

SWAIE

INDUSTRIES

Premium Additive Manufacturing & Prototyping

Flathead Valley, Montana

ABOUT US

From concept to completion, SWAE Industries uses 3D printing to prototype and manufacture specialized equipment.

What began as a small-scale print lab for research and development has grown into a boutique additive manufacturing workshop. We are excited to extend our capabilities as the region's most capable 3D printing facility to select partners and businesses.

SERVICES

Rapid Prototyping
Low Volume Manufacturing
3D/Computer Aided Design
Part Surface Refinishing

APPLICATIONS

Both conceptual prototyping and functional end-use products:

Industrial Equipment
Machining/Tooling Fixtures & Molding
Aerospace/Defense
Automotive
Vintage/Out-of-Production Parts
Medical Devices & Prosthetics
Low-Volume Consumer Goods



MATERIALS

Note: Material datasheets can be provided upon request.

COMPOSITES/THERMOPLASTICS

Onyx

A micro carbon fiber filled nylon composite, featuring high strength/toughness and a black, matte finish. It can be further reinforced with continuous fiber and is also available in ESD resistant and flame-retardant variants

Onyx FR

Onyx ESD

Nylon

A smooth, non-abrasive thermoplastic compatible with continuous fiber reinforcement. It is available in a white, gloss finish

PLA

A low-cost prototyping plastic available in a wide range of colors (black, gray, white, red, orange, yellow, green, and blue) with a matte finish

TPU 95A

A flexible, rubber-like thermoplastic available in black and white with a gloss finish

FIBER REINFORCEMENT

A continuous fiber reinforcement process unique to our Markforged printers allows plastic parts to be strengthened with a secondary long-strand fiber material added mid-print.

Carbon Fiber

Highest strength-to-weight ratio

Carbon Fiber FR

Flame retardant variant

Fiberglass

Low-cost alternative to Carbon Fiber

HSHT Fiberglass

High strength/temperature variant

Kevlar (Aramid Fiber)

Toughness and energy/impact absorption

Fiber Fill Type	Concentric Fiber
Walls to Reinforce	Outer Shell Only
Concentric Fiber ...	4
Start Rotation Pe...	
Add Sketch	

METALS

17-4PH Stainless Steel

A multipurpose steel

Copper

A soft and ductile metal with thermally and electrically conductive properties

Inconel 625

A nickel-chromium based superalloy featuring high temperature and corrosion resistance

H13 Tool Steel

A metal of higher temperature resistance and hardness than 17-4PH Stainless Steel

A2 Tool Steel

An air hardening universal cold work steel, featuring high compression strength and dimensional stability during hardening and tempering

D2 Tool Steel

A high carbon/chromium air hardening steel with higher hardness and wear resistance but lower toughness relative to A2 Tool Steel

TECHNOLOGY

Markforged X7 (Gen 2) & Onyx Pro (Gen 2)

Our composite printers use precision machined hardware and laser scanning to consistently produce functional parts with the highest surface quality, accuracy, and strength achievable by any FDM printer in the industry. They employ an FDM/FFF (fused filament fabrication) printing process in which spooled material filament is extruded through a heated nozzle which constructs a part layer by layer based on a digital 3D file. Its continuous fiber reinforcement process can produce parts 10X the strength of ABS and capable of replacing machined aluminum.

Markforged Metal X (Gen 2)

Our Metal X system is a 3-stage end-to-end fabrication process. A part is printed via a bound powder FFF process before progressing through a solvent wash and sintering furnace. This is capable of producing genuine, workable metal parts, in high temperature/density metals, with intricate features that exceed the capabilities of other fabrication methods.

DESIGN PARAMETERS

Composites/Thermoplastics

Build Volume:

330 x 270 x 200mm

(13.0 x 10.6 x 7.9in)

Metals

Build Volume:

380 x 165 x 164mm

(15.0 x 6.5 x 6.5in)

Note: Parts are scaled up by about 18-20% pre-sintering to account for shrinkage.

