

METHOD

# 2023 GUIDE TO 3D PRINTING MATERIALS

Now including over 25 engineering materials:

- Metals
- Composites
- Polymers

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# Introduction to 3D Printing Materials



In 1989, the first FDM (Fused Deposition Modeling) 3D printer was invented and, with it, the dawn of an era of possibilities for product design and manufacturing. The first material for that printer was a mix of wax and plastic. Over the next 30 years, material scientists developed a range of new and exotic materials, while hardware and software advancements in 3D printing enabled the use of these new materials. Most of the early 3D printers and materials developed were only available to companies who could afford their six-figure (or more) price tags, but recently there has been a renaissance in which major material manufacturers are flocking to the space. With that popularity, a wealth of new materials are being developed and optimized for 3D printers.

While some of these materials print spectacularly, others still have a ways to go in terms of reliability, print quality, or material performance. Some materials are extremely affordable and others can be costly. With all of these options and variables, it can be daunting to someone who is relatively new to 3D printing. For that reason, we've created a guide that will take you through the ins and outs of FDM 3D printing materials, when to use them, and what to expect along the way.

# Material Compatibility: The METHOD Series

When it comes to FDM 3D printers such as the METHOD users gain unmatched flexibility to jump between polymers, composites, and now even metals. On the METHOD platform alone there are 25 materials (and counting) that users can choose from to ensure that they always have the right material for the job at hand. With dual extrusion, you have the ability to introduce dissolvable supports, enabling even more complex geometries. And with our LABS extruder, users can leverage an unlimited sea of third-party materials - including those verified through the LABS program and listed here!

## MODEL MATERIALS

### Polymers

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#### PLA



**Extruder** Material Extruder 1  
**Printer** METHOD, METHOD X

#### TOUGH



**Extruder** Material Extruder 1  
**Printer** METHOD, METHOD X

#### PETG



**Extruder** Material Extruder 1  
**Printer** METHOD, METHOD X

#### ABS



**Extruder** Material Extruder 1XA  
**Printer** METHOD X

#### ABS-R



**Extruder** Material Extruder 1XA  
**Printer** METHOD X

#### ASA



**Extruder** Material Extruder 1XA  
**Printer** METHOD X

#### NYLON



**Extruder** Material Extruder 1  
**Printer** METHOD, METHOD X

#### PC-ABS



**Extruder** Material Extruder 1XA  
**Printer** METHOD X

### PC-ABS FR



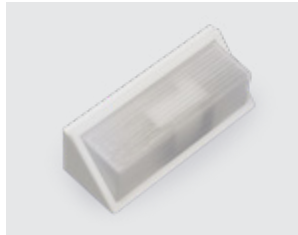
**Extruder** Material Extruder 1XA  
**Printer** METHOD X

### JABIL TPE SEBS



**Extruder** LABS GEN 2  
**Printer** METHOD, METHOD X

### MITSUBISHI DURABIO



**Extruder** LABS GEN 2  
**Printer** METHOD X

### POLYMAX PC



**Extruder** LABS GEN 2  
**Printer** METHOD X

### PC-PBT



**Extruder** LABS GEN 2  
**Printer** METHOD X

### POLYMAX FR



**Extruder** LABS GEN 2  
**Printer** METHOD X

### POLYLITE



**Extruder** Material Extruder 1  
**Printer** METHOD, METHOD X

## Composites

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### NYLON CARBON FIBER



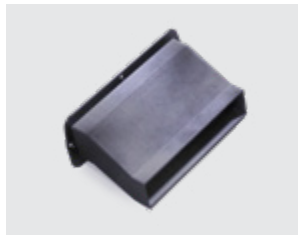
**Extruder** Material Extruder 1C  
**Printer** METHOD, METHOD X

### N12 CARBON FIBER



**Extruder** Material Extruder 1C  
**Printer** METHOD, METHOD X

### PETG CARBON FIBER



**Extruder** LABS GEN 2  
**Printer** METHOD, METHOD X

### ABS CARBON FIBER



**Extruder** LABS GEN 2  
**Printer** METHOD X

### PETG ESD



**Extruder** LABS GEN 2  
**Printer** METHOD, METHOD X

### ABS KEVLAR



**Extruder** LABS GEN 2  
**Printer** METHOD X

### ABS EC



**Extruder** LABS GEN 2  
**Printer** METHOD X

### ABS ESD

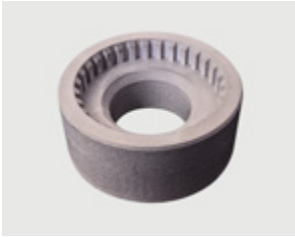


**Extruder** LABS GEN 2  
**Printer** METHOD X

## Metal

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### BASF ULTRAFUSE 316L STAINLESS STEEL



**Extruder** LABS GEN 2

**Printer** METHOD, METHOD X

## SOLUBLE SUPPORT MATERIALS

### RAPID RINSE



**Extruder** Support Extruder 2XA

**Printer** METHOD X

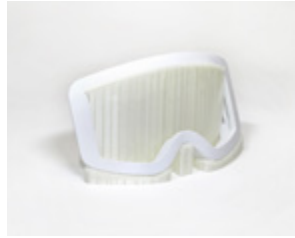
### SR-30



**Extruder** Support Extruder 1XA

**Printer** METHOD X

### PVA



**Extruder** Support Extruder 1

**Printer** METHOD, METHOD X

# Model Materials

## from Polymers to Composites to Metals

The model material is simply the material that you want your final part - whether it's a prototype, a tool, or a working product - to be manufactured in. In the case of FDM 3D printing with the METHOD Series we categorize these materials into three families - polymers, composites, and metals.

## POLYMERS

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### PLA

#### Fast, Easy, Rigid



PLA (polylactic acid) is a great material for early concept models because it is easy to use, office-friendly, and works well with breakaway supports which print faster and can be removed faster than dissolvable supports. PLA is a corn-based plastic and is considered biodegradable under industrial processes. PLA is strong in tensile strength and modulus relative to other base polymers, which may be surprising to some because it is generally viewed as a fairly basic material. One potential downside of PLA is its brittleness – if it fails, it fractures catastrophically whereas some of the other polymers may bend.

