
# Markforged X7

The turnkey industrial 3D printer for every type of functional part.

**The only way to get industrial-grade parts in hand in hours, not weeks — the X7 enables engineers and designers to fundamentally improve their manufacturing operation at light speed.**

### Carbon Fiber Strength

The X7 3D prints Continuous Carbon Fiber reinforced parts in hours that are as strong as — and capable of replacing — machined aluminum.

### Functional Parts of All Types

Whatever your functional requirements are — flame resistant, chemical resistant, energy absorbent, high resolution, draft parts — the X7 has an industrial material or print mode capable of fabricating a functional part for you.

### Industrial Reliability and Accuracy

Precision-machined hardware, advanced sensors, and unique software drive industry leading accuracy and reliability. Only Markforged industrial 3D printers offer micron-level laser scanning for closed-loop calibration, reliably yielding parts with 50 µm repeatability and industry-leading surface finish. tura superficiale sbalorditiva.

3DZ

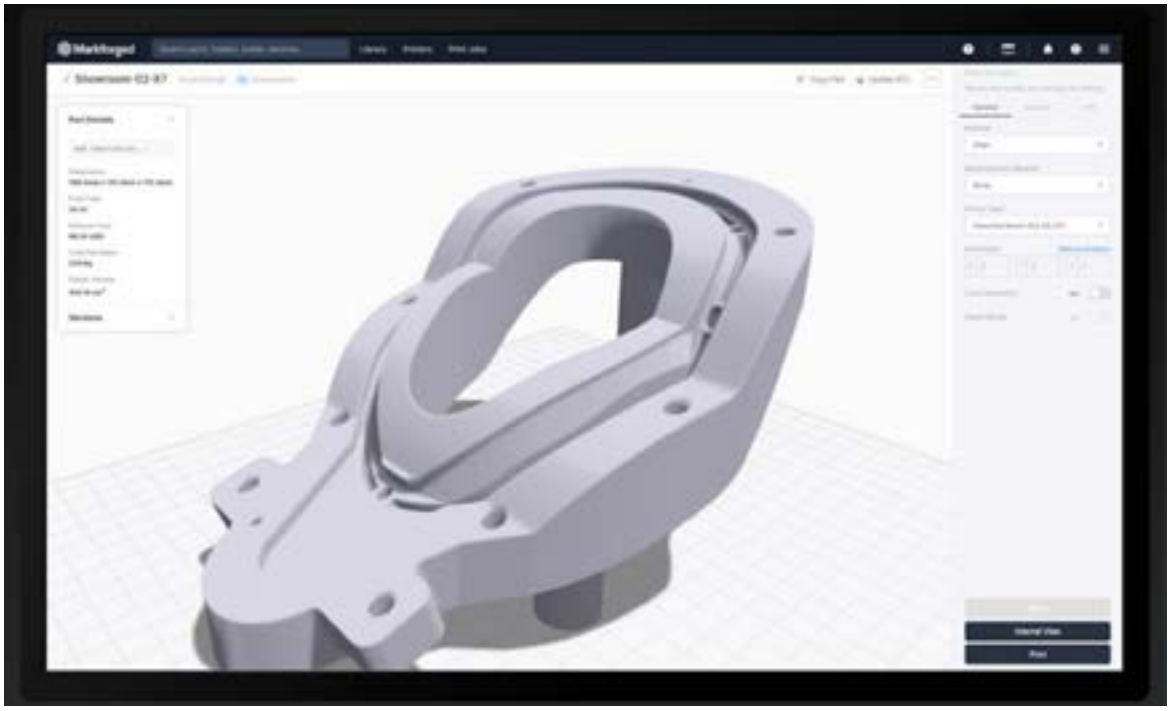
Print the Future

www.3dz.es
info@3dz.es

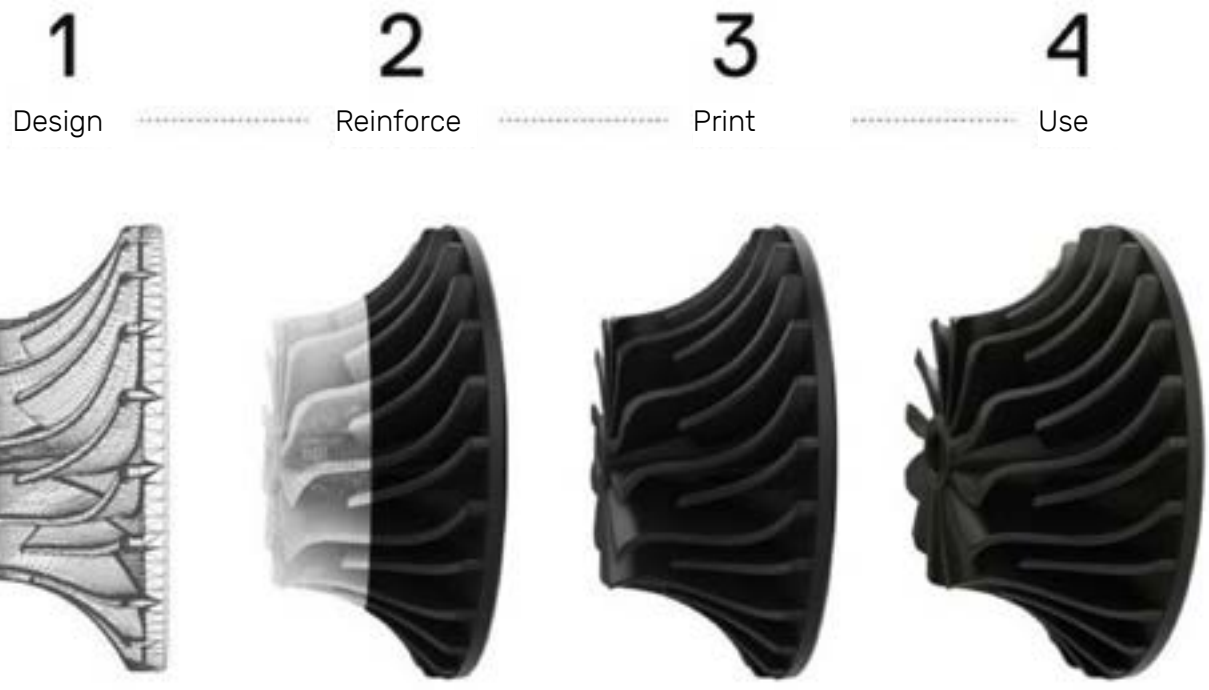
# SOFTWARE

**3D Printing Software Meets Production Management.**

Design your part, upload it into our browser-based software, select from a wide range of Composite Base filaments and Continuous Fibers, and hit print. It's that simple.



**Continuous Fiber Reinforcement, Made Easy.**



# MATERIALS

Markforged

**Print with Markforged's full range of Composite Base materials and Continuous Fibers.**

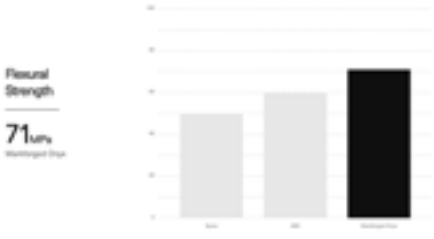
## Onyx

Micro carbon fiber filled nylon that forms the foundation of Markforged composite parts

Onyx — our flagship Composite Base material — is a micro carbon fiber filled nylon that yields accurate parts with impeccable surface finish. Few materials have the versatility of Onyx; it offers high strength, toughness, and chemical resistance when printed alone, and can be reinforced with Continuous Fibers to yield aluminum-strength parts. Today, there are more than a million Onyx parts in the field transforming manufacturing.

