ZMORPH

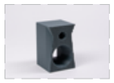
Materials Library

Professional materials for
additive and subtractive manufacturing.

zmorph3d.com

Materials Overview

3D Printing

Material	Features	Applications
 **PLA**	Biodegradable, easy to print, low emission, wide range of colours, low shrinkage, high stiffness.	Molds, consumer goods, architectural models, educational models, containers, medical accessories, prototypes, biodegradable models.
 **ABS**	Dissolves in acetone, exceptional impact strength, good mechanical properties, good heat resistance.	Prototypes, consumer goods, jigs & fixtures, casings, models requiring high-impact strength, gearing, toys, automotive parts.
 **PET-G**	Stability dimensions, low shrinkage, good thermal resistance, scratch resistance, rigidity, good electrical properties.	Bottles, containers, electronic devices housings, precise bearings and gears, photography accessories, transparent elements, models requiring stability of shape.
 **Nylon**	Great mechanical resistance, good abrasion resistance, high impact strength, lightweight, fatigue resistance.	Functional prototypes, gear wheels, plain bearings, models that require abrasion resistance, clips, hooks, screw nuts.
 **HIPS**	Dissolves in d-limonene, easy to postprocessing, lightweight, water resistant.	Support material, casings, containers, protective elements, mechanical parts, models that require abrasion resistance.
 **ASA**	Good impact strength, high temperature resistance, weather and UV resistance, dissolve in acetone.	Outdoor applications, models that require high UV resistance, sporting elements.
PMMA	Transparency, UV resistance, high optical properties, tough, scratch resistance.	Optical applications, UV resistant models, chemical equipment, lamps, protective glass, illuminated signs, electronic casings.
 **TPE**	Good thermoplastic and elastic properties, vibration dampening, good impact and tensile strength.	Prototypes, end parts, connectors, covers, tools, robotic, dampeners.
PC	High impact strength, self-extinguishing, good optical properties, resistance for weather conditions, transparency, dimensional stability.	Automotive components, molds for silicone casting, lifts, photography accessories.
 **PC/ABS**	Great mechanical durability, heat resistance, stiffness, exceptional impact strength, UV resistance.	Cantilever elements, clasps, hooks, dashboards, keyboards, buttons, gears, propellers, housings.
 **PP**	Lightweight, good chemical resistance, resistance to moisture, good heat and fatigue resistance.	Mechanical parts, covers, housings, chemical accessories, containers, caps, pump valves.
 **PVA**	Dissolves in water, biodegradable.	Support for complex designs, molds for cold- metal casting.

Laser Cutting & Engraving

Material	Engraving	Cutting	Applications
 **Leather**	x	x	Jewelry, engraved accessories, leather labels.
 **Felt**	x	x	Jewelry and decorations, furniture pads, coasters.
 **Laser Foil**	x	x	Stickers, advertising materials.
 **Cardboard**	x	x	Stencils, French curves.
 **Foamiran**	x	x	Jewelry and decorations, paddings.
 **Wood fiber boards**	x		Stencils, frame engraving.
 **Plywood**	x		Decorations, pictures.
 **Wood**	x		Engraving on end products.
 **EPP**		x	Package fillings for better product holding (e.g. small SD cards).
 **EVA Foam**		x	Accessories, casings.
 **Neoprene**	x	x	Wetsuits, face masks, electrical insulation, fan belts, laptop sleeves

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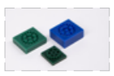
Materials Overview

CNC Milling

Material		Family	Features	Applications
	**ABS**	Plastics	Good machinability, high stiffness, good impact strength.	Casings, automotive parts, protective elements.
	Nylon	Plastics	High tensile strength, lightweight, does not burn - it just melts, low friction coefficient.	Cogwheels, dampening elements.
	**HDPE**	Plastics	Sturdy, excellent machinability.	Casings, tooling/fixturing, prototyping.
	PTFE	Plastics	Good heat and chemically resistance, flexible, low friction coefficient.	Sliding elements, joints.
	PC	Plastics	Impact resistance, FDA compliant.	Advertising materials, transparent protective elements.
	**PP**	Plastics	Moisture resistance, FDA compliant grades available.	Dampening elements, casings, clamps.
	**POM**	Plastics	Chemical resistance, abrasion resistance, excellent rigidity.	Cogwheels, bearing supports, connector elements.
	**PMMA**	Plastics	Good hardness and stiffness, low water absorption, exceptional uv resistance.	Advertising materials, casings, office equipment.
	**PVC**	Plastics	Lightweight, weather resistance, abrasion resistance.	Advertising materials, casings, office equipment.
	HIPS	Plastics	Good machinability, impact resistance, insulator, good impact resistance, paintable.	Advertising materials, casings.
	**LDPE**	Plastics	Moisture resistance, FDA compliant.	Sliding rails, gibs, applications requiring low-temperature flexibility, toughness, and durability.
	**PET**	Plastics	Water resistance, durable, good thermal isolating properties, FDA compliant, immune to fracturing.	Casings, forms.
	**Carbon**	Composites	Lightweight, sturdy, high stress resistance.	Drones, construction plates, industrial automation, robotics, aerospace tooling.