**Parts:** 3D Laser Scanner

**Support:** Breakaway Support

**Print Time:** 23h 58m

## TOUGH MATERIAL

### Fast, Easy, Durable



Tough is a relatively new category of material that has a PLA base with modifiers to increase its tensile modulus to make it more impact-resistant. The combination of ease of use, office-friendliness, and durability / machinability make it great for mid-stage prototypes. Tough has an incredibly high elongation before break making it highly durable – this can be seen when printing extremely thin living hinges, which can be bent back and flexed many times before breaking. While highly durable, Tough can lack the higher quality surface and detail finish of both PLA and ABS.

**Parts:** Mouse

**Support:** PVA

**Print Time:** 26h 31m

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## PETG

### Chemical Resistant, Durable



PETG's (glycol-modified polyethylene terephthalate) chemical resistance makes it a choice material for liquid containers and bottles, which also makes it great for prototyping those types of products. While available in a range of colors, PETG's glycol addition removes haziness to give it a nice translucence. The glycol also increases the strength and heat-resistance compared to PET. In addition to containers, the liquid / chemical resistance can benefit a range of uses from the machine shop to the lab.

This vacuum nozzle was printed as an attachment for a shop vac for removing waste material from a CNC machine. PETG is a great choice for this application due to the material's chemical resistance to the CNC coolant.

**Parts:** Vacuuming Nozzle

**Support:** PVA

**Print Time:** 11h 23m



## ABS

### Smooth, Durable, Heat-Resistant



ABS (acrylonitrile butadiene styrene) is one of the most popular materials for injection molded consumer products due to its clean surface finish, durability, and heat resistance. For this reason, it is often used for prototyping consumer products that will later be injection molded. By using ABS, the prototype is more likely to look, feel, and perform like the final product. ABS's durability and high heat deflection temperature also make it a good material for use in the lab or on the factory floor.

**Parts:** Thermocouple Thermometer

**Support:** Stratasys® SR-30

**Print Time:** 16h 16m

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## ABS-R

### Strong, Durable, Heat-Resistant



ABS-R is a newer formulation of ABS with improved performance characteristics and reliability. It was developed specifically by us to be compatible with RapidRinse - a water soluble material that reduces post-print dissolution time from hours to minutes. In testing ABS-R has shown to increase print reliability from the already reliable ABS by 98%. Like ABS, ABS-R is a choice material for prototyping in advance of injection molding production with ABS, but is also durable and can be used for end use parts.

**Parts:** Water Impeller

**Support:** RapidRinse

**Print Time:** 13h 12m

## ASA

### UV and Weather Resistant, Durable



ASA (acrylonitrile styrene acrylate) combines the qualities of ABS with the added benefit of UV resistance and additional moisture resistance, making it ideal for equipment exposed to sunlight and rain over long periods of time – such as products for the agriculture, transportation, and power and utility industries. Because the use of ASA is fairly common in production parts for these industries, the prototyping of the same parts in ASA allows test engineers to better understand how their products will hold up in extreme weather conditions. In the field, a utility worker or a farmer could benefit from printing replacement parts as needed for broken equipment.

**Parts:** Electrical Outlet Cover

**Support:** Stratasys® SR-30

**Print Time:** 4h 29m

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## NYLON

### Abrasion-Resistant, Strong



Nylon's ability to withstand high temperatures and its durability combine to give it above average abrasion resistance. While the storage of replacement parts can be costly, the ability to instead store the CAD file and print the parts as needed is an alternative that can save space and provide flexibility. Gears take consistent punishment and high abrasion, making Nylon an ideal material for this type of part.

**Parts:** Conveyor Gear

**Support:** PVA

**Print Time:** 10h 19m

## PC-ABS

### Durable and Heat Resistant



PC-ABS might seem like a composite, being that it is a mix of two polymers (polycarbonate and ABS), but the classic definition of a composite for 3D printing materials tends to refer to a polymer that has been reinforced with a solid particle (fibers, glass beads, etc.). If you use ABS, you might want to check out PC-ABS. It has many of the properties that make ABS desirable with added strength and heat-resistance beyond the range of regular ABS and thus is a common material used in the automotive industry.

**Parts:** Train Car Handle

**Support:** SR-30

**Print Time:** 14h 01m

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## PC-ABS FR

### Durable, Heat Resistant, and Flame Retardant



Preventing or slowing the spread of fire can be important in many testing or end-use applications. By modifying a base polymer like PC-ABS, it is possible to 3D print parts that are not only strong, but also have extinguishing properties that prevent flames. FR is an important characteristic for parts made for the automotive, railway, and aerospace industries.

**Parts:** A/C Outlet

**Support:** SR-30

**Print Time:** 8h 46m

## JABIL TPE SEBS 1300 95A LABS



TPE SEBS 95A is a soft material great for prototyping where rubber-like or elastomeric properties and durability are required. TPE SEBS 1300 95A is slightly firmer than TPE SEBS 1300 85A for application requirements that call for flexibility but also need more rigidity to achieve the optimal finished part performance. This type of material is great for applications such as overmolds, soft jaws, and endstop bumpers.

**Parts:** Flexible Pipe

**Support:** PVA

**Print Time:** 8h 20m

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## MITSUBISHI DURABIO LABS



DURABIO™ combines most of the advantageous properties of Polycarbonate (PC) and those of the Polymethacrylate (PMMA), with additionally the bio origin of raw material. DURABIO's translucence makes it great for applications such as switch housings with embedded LEDs.

**Parts:** Light Diffuser

**Support:** SR-30

**Print Time:** 9h 37m

## POLYMAKER POLYMAX PC LABS



PolyMax™ PC (polycarbonate) is an engineered PC filament combining excellent strength, toughness, heat resistance and printing quality. Polycarbonates are popularly used in industries from consumer electronics to automotive thanks to their ease of injection molding and strength.