### Applications

- Plastic Part Replacement
- Housings
- Sensor Mounts
- Cosmetic Prototypes




## Onyx FR

Certified UL 94 V-0 rated flame-retardant micro carbon fiber filled nylon

Onyx FR is a flame-resistant variant of Onyx designed for use in applications where parts must be non-flammable. The material earned a UL Blue Card, and is considered V-0 (self extinguishing) at thicknesses greater than or equal to 3mm. It can be reinforced with any Continuous Fiber and is compatible with industrial composite 3D printers.

### Applications

- Weld Fixturing
- Aerospace Clips & Brackets
- Laser Marking Fixtures
- Energy/Electrical Brackets & Fixtures


## Onyx ESD

Stronger, stiffer, and ESD resistant Onyx variant for industrial applications

Onyx ESD is the most advanced polymer we've ever developed. It's precision-engineered to possess an extremely tight range of surface resistance — meeting ESD-safe requirements of the most stringent manufacturers — while offering the same industry leading benefits that Onyx offers. In fact, it's actually stronger and stiffer than Onyx with similarly impeccable surface finish, making it the go-to material for advanced applications.

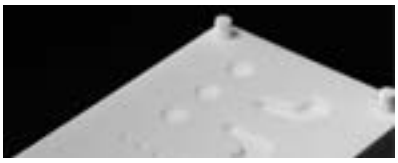
### Applications

- Vacuum Grippers
- Transfer Tools
- Pick and Place
- Transfer and Packaging Trays
- Electronics Enclosures

# MATERIALS

Markforged

**Print with Markforged's full range of Composite Base materials and Continuous Fibers.**



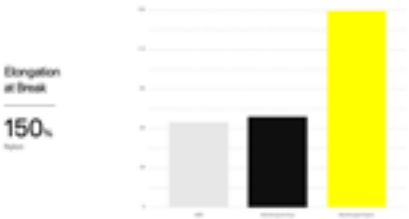
## Nylon

Smooth engineering thermoplastic that can be easily painted or dyed

Nylon is an unfilled thermoplastic. It's a non-abrasive material that is great for ergonomic surfaces and workholding for pieces that are easily marred. It can be painted or dyed.

### Applications

- Ergonomic Tools
- Assembly Trays
- Cosmetic Parts



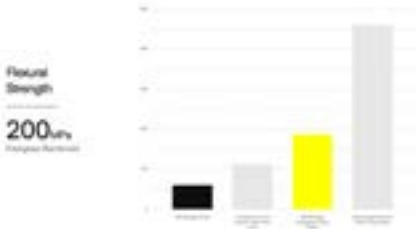

## Fiberglass

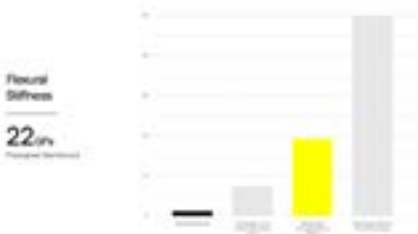
Entry-level Continuous Fiber for industrial applications

Fiberglass is Markforged's entry-level Continuous Fiber—a material capable of yielding parts 10x stronger than ABS when laid into a Composite Base material like Onyx. Fiberglass is the flagship material of the Onyx Pro and X5 and printable on the Mark Two and X7, providing a more affordable alternative to Carbon Fiber.

### Applications

- Softjaws
- Medium-Strength Tooling
- Insulative Reinforcement
- Hand Tools



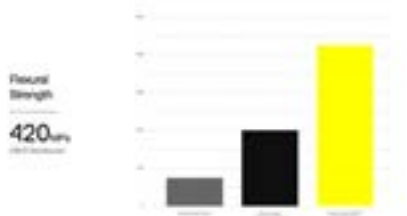

## HSHT Fiberglass

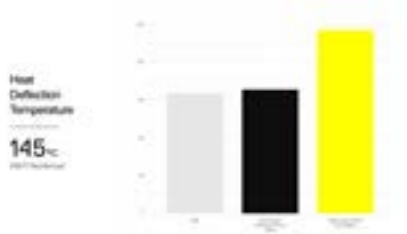
Thermally resistant Continuous Fiber for strong parts in high-temperature environments

High Strength High Temperature (HSHT) Fiberglass is defined by two characteristics: high strength (nearly equal to 6061-T6 Aluminum) and strength in high temperatures. Though not as stiff as Continuous Carbon Fiber, Onyx parts reinforced with HSHT are strong at both low and high temperatures. As a result, HSHT reinforcement is best used for parts in high-temperature environments like molds, autoclaves, and others.