CNC Milling

Material		Family	Features	Applications
	**CCL FR4**	Composites	Sturdy, bending resistance.	PCBs.
	**Dibond**	Composites	Lightweight, sturdiness.	Casings, advertising materials, signs.
	**TCF**	Composites	High thermal durability.	Electrical isolations, stencils.
	**Wood**	Wood derivatives	Fully biodegradable, good machinability.	Art, reliefs, panels, casings.
	**Plywood**	Wood derivatives	Excellent machinability, lightweight.	Mockups, prototypes, casings, constructing.
	**Wood fiber boards**	Wood derivatives	Paintable.	Furniture, mockups, casings, art.
	**Aluminum**	Metals	Lightweight, good machinability, good heat transfer.	Casings, radiators, fastenings, art.
	**Brass**	Metals	Good heat transfer, self lubricating.	Heating elements, casings, reliefs, gliding elements.
	**Copper**	Metals	Great heat transfer, good machinability.	Radiators, heating elements.
	**Cardboard**	Others	Eco-friendly, cheap, insulating	Packaging goods, hardcovers for books, advertising materials.
	**Machining Wax**	Others	Excellent machinability.	Casting, casting cores, molds.
	**Modelling Board**	Others	Excellent machinability.	Casting, casting cores, molds.
	**Styrodur**	Others	Great insulator.	Advertising materials, composite cores, acoustic diffusers.

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3D Printing

FFF 3D Printing, also known as additive manufacturing, is a process of making three dimensional solid objects from a digital file. The objects are made by extruding material layer-by-layer until the object is created. FFF 3D Printing is commonly used for production applications, low-cost prototyping, modeling, and design verification with efficient turnaround times. The main advantages of 3D Printing are:

Profitability Time-effectiveness Design freedom Accessibility Risk reduction

Zmorph Fab All-in-One 3D Printer is compatible with a vast range of 3D printing materials and offers two high-tech toolheads: Single Extruder Toolhead and Dual Extruder Toolhead with advanced multi-material 3D printing features like printing with PVA support, selective two-material 3D printing, color blending, and image mapping.

Technical Specs	Metric	Imperial
Build volume	235 x 250 x 165 mm	9.25 x 9.8 x 6.5 inch
Layer resolution	50 - 400 microns	
Build platform	Heated (up to 115°C)	239 °F
Max. printing temperature	250°C	482 °F
Max. wall thickness	0.25 mm	0.0098 inch
Angle accuracy	60°	
Max. travel speed	120 mm/s	4.7 in/s

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PLA

PLA (Polylactic Acid) is one of the most common 3D printing materials, it’s easy to 3D print, compostable and emits low-toxic fumes. PLA is a cost-effective material best for early-stage prototyping, educational facilities, and containers.

Used for molds, consumer goods, architectural models, educational models, containers, medical accessories, prototypes, compostable models.

Compostable · Low emission · High stiffness · Easy to print · No problem with shrink · Wide range of colours

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	55 °C	131 °F	ISO 306
Heat deflection temperature	55 °C	131 °F	ISO 75
Mechanical			
Impact strength	16 kJ/m²	7,61 lbf/in²	ISO 179
Flexural modulus	3500 MPa	507,63 ksi	ISO 178
Physical			
Density	1,24 g/cm³	10,34 lb/gal	ISO 1183/B
Melt Flow Index	6 g/10 min	6 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	195 - 215 °C	383 - 419 °F
Bed Temperature	35 - 60 °C	95 - 140 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Open	

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ABS

ABS (Acrylonitrile Butadiene Styrene) is a sturdy, plastic material with great impact strength and mechanical properties. ABS is a good material for testing, post-processing, low volume manufacturing, and objects where