**Parts:** CNC Impeller

**Support:** SR-30

**Print Time:** 7h 27m

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## POLYMAKER PC-PBT LABS



Polymaker™ PC-PBT is a PC/PBT polymer blend which offers good heat resistance and toughness at temperatures down to  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ). Polymaker™ PC-PBT also features good chemical resistance.

**Parts:** Rear View Mirror

**Support:** SR-30

**Print Time:** 17h 26m

## POLYMAKER POLYMAX PC-FR

LABS



PolyMax™ PC-FR (flame retardant), can achieve V0 performance in the UL94 flame retardancy test and displays excellent toughness, strength and heat resistance. This filament opens new applications in the transportation industries such as automotive, railway and aerospace which often have FR safety requirements for parts.

**Parts:** Cable Holding Jig

**Support:** SR-30

**Print Time:** 4h 12m

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## POLYMAKER POLYLITE PC

LABS



PolyLite™ PC is produced using a polycarbonate resin specifically engineered for 3D printing. It delivers good stiffness and heat resistance with light diffusing properties, making it great for applications that require embedded LEDs.

**Parts:** Lamp Shade

**Support:** SR-30

**Print Time:** 14h 58m

# COMPOSITES

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## NYLON (6/66) CARBON FIBER



Nylon 6 Carbon Fiber has the strength and lightweight benefits of other carbon fiber composites. The main thing about Nylon 6 that sets it apart from others in that category is its ability to withstand higher temperatures. The heat deflection temperature is significantly higher than many of the popular base polymers. In the case of Nylon Carbon Fiber, the HDT is 100°C higher than that of ABS and 93°C higher than regular Nylon 6.

**Parts:** Sprinkler System Attachment

**Support:** SR-30

**Print Time:** 8h 05m

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## NYLON 12 CARBON FIBER



Much like Nylon 6 Carbon Fiber, the Nylon 12 variant has the benefits of strength, stiffness, and lightweight. Unlike Nylon 6, Nylon 12 has a better resistance to moisture uptake, making it somewhat easier to print and giving the printed part a cleaner final appearance without the need for post-processing. One drawback of Nylon 12 compared to Nylon 6 is it will generally have a lower HDT - so you really just need to weigh what is most important for your specific application.

**Parts:** Mechanical Gripper

**Support:** SR-30

**Print Time:** 19h 29m

## KIMYA PETG CARBON FIBER LABS



Kimya PETG Carbon Fiber 3D filament is a mixture of PETG and carbon fibers. The addition of carbon fibers to PETG provides high levels of mechanical performance. Thanks to its rigidity, the PETG Carbon is highly valued in the production of special parts, notably in the paramedical and automotive fields.

**Parts:** Vent Outlet

**Support:** SR-30

**Print Time:** 8h 46m

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## KIMYA ABS CARBON FIBER LABS



Kimya ABS Carbon Fiber 3D filament belongs to the styrenic polymer family. ABS Carbon is a mixture of ABS and carbon fibers. The carbon fibers give the filament improved rigidity compared to a standard ABS. This filament is highly valued by manufacturers of drones and by modeling aficionados. It is also used to make tools.

**Parts:** Gripper Jaws

**Support:** SR-30

**Print Time:** 12h 21m



## JABIL PETG ESD LABS



ESD (Electrostatic Dissipative) is a property that reduces static electricity in order to protect electrostatic-sensitive devices, or to contain flammable liquids or gases. Through modifications in chemistry, and the addition of a solid particle such as Carbon Black, 3D printing base polymers, such as PETG, can take on ESD characteristics, making them ideal for creating test fixtures or housings for circuit boards.

**Parts:** PCB Holder

**Support:** SR-30

**Print Time:** 6h 20m

## KIMYA ABS KEVLAR LABS



Kimya ABS Kevlar 3D filament is a composite filament enriched in aramid fibers - the same fibers used in bullet-proof vests. It offers strength and durability properties that are superior to a standard ABS. It provides the printed parts with increased resistance to abrasion. It is commonly used for finished parts and tools.

**Parts:** Punching Jig

**Support:** SR-30

**Print Time:** 11h 23m

## KIMYA ABS-EC LABS



Kimya ABS-EC (electrically conductive) 3D filament is a combination of Acrylonitrile Butadiene Styrene and electrically active additives: carbon nanotubes that allow it to conduct electricity. ABS-EC is resistant to impact, heat and ageing. It is used in the automotive and electronics industries.

**Parts:** Discharge Base

**Support:** SR-30

**Print Time:** 7h 32m

## KIMYA ABS ESD-S LABS



Kimya ABS-ESD 3D filament is an Acrylonitrile Butadiene Styrene to which an additive has been added to give it Electrostatic Discharge properties: this material protects against electrostatic discharge. It also provides good impact resistance. It is a lightweight and rigid material that is also easy to print. It is ideal for creating test fixtures or housings for circuit boards.

**Parts:** RPI Case

**Support:** SR-30

**Print Time:** 10h 28m

# METALS

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## BASF ULTRAFUSE 316L STAINLESS STEEL



Ultrafuse 316L is a unique FDM material that allows for users to produce real, solid 316L stainless steel parts. In filament form it is a bound material (ie. metal powder suspended within an ABS-like polymer). This allows for relatively easy use with FDM 3D printers such as the METHOD. Upon completion of the print, a green part must then go through a debinding and sintering process in which the binder material is removed, and the remaining metal material is sintered together to form the final solid metal part. The resulting part can withstand forces and temperatures far beyond the threshold of polymers or composites, making it an extremely valuable option for certain end parts.

**Parts:** Planetary Gear Hub

**Support:** n/a

**Print Time:** 10h 15m

### Metal 3D Printing Process



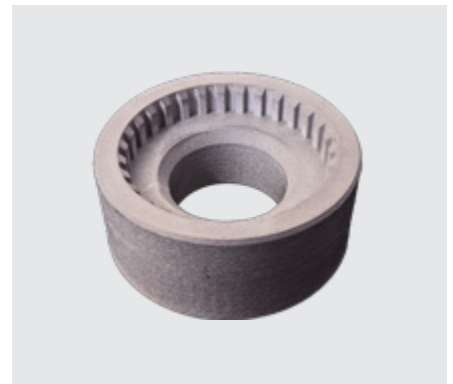
#### PRINT

Launch your print from anywhere via CloudPrint to your personal or team-shared METHOD 3D printer equipped with a LABS GEN 2 Extruder and BASF Ultrafuse 316L material.



