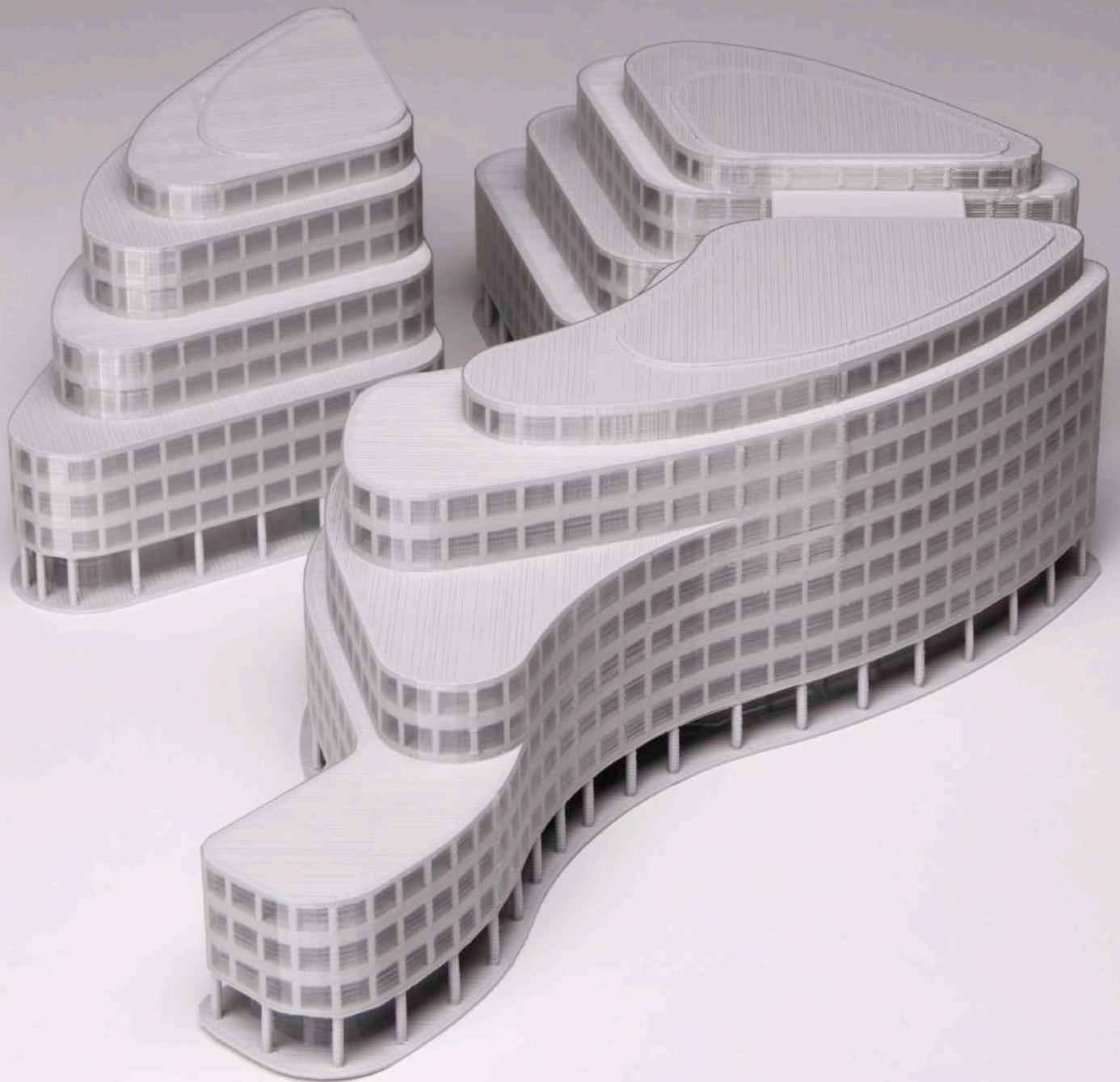




# 3D Printing and Digital Fabrication ZMorph for Professionals



# All-in-one solution for professionals

3D printing is on the constant rise with over 70% of companies in the US already using it in various ways. Engineers, designers, entrepreneurs, and other professionals use this technology for rapid prototyping, product design, and boosting manufacturing processes. 3D printed items can be used for materializing ideas as well as creating custom market-ready products with new applications being found on daily basis.