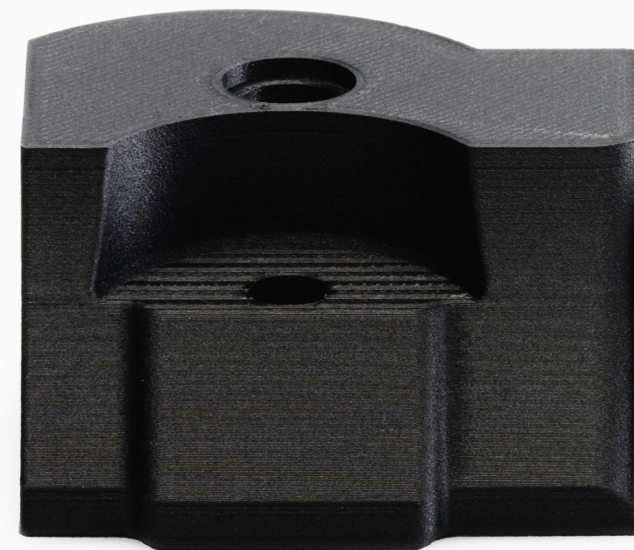
Note: Alternate build volumes are available that may better accommodate your part.

Note: Design guides can be provided upon request.



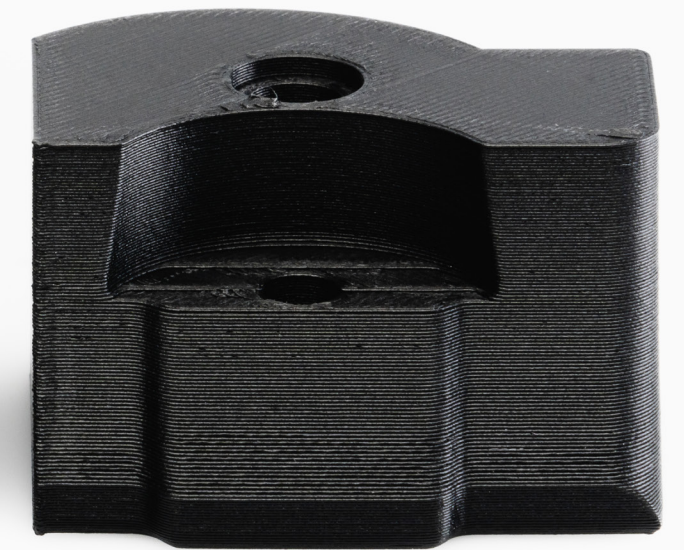
Material: Onyx

Cellular Infill (37% triangular)



Material: Onyx

Layer Height: 0.1mm



Material: Onyx

Layer Height: 0.25mm

SURFACE REFINISHING

STAGE 1 - Basic Post-Processing

All standard print jobs are offered with a minimal level of post-processing, including removal of all scrap support material. We offer additional stages to enhance the quality of the end product. Consult with us to find the process best suited to your part's intended use.

STAGE 2 - Pretreatment

Polyester Body Filler/Glazing

Primer Application

The FDM printing process results in a layered texture. While our printers are calibrated to minimize this, filler/primer application may be necessary to get a perfectly smooth finish.

STAGE 3 - Painting & Clear Coating

Base Coat Application

Top Coat Application

Filler/primer preparation can be followed up with a full refinishing whether it be an automotive level paint job or durable/textured finish for more rugged applications, among a range of other processes.

Note: Specific dimensional accuracies cannot be guaranteed through additional finishing stages as the original printed surface is being manipulated.

Note: Print quality and finishing prices are inversely related (a part printed at a higher speed/lower quality will take more time to finish to the same standard).



PROCESS



Intake

Whether you have print-ready files or only rough guidelines, we'll work with you to develop a quote unique to your project.



Design

We'll review your project and offer consulting and design services as needed to help optimize your part for printing and meet your exact specifications.



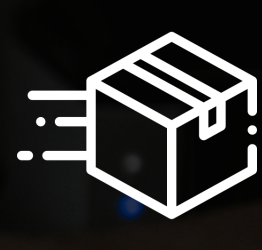
Printing

Once approved, we'll begin printing. Print time can vary greatly depending on the size, material, and quality required for the job.



Post-Processing

Wash and sintering stages are required for metal parts along with a range of additional post-processing stages available to create a more refined product.