#### SEND IN YOUR GREEN PART

Once your "Green" part is complete, send it in to your sintering service provider such as Matterhackers where parts are debinded and sintered in a high heat, pure hydrogen atmosphere resulting in pure 316L Stainless Steel.



#### RECEIVE SOLID METAL PART

You receive the solid steel part in as little as 5 days - up to half the time and the cost of a typical 3D printing service bureau. Install the part as needed or incorporate with other printed parts in composites and polymers for a more dynamic assembly.

# Support Materials

## Enabling the most complex geometries

Whether you're working with FDM, SLA, SLS, or another type of 3D printer, unless you're printing in space, you have to account for gravity. If you're printing something like a solid cube, this isn't really an issue because each layer has a corresponding layer beneath it for support. But what if you have an object that has portions of the model that are essentially floating in midair with no structure directly underneath them? This is where removable supports come into play. Depending on the type of FDM 3D printer you are working with, there are a few good options you can use.

## RAPIDRINSE

### Tap-Water Soluble Support Material for ABS



#### ABS, FINALLY AS EASY AS PLA

With our proprietary RapidRinse™ support achieve incomparable ABS parts with unprecedented ease.



#### TAP WATER SOLUBLE

Forget the cumbersome wash tanks and chemicals, RapidRinse™ dissolves in pure tap water so it's easy to use in just about any environment.



#### DISSOLVES IN MINUTES\*

You don't have time to wait around while your print dissolves, so we've engineered RapidRinse™ to dissolve faster than PVA and competitive high-temp dissolvable support materials.

\*Dissolution time may vary based on part geometry and dissolution methodology

## SR-30

### Soluble support for high temperature polymers



SR-30 is a proprietary material developed by Stratasys to work seamlessly with ABS, ASA, and various other high-temp materials. Because of this focused development, using SR-30 with these typically more challenging materials can yield exceptional results that wouldn't be possible with something like PVA, which is very difficult to use with ABS. Like PVA, SR-30 is dissolvable and can enable extreme complexity of geometry while maintaining excellent surface finish at the support site. Unlike PVA, SR-30 requires a specialty solvent along with heat, to efficiently dissolve. Users of SR-30 will need to invest in additional equipment, and possibly use in a more controlled environment like a lab.

**Parts:** Robotic Sander

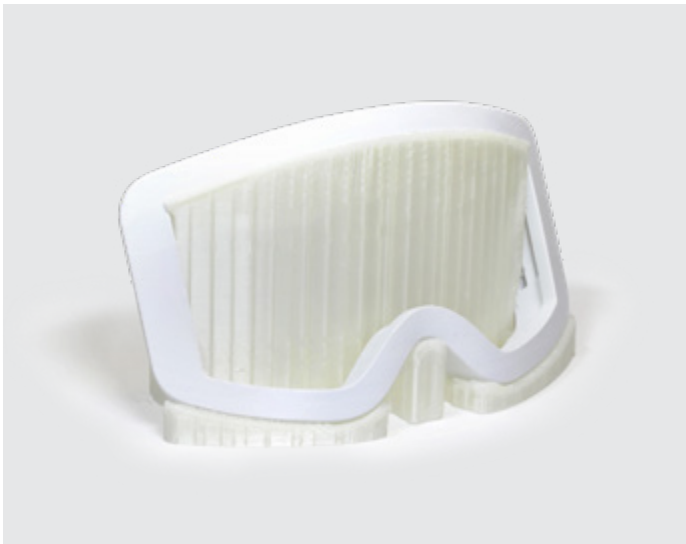
**Support:** SR-30

**Print Time:** 17h 20m

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## PVA

### Water Soluble



PVA (polyvinyl alcohol) is a water soluble support material that is compatible with many lower temperature model materials such as PLA and PETG. Printing PVA alongside a model material requires at least two extruders so you'll need a printer with dual extrusion for this. Because PVA is water soluble, it is extremely office-friendly - you can place your part in water and after a few hours, the supports will dissolve. Using a dissolvable material like PVA allows you to create much more complex parts because the solvent (in this case water) can reach deep within channels and crevices of the part. It also can reduce the damage caused to the print, which might be more prevalent when using breakaway supports.

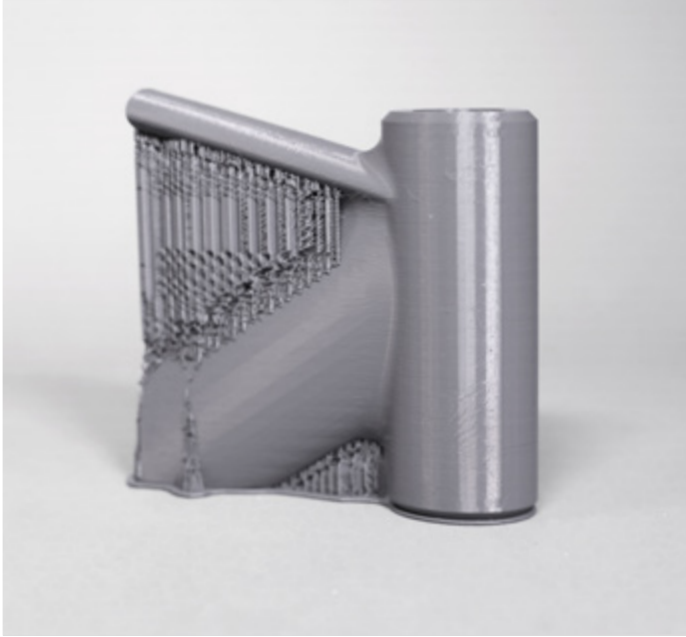
**Parts:** Ski Goggles

**Support:** PVA

**Print Time:** 14h 16m

## BREAKAWAY

### Using Model Material



Breakaway supports aren't so much a type of material, but rather a software trick in which the slicing program fills in the void below the model with a removable structure printed in the same material. Breakaway supports are popular because they can use the same material as the printed model with a single extruder (as opposed to dissolvable supports requiring a second extruder and material). The quality of the print then depends on a couple of variables. The first is dependent on the slicing algorithm. A good slicer will ensure that the prints are well supported, but also leave a seam along which a clean break can be made. The second thing to consider is which material is being used. A hard, rigid plastic like PLA is really best for this because it is more apt to having a clean fracture whereas a less rigid plastic will bend and tear when removing support, leaving remnants on the model part.