But 3D printing is only one of several digital fabrication techniques. Previously limited to huge and expensive dedicated machines, now technologies like CNC milling, laser cutting and engraving, food and ceramics printing, are available within one desktop ZMorph 2.0 SX Multitool 3D Printer, easy to use and fit on a desk.

Professional applications of digital fabrication are vast and examples gathered in this booklet are just a sample of that. They also prove that this technology inspires innovations and unlocks new waves of creativity in every area it's applied. There's no other solution that gives such freedom while saving both time and money for your business.

## Continue reading to learn:

- Various ways professionals can utilize digital fabrication
- How ZMorph 2.0 SX is perfectly designed for professional uses
- Use cases and successful applications of digital fabrication
- The latest innovations in two-material 3D printing
- Wide range of materials available to all ZMorph users
- The difference between ZMorph and regular 3D printers

*The sheer variety of tool heads the ZMorph 2.0 SX provides is stunning, and the results lived up to expectations. (...) If you are looking for a single machine to do it all, look no further. (Vol. 54)*

## Make:

*Best All-in-one 3D printer 2016. Although it looks like a simple RepRap from afar, this is a great tool and possibly the best in the all-in-one 3D printer class.*



*If you're looking for a more capable fabrication station, ZMorph should definitely be on your list.*



# Perks of digital fabrication

## Full in-house product development

Digital fabrication gives you full control over the development process. By owning a multitool 3D printer, companies can choose fabrication methods and materials for making their working prototypes as well as quickly test and improve designs based on the results.

## Faster supply chains and shorter lead times

With a 3D printed prototype similar in size and properties to a final product, it's much easier to communicate and verify the idea. Professionals can reduce the time it takes them from sketching the idea to manufacturing or from an order to shipping products to clients.

## Fewer construction constraints

Some precise parts can't be manufactured without digital fabrication, other are simply cheaper to fabricate this way. The technology also opens new range of possibilities for creating unique jigs and fixtures that are cheap and easily replaceable.

## Reduced costs and lack of wastefulness

Desktop multitool 3D printer can serve as three machines in one - 3D printer, CNC cutter and laser engraver, which brings savings in space and energy. The technology also helps save time and money on development, while requiring less material and creating less waste.

## Customization and low volume manufacturing

More and more clients prefer buying products that are tailored to fit their needs, instead of stuffing their pockets and homes with impersonal stuff. Digital fabrication provides means to stand out from the crowd by offering personal value and quality instead of quantity.



# ZMorph 2.0 SX - designed for professional uses

We're proud to present ZMorph 2.0 SX Multitool 3D Printer, the most versatile digital fabrication desktop machine on the market. Its unique features make it the best all-in-one solution for professionals looking for a reliable tool that provides high quality of works while saving time and money. With this machine you can instantly add the full variety of digital fabrication methods into your professional work life and boost your company's product development and manufacturing processes.

## Ready to use out of the box

This multitool 3D printer can be set up and working in just a few minutes after taking it out of the box. It doesn't require additional assembly and every professional can start using it after familiarizing with comprehensive online guides. It's easy to use for beginners while giving the advanced users a wide range of settings to tinker with.

## All-in-one mini factory

ZMorph 2.0 SX can be used for one and two-material 3D printing, 2D and 3D CNC milling, laser cutting and engraving, printing with ceramics and chocolate. This vast set of digital fabrication techniques makes it the most versatile desktop machine on the market and enables using it for a large number of applications in rapid prototyping, product design, jigs and fixtures, and low volume production.

## Fits into existing workflows

The machine was designed to fit existing workflows with PC and Mac connectivity, use of standard rapid prototyping and manufacturing G-code files, and the ability to work with the most popular CAD and printing software.

## Compatible interchangeable parts

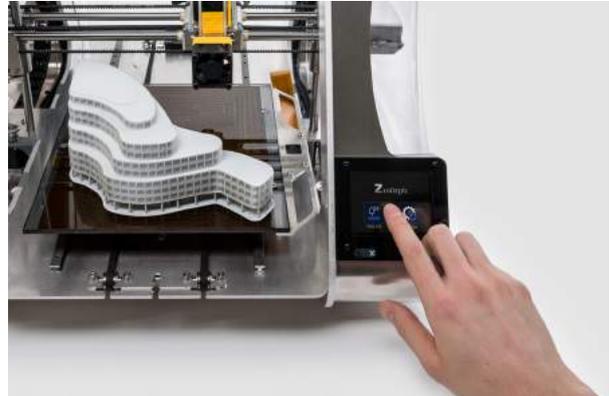
ZMorph 2.0 SX comes with a set of interchangeable toolheads that can be mounted in just a few steps in order to change the digital fabrication technique. Switching between various fabrication methods in one machine is less time consuming and more cost-effective than using separate tools and technologies incompatible with each other.



