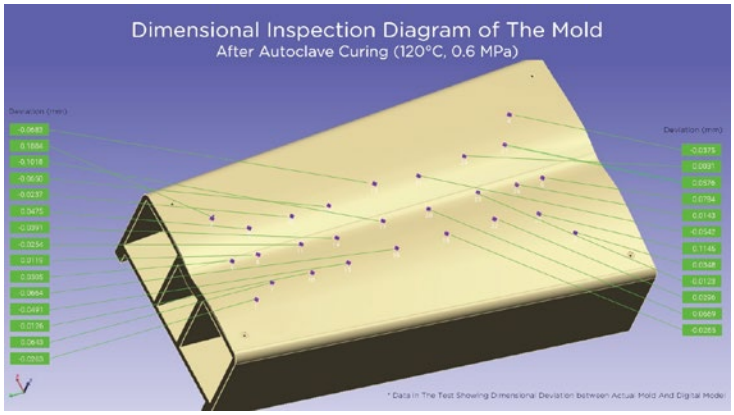
PC-7413

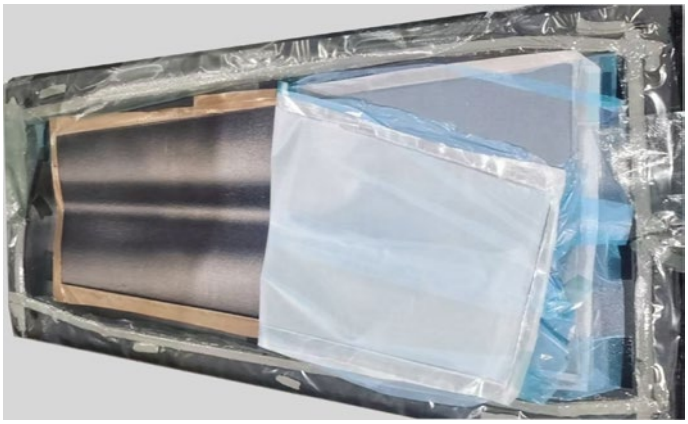
30% glass fiber reinforced PC compound

In composite manufacturing, medium-temperature composite molds play a crucial role. PC-7413 is specifically engineered for this application. This advanced material was used to print an aerospace mold, followed by precision CNC machining and autoclave curing at 120°C and 0.6 MPa, ensuring dimensional tolerances within 30.2 mm and achieving airtightness for vacuum infusion.

Collaborating with Helio Additive further optimized the process, resulting in a ‘First Time Right Print’ and additional 38% reduction in printing time. This case highlights the successful application of PC-7413 in medium-temperature composite mold manufacturing.







Partners: Helio Additive
Date: August 2024

Newsletter Case Study

Trimming Tooling

PETG-1113

30% glass fiber reinforced PETG compound

This trimming tooling seamlessly integrates 3D printing and CNC machining for efficient and precise mold & tooling creation. The tooling is produced using PETG-1113 (30% GF reinforced), providing outstanding durability, rigidity and excellent adaptability in printing. This formulation not only ensures mechanical stability during the trimming process but also offers low environmental impact and good temperature resistance.

The final tooling dimensions are 600×450×1200 mm, with the total production time only taking 31 hours—16 hours for printing and 15 hours for CNC finishing. This demonstrates how this technology can significantly enhance manufacturing efficiency whilst minimizing material waste and reducing reliance on skilled labor.

Partners: Adaxis, CEAD, TMS
Date: April 2025

Sand Casting Pattern

PETG-1312

20% glass fiber reinforced PETG compound

This sand casting pattern for a pump body was fabricated from PETG-1312 (20% glass fiber reinforced PETG), demonstrating a breakthrough application in foundry tooling. PETG-1312 provides stable printing and high dimensional accuracy, making it particularly suitable for the rapid production of large patterns. Its heat deflection temperature of 75°C (at 0.45 MPa) ensures the pattern retains its shape during sand casting, resisting deformation from environmental heat or sand compaction. The glass fiber reinforcement increases stiffness and overall strength, maintaining structural stability under compression. The surface can be easily sanded and CNC-finished, improving the quality of both the sand mold and the resulting castings.

Traditional wooden patterns are prone to deformation, have short lifespans, and offer limited precision. By combining LFAM / FGF with CNC finishing, this 900×600×400 mm pattern was completed in just two days at a comprehensive cost under $150. Its single-piece design eliminates assembly errors, achieving higher accuracy while significantly reducing production time, labor, and cost.

Partners: Shanzao
Date: August 2025

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polycore.inquiry@polymaker.com

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