**Parts:** Bicycle Front Stem

**Support:** Breakaway

**Print Time:** 7h 12m

## BREAKAWAY

### Using Support Material



For certain model materials, using the primary material as model AND support isn't really feasible. This can be due to a variety of reasons, but most commonly you'll find issues when the material is less rigid and more pliable. ABS is one example of a material where you may have a more difficult time because removal of the ABS supports is more of a tearing action than fracturing. This can leave unwanted artifacts on your print. Thus there is an option to use a different material (either model or support) loaded in the second extruder as a breakaway material. You may find settings to do just this and it can allow the user to use a more pliable material in a situation where they want the post-processing speed offered by breakaway supports.

**Parts:** Bicycle Pedal

**Support:** SR-30 Breakaway

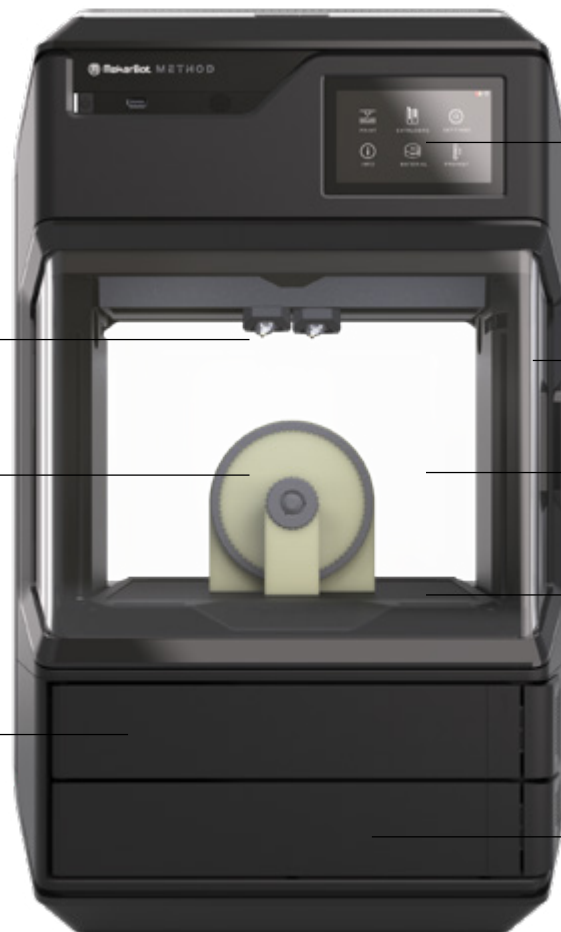
**Print Time:** 10h 34m

# Not All 3D Printers are Equal: 5 Things that Allow METHOD 3D Printers to Print Materials Better

While FDM (also known as FFF) is a specific category of 3D printers, that doesn't mean all FDM 3D printers are created equally. Within the family of FDM, costs can range from \$200 to \$200,000. While the most basic 3D printing technology is a build plate, with an extruder and a gantry, there are many things you can do to improve print quality, material diversity, complexity, and more. For this section, we're going to focus on the industrial processes and features that enable the METHOD 3D Printers to print with a unique blend of speed, dimensional accuracy, and reliability. We'll go in chronological order from initial development through to final print.

## SENSORS + CONNECTIVITY

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TOUCHSCREEN

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DUAL PERFORMANCE

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ULTRA-RIGID METAL FRAME  
CONSTRUCTION

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DISSOLUBLE SUPPORT SYSTEM

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CIRCULATING HEATED  
CHAMBER