# ZMorph 2.0 SX - designed for professional uses

## Easy to operate and service

LCD Touchscreen enables easy access to all functions of the machine, while universal thumbscrews and magnetically attached worktables dedicated for 3D printing and CNC milling makes it very easy to service the machine. ZMorph 2.0 SX also offers user friendly magnetic add-ons like cooling fans and calibration TouchProbe.



## Build to work around the clock

Durable aluminum parts and strong top frame makes the whole construction very sturdy. See-through plastic covers provide an enclosed working environment and safety for users, while encoder-based Closed Loop System guards the quality of prints. ZMorph 2.0 SX also features a Quiet Mode so it can work overnight at a reduced energy consumption.



## Keeps your workspace clean and safe

Plastic see-through covers around the machine not only serve as protection, but also help in keeping your workplace clean, so the machine can be placed in an open office environment. Only laser works require additional safety measures.

## Works with over 30 materials

ZMorph 2.0 SX works with a wide range of materials for 3D printing and other digital fabrication techniques, including ABS, M-ABS, PLA, PVA, HIPS, Flex, various kinds of wood, plexiglass, cardboard, leather, ceramics, chocolate, and more. It gives the full freedom to choose brands and material providers based on their local availability and prices.



# ZMorph 2.0 SX - designed for professional uses

## Low wastefulness for bigger savings

While using ZMorph 2.0 SX you know exactly how much material the machine will use to complete your project which helps with inventory planning. Number of wasted material is minimal and what's left always can be recycled or reused for other projects.

## Comes with a dedicated software

Good software is essential in utilizing digital fabrication for your business. This is why ZMorph 2.0 SX comes with dedicated 3D printing software that works with the most popular file formats like .STL, .JPG, .DXF, and DICOM medical files. In Voxelizer you can edit 3D models at voxel level, adjust printing settings, and prepare objects for manufacturing. It also features several workflows dedicated to multi-material printing, color mixing, CNC, laser works, and thick pastes. It's a complete software solution for digital fabrication.

## 1 year of free warranty

We know that machine like ZMorph 2.0 SX will be heavily used, especially in design teams, product development, and manufacturing departments. This is why we offer a full year of free warranty for all components of the machine. You can also prolong your warranty for the second year at a reasonable price.

## Availability and tech support

ZMorph is currently available globally online and through a chain of resellers in over 50 countries. You can use our extensive Knowledge Base and contact Customer Support at any time, while our partners can provide you with on-site training and local tech support without the need to send out the machine and losing precious time.

## Individual offers tailored for creative professionals and company needs

We encourage you to talk with our Sales Team and Distributors before making a decision about which multitool 3D printer choose for your business. Knowing your story and actual needs, we'd be happy to prepare a custom offer tailored to your needs.



# Rapid prototyping

Rapid prototyping is one of the most popular applications of digital fabrication. The technology enables reliable and cost-efficient product development. Designers and engineers have full creative freedom over the manufacturing process, which means they can iterate faster and improve their projects at low costs. They also can use materials identical or similar in properties to those planned for the final product, which allows additional testing at an early stage of development.

Example of the Polish company YLE Engineers shows that a desktop machine can be used for rapid prototyping of a truly large-scale project. Using ZMorph multitool machine they were able to prototype and test the design of a 2,000 ton bridge that they later successfully built in Gdansk, Poland.



## Selective two-material printing

Combining DUAL PRO toolhead and Voxelizer software, ZMorph users are able to select parts of the model and print them with a different material than the rest of the model. Using this feature to print architectural models, you can create detailed buildings or sceneries and lower the manufacturing costs at the same time.