### Applications

- Polymer Molds
- Prototype (Low-Run)
- Injection Molds
- High-Temperature Fixturing
- High-Temperature Prototypes



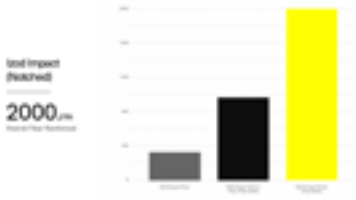



## Kevlar

Tough, highly compliant Continuous Fiber for high-impact applications made with Dupont™ Kevlar® Fiber.
Aramid Fiber is a Kevlar® based, specialized Continuous Fiber known for its energy absorption and extreme toughness. When laid into Onyx or another Composite Base material, it yields extremely impact-resistant parts that are nearly immune to catastrophic failure (fracture).

## Applications

- End-of-Arm Tooling
- Stanchions, Cradles, & Supports
- Delrin® Part Replacements
- Wear Stops

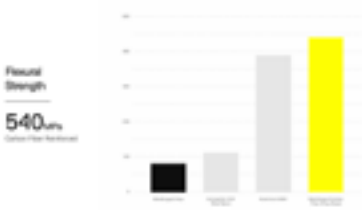



## Carbon Fiber

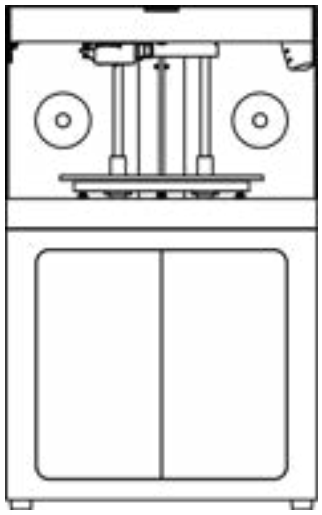
The backbone of aluminum-strength composite parts
Carbon Fiber is Markforged's unique, ultra-high-strength Continuous Fiber — when laid into a Composite Base material like Onyx, it can yield parts as strong as 6061-T6 Aluminum. It's extremely stiff and strong, and can be automatically laid down in a wide variety of geometries by Markforged 3D printers.

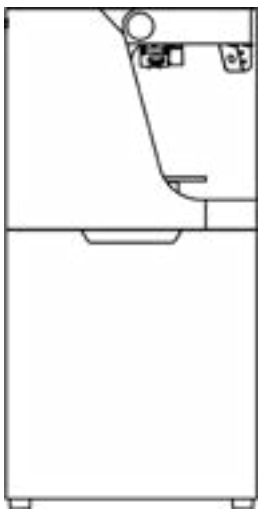
## Applications

- High-Strength Tools & Fixtures
- Brackets & Mounts
- Inspection/CMM Fixturing
- Bespoke End-Use Parts
- Functional Prototypes




## The Markforged X7 CFR industrial 3D printer combines precision-built hardware, advanced sensors, and best-in-class software to deliver accurate parts repeatably.





**Printing Process**
Continuous Fiber Reinforcement (CFR)

**Z Layer Resolution**
50 µm -250 µm

**Printing Media**
Composite Base Filaments, Continuous Fibers

**Internal Part Geometry**
Closed Cell Infill with Continuous Fiber Reinforcement

**Physical Dimensions**
Width – 584 mm
Depth – 483 mm
Height – 914 mm
Weight – 48 kg

**Build Volume**
Width – 330 mm
Depth – 270 mm
Height – 200 mm

**Print Bed**
Precision Ground Composite