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DRY-SEALED

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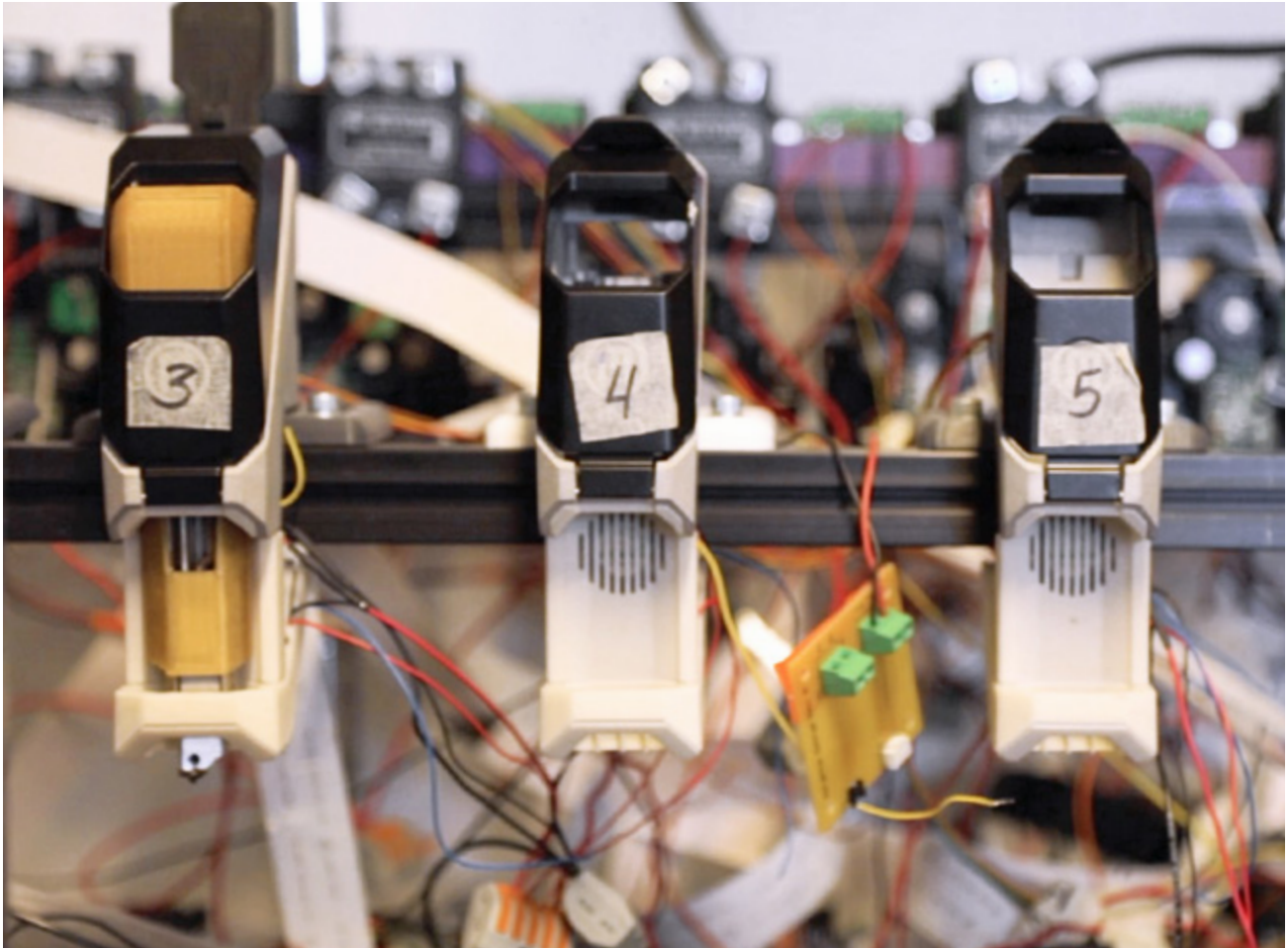
SPRING STEEL BUILD PLATE

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SMART SPOOLS AND SMART  
ASSIST MATERIAL LOADER

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# 1. Testing and Optimization



## **PRINTER OPTIMIZATION**

Once the decision is made to optimize a new material for the METHOD platform, we work with a material supplier to get samples and suggested settings. From there, a collaborative effort between our software development team and test engineering group will develop and optimize slicing profiles that will yield best results in part quality, surface finish, dimensional accuracy, and print time. Depending on the material type, this process can take up to several months.

## **TORTURE TESTING**

During the optimization, ABR tests are conducted across dozens of printers to ensure consistency of these settings while printing some of the most challenging geometries. These tests can be grueling and push the printers to their limits to find the limits of both the hardware and the material, and ensure the user will have a good experience when they print with the new material.



## 2. Shipping and Handling



### SMART SPOOL / MYLAR BAG

Once the material is manufactured, it is spooled up and bagged. METHOD utilizes the Smart Spool system, which is a purpose-built spool that contains sensors read by the printer when loaded into the material bay. The RFID chips contain information about the material type, color, amount remaining on the spool, etc. This information allows the printer to use the optimized print settings with the material type, further streamlining the user experience. The spools are shipped in resealable mylar bags, which are impermeable to light and moisture and help protect the filament from potential damage. Within the spool there is also desiccant to keep the environment moisture-free.

### 3. Loading and Storing

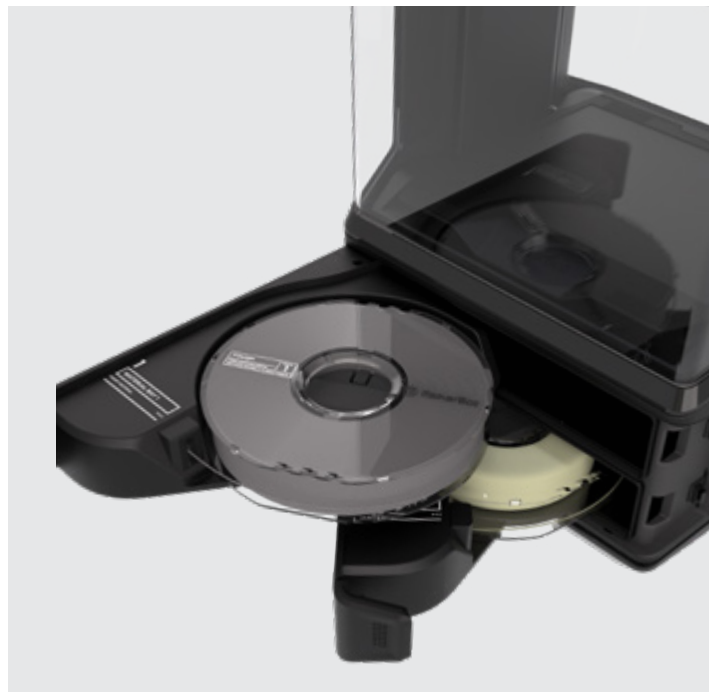
#### **SMART ASSIST MATERIAL LOADER**

Once the spool is loaded into the drawer of the material bay, you only need to insert the tip of the filament into the material slot. The printer recognizes the presence of filament and will do the rest of the work loading the filament up the routing tube and into the extruder. This hands-free process is not only convenient for users but also prevents the user from accidentally adjusting a calibrated extruder.



#### **DRY-SEALED MATERIAL BAYS**

Once material starts loading, the drawers on the material bays can be closed. The two Dry-Sealed Material Bays are sealed from the outside environment. This seal, combined with the desiccant cartridge of the Smart Spool, ensures that the material is stored in a low-humidity environment even during printing and in between prints. A sensor in the bay can show the humidity level within the bay and humidity levels can be tracked across Smart Spools. Protection from humidity is especially important when printing with materials like Nylon and PVA – both of which are prone to absorb moisture which can cause damage to the end print.