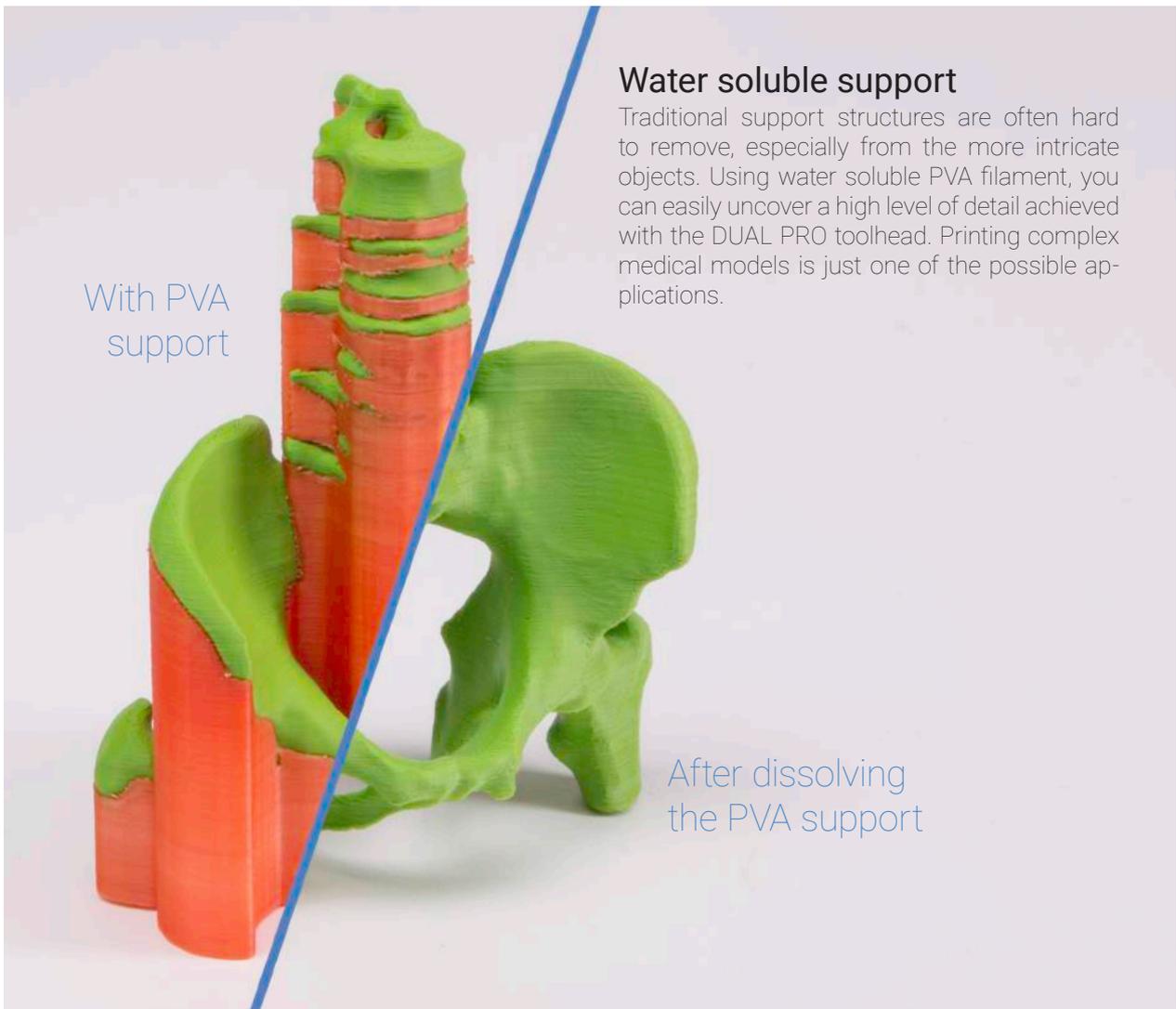


# Product design



If a picture is worth a thousand words, then a showcase model is worth tens of thousands. 3D printing gives product designers, architects, and artists from all over the world means to materialize their ideas and make their point during presentations and business meetings. It also gives them the advantage of hands-on experience when working on consumer products.

Over the course of six iterations, designer of the wireless mouse model presented on this page was able to improve its shape, make it more ergonomic and convenient to use. ABS material used for 3D printing also allowed additional post-production and painting of the model, so it could imitate the final product. All much quicker and at a fraction of cost when compared to traditional model-building techniques.



## Water soluble support

Traditional support structures are often hard to remove, especially from the more intricate objects. Using water soluble PVA filament, you can easily uncover a high level of detail achieved with the DUAL PRO toolhead. Printing complex medical models is just one of the possible applications.