Delivery

We'll notify you as soon as your print is complete. Schedule a pickup from our lab in person or have us securely ship it directly to you.

PRICING

Processing

\$50 (covers file review/custom quote)

Design/Labor

Additional CAD/3D design services provided at \$90/hr

Material

\$0.16 - \$2.94/cc (varies by chosen material)

Machine

\$3.40 - \$15.30/hr (varies by printer)

Wash/Sinter

\$608.89 - \$1560.21/run (applicable to metal prints only)

Refinishing

Additional post-processing provided at \$120/hr

Material cost (varies by chosen stages)

Shipping

Preferred method will be added to final invoice



EXAMPLES - ONYX



Subaru WRX STI Rally Mirror

Material: Onyx

Dimensions: 316x134x133mm

Production Time: 3 Days

Price: \$380



Part Mold

Material: Onyx

Dimensions: 285x96x21mm

Production Time: 3 Days

Price: \$169



Wheel Center Cap

Material: Onyx

Dimensions: 60x60x20mm

Production Time: 2 Days

Price: \$27

EXAMPLES - PLA



Robot Leg Panel

Material: PLA (black)

Dimensions: 258x254x100mm

Production Time: 3 Days

Price: \$220



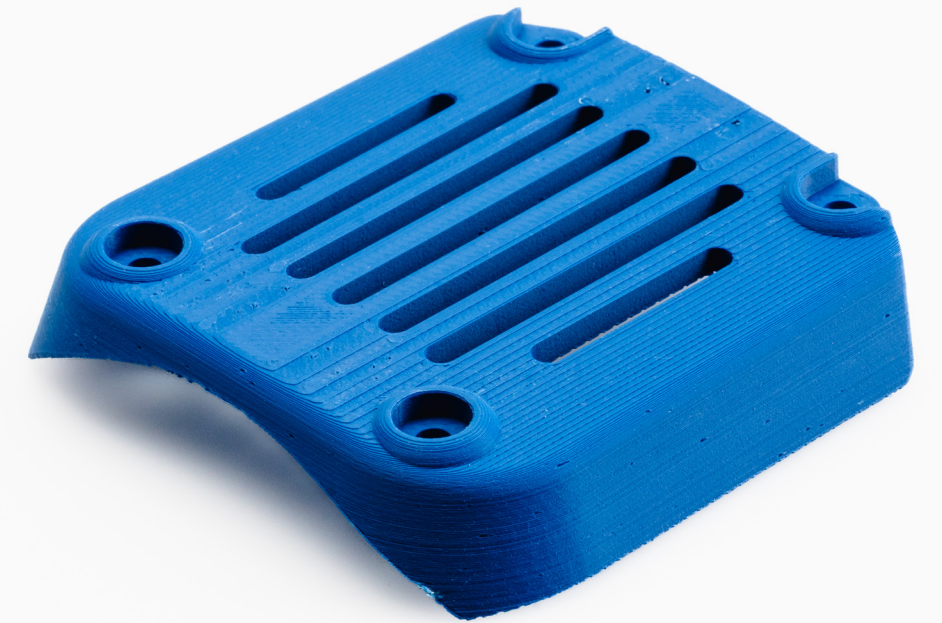
Robot I/O Cover

Material: PLA (orange)

Dimensions: 165x126x69mm

Production Time: 2 Days

Price: \$112



Fan Shroud

Material: PLA (blue)

Dimensions: 77x74x17mm

Production Time: 2 Days

Price: \$34

EXAMPLES - STEEL



Coin Panel

Material: 17-4PH Stainless Steel

Dimensions: 97x171x3mm

Production Time: 5 Days

Price: \$953

Max Batch Quantity: 4

Per Part Batch Price: \$416



Vehicle Badge

Material: 17-4PH Stainless Steel

Dimensions: 203x38x3mm

Production Time: 4 Days

Price: \$827

Max Batch Quantity: 8

Per Part Batch Price: \$200



Ouroboros Keychain

Material: 17-4PH Stainless Steel

Dimensions: 54x62x4

Production Time: 3 Days

Price: \$736

Max Batch Quantity: 24

Per Part Batch Price: \$48



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