## 4. Printing

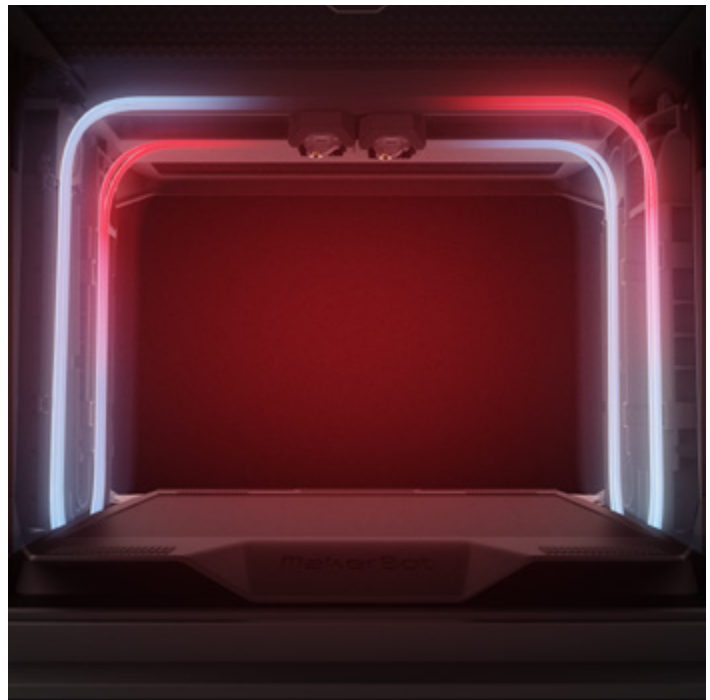
### PERFORMANCE EXTRUDERS

METHOD has two extruders – one for model material and one for support material. These extruders are packed with a sensor suite and chip set that enable them to accurately control print temperature so as not to damage materials. The sensor suite also includes active jam detection, and auto-stop when filament runs out. With a range of temperatures, METHOD's extruders can handle higher temp materials such as ABS and ASA, or when active cooling is turned on, single extrusion low temp materials can be printed with ease.

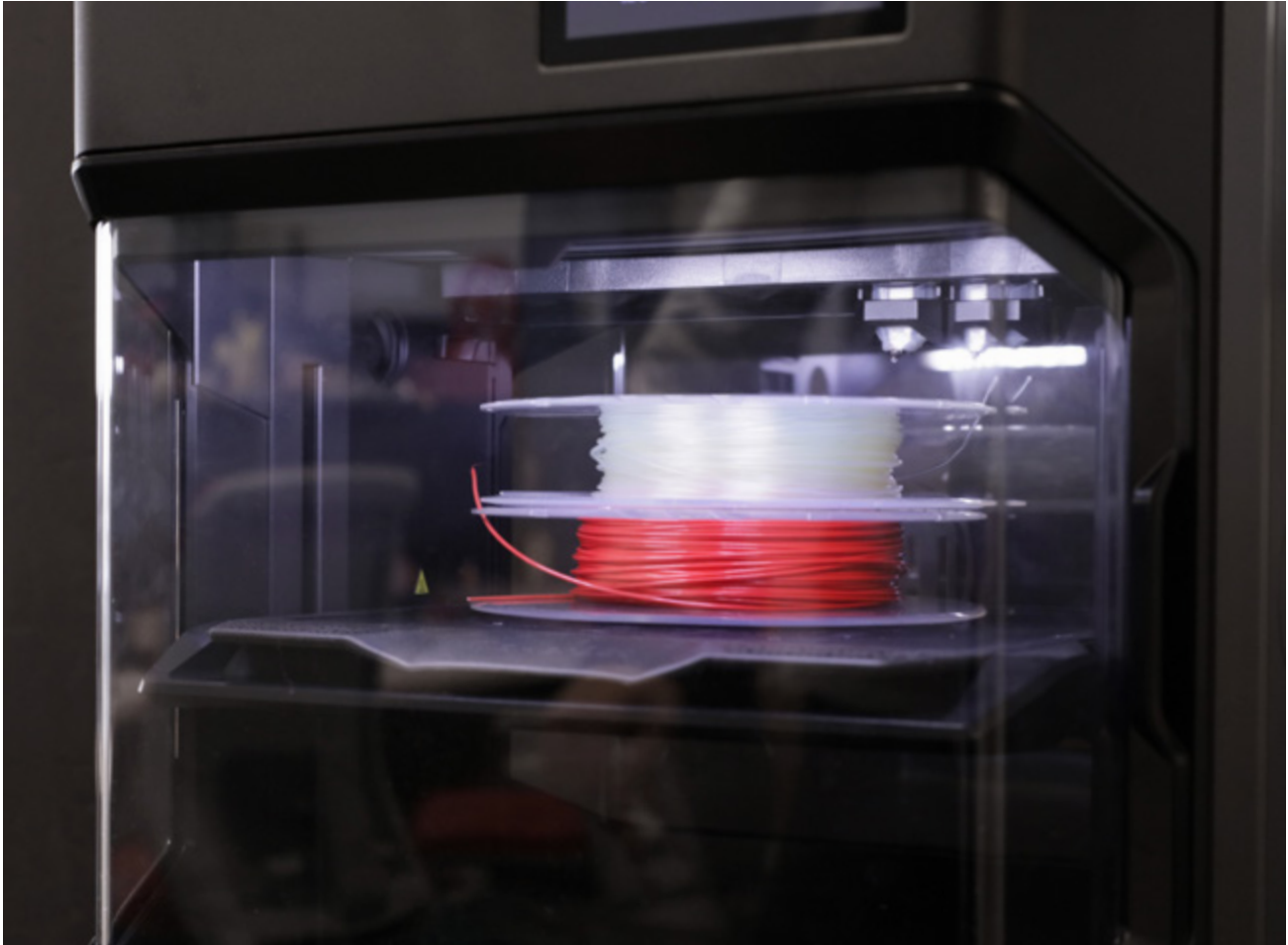


### CIRCULATING HEATED CHAMBER

One of the marquee features of METHOD that distinguishes it from other 3D printer options in its price class is the Circulating Heated Build Chamber. Using two active heat exchangers on either side of the printer, METHOD warms the chamber temperature from 40°C and 100°C depending on the material. By creating a consistent chamber temperature throughout, METHOD is able to achieve a printed part dimensional accuracy within  $\pm 0.007$ in ( $\pm 0.2$ mm) of the CAD design. The added heat also increases the strength of the bond between vertical layer lines – giving the part strength on all three axes (not just two).