With PVA support

After dissolving the PVA support

# Manufacturing

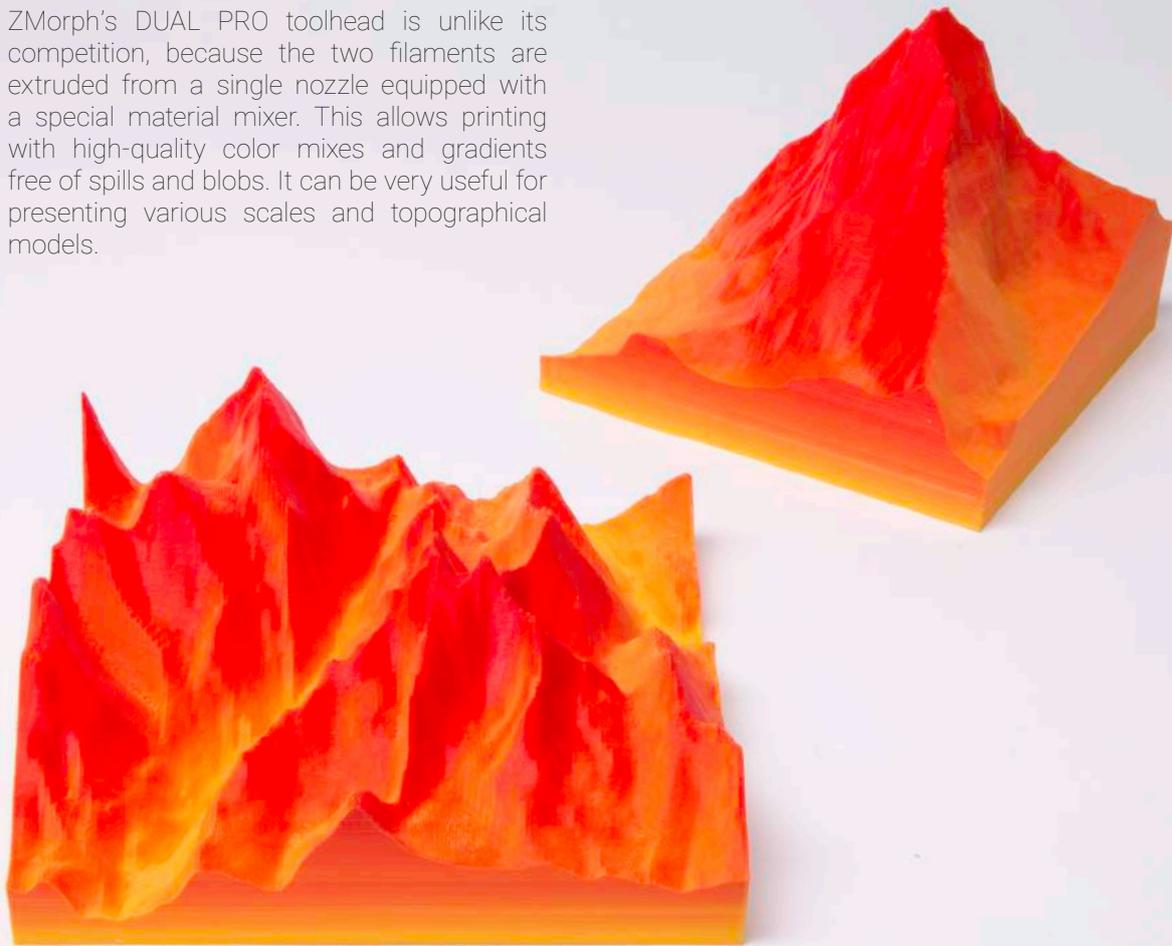
Jigs and fixtures enable people to perform their jobs better. They aid repeatability, quality, and time efficiency. Up until recently, many companies didn't use them because of the high costs, but that changed thanks to digital fabrication. Companies can now improve their processes internally in just one day (instead of weeks) with precise parts previously unobtainable. This can bring up to 95% savings in costs, including outsource and storage. 3D printed toolings can be thrown away or recycled and printed again when needed.

The same applies to creating prototypes, casts and forms for various types of molding. Using ZMorph machine, designer Paula Szarejko was able to improve traditional jewelry making process and lower the manufacturing costs of silver jewelry by 40%.



## Advanced color mixing

ZMorph's DUAL PRO toolhead is unlike its competition, because the two filaments are extruded from a single nozzle equipped with a special material mixer. This allows printing with high-quality color mixes and gradients free of spills and blobs. It can be very useful for presenting various scales and topographical models.



## Low volume production



Digital fabrication gives an innovative set of tools to craftsmen and artists previously limited to traditional methods. Now they can offer new products and higher level of customization, no matter if they're making home interior decorations, original jewelry, clothing, or shoes.