## 5. Drying



### CHAMBER MATERIAL DRYING

METHOD has the ability to dry spools using the heat within the Circulating Heated Chamber. This is great if you have a spool that's been left out of the bag for a long period of time, or if the spool is older and the desiccant has become saturated. To run this function, use the touchscreen to navigate to **Settings > Advanced** and select Dry Filament. To take it one step further, get the Material Dry-Kit which includes a fresh bag and fresh desiccant. Putting your spool into the kit before running the dry cycle will improve the results significantly.

Conceptual  
Prototyping

Functional  
Prototyping

Manufacturing  
Aids

End-Use Parts

## Polymers

	Conceptual Prototyping	Functional Prototyping	Manufacturing Aids	End-Use Parts
PLA	✓✓✓	✓✓✓	✓✓✓	✓✓✓
TOUGH	✓✓✓	✓✓✓	✓✓✓	✓✓✓
PET-G	✓✓✓	✓✓✓	✓✓✓	✓✓✓
ABS	✓✓✓	✓✓✓	✓✓✓	✓✓✓
ABS R	✓✓✓	✓✓✓	✓✓✓	✓✓✓
ASA	✓✓✓	✓✓✓	✓✓✓	✓✓✓
NYLON	✓✓✓	✓✓✓	✓✓✓	✓✓✓
PC-ABS	✓✓✓	✓✓✓	✓✓✓	✓✓✓
PC-ABS FR	✓✓✓	✓✓✓	✓✓✓	✓✓✓
JABIL TPE SEBS 1300 95A	✓✓✓	✓✓✓	✓✓✓	✓✓✓
mitsubishi DURABIO	✓✓✓	✓✓✓	✓✓✓	✓✓✓
POLYMAKER POLYMAX PC	✓✓✓	✓✓✓	✓✓✓	✓✓✓
POLYMAKER PC-PBT	✓✓✓	✓✓✓	✓✓✓	✓✓✓

Conceptual  
Prototyping

Functional  
Prototyping

Manufacturing  
Aids

End-Use Parts



**POLYMAKER  
POLYMAX PC-FR**



**POLYMAKER  
POLYLITE PC**



## Composites

**Nylon (6/66)  
Carbon Fiber**



**Nylon 12  
Carbon Fiber**



**KIMYA PETG  
CARBON FIBER**



**KIMYA ABS  
CARBON FIBER**



**JABIL PETG ESD**



**KIMYA ABS KEVLAR**



**KIMYA ABS EC**



**KIMYA ABS ESD-S**



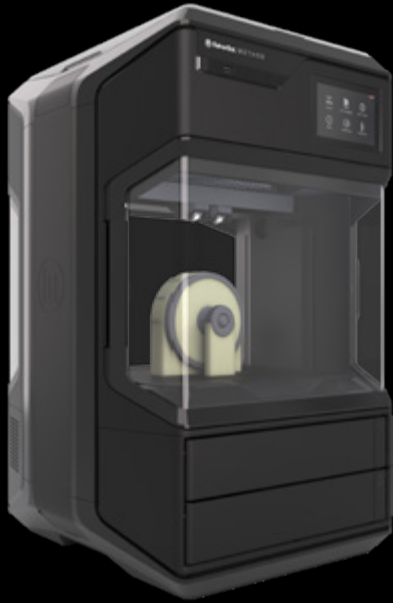
## Metals

**BASF Ultrafuse 316L  
Stainless Steel**

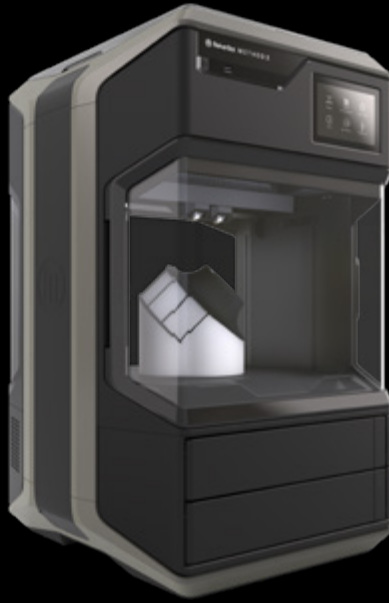


# METHOD

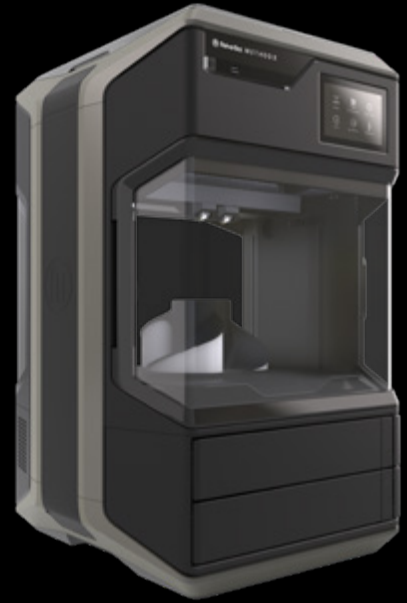
Limitless 3D Printing



METHOD



METHOD X



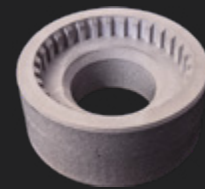
METHOD X  
CARBON FIBER EDITION



POLYMERS



COMPOSITES



METAL

Print all the materials in this guide and more on METHOD

[MAKERBOT.COM/METHOD](https://www.makerbot.com/method)