Spanish footwear designer Silvia Fado made ZMorph multitool 3D printer an integral part of her workshop. She uses it for both prototyping and manufacturing of final parts. Time saved in development allows her to rectify and improve her designs. For her unique shoes, Silvia prints heels and platforms and combines them with materials like leather, wood, metal components, industrial springs and even pneumatic hydraulics. Digital fabrication gave Silvia Fado a completely new way of materializing her ideas.



### Image Mapping

The latest and most innovative application of the DUAL PRO toolhead and Voxelizer software. You can place colorful bitmaps on any 3D object and print them using color mixing. While perfect for designers, artists, and craftsmen, this unique technology is the next step towards full-color desktop FDM printing.

# List of recommended materials

## Most popular for 3D printing

	Printing temperature (extruder / bed)	Printing difficulty	Features	Best two-material mixes	Material surface	Post-production
ABS	220-250°C / 90-100°C	Easy	Light and durable, stable, easier in post-production than PLA	ABS, HIPS	Mat	Mechanical, acetone, painting
M-ABS	220-250°C / 90-100°C	Easy	Less warping than regular ABS, good chemical resistance	M-ABS, HIPS	Mat	Mechanical, acetone, painting
PLA	180-210°C / 60°C	Easy	Easy to print at low temperatures, hard, low warping, biodegradable, limited smell	PLA, PVA	Semi-gloss	Limited mechanical, painting
HIPS	220-250°C / 90-100°C	Medium	High impact resistance, easy to glue	HIPS, ABS, M-ABS	Mat	Dissolves in D'limonen, mechanical, painting
ASA-X	235-250°C / 90-100°C	Easy	Great strength and interlayer adhesion, UV and Weather resistant	ASA-X, ABS, M-ABS, HIPS	Semi-gloss	Mechanical, painting
Flex & SemiFlex	230-250°C / 115°C	High	Strong, heat, chemical and UV resistant	Flex & SemiFlex	Gloss and semi-gloss	None
PVA	180-205°C / 60°C	Medium	Perfect for support, good bonding, biodegradable, limited smell	PLA	Translucent	Water soluble
PETG	195-220°C / 60-80°C	Easy	Strong and flexible, doesn't absorb water, can have contact with food	PETG, PLA	Gloss	Limited mechanical, painting

## Other 3D printing materials

Thermochrome, wood filaments, metal filaments, ceramic filaments, thick pastes (chocolate, cake, ceramics), and many more.

## CNC cutting & engraving

Plywood, Beech, Oak, Maple, Walnut, Pine, Chestnut, Machining wax, PCB, Plexiglass, PVC foam, and many more.

## Laser cutting & engraving

Plywood, EVA foil, cardboard, leather, and many more.



# ZMorph 2.0 SX - more than a regular 3D printer

	Zmorph	Typical 3D printers (Makerbot, Ultimaker)	Glowforge	Formlabs
single material printing	✓	✓		✓
multi material printing	✓	✓		
multi material blending & mixing	✓			
CNC milling	✓			
laser cutting and engraving	✓		✓	
food printing	✓			
ceramic printing	✓			

## Construction

- Aluminum 6 and 3 mm (precise and very rigid), stainless steel 2 mm and 3 mm, PET 3 mm and ABS.
- Interchangeable nozzles: 0.2 mm, 0.3 mm, 0.4 mm.
- Interchangeable toolheads.
- Interchangeable worktables.
- Add-on slot.
- Heated worktable: hardened glass 5 mm, silicone heater 140 W, temperature up to 120°C.

## Dimensions

- Working area: 250 x 235 x 165 mm (toolhead dependent).
- Dimensions: 530 x 555 x 480 mm.
- Weight: 20 kg with packaging (basic version).

## Positioning precision

- 14 microns for X and Y axis, 0.625 micron for Z axis.

## Resolution

- 50 - 400 microns.

## Electronics

- Sunbeam 2.0 with ARM LPC1769 processor, equipped with 5 stepper motor drivers - 3 for XYZ axis, 2 more for double material extruder. Internal disc drive accessible via USB.

## Display

- Capacitive LCD color touchscreen.

## Communication

- USB and LAN (access to WiFi after plugging to WiFi router).
- Standalone printing supported via panel + internal SD card.

Contact us:

[www.zmorph3d.com](http://www.zmorph3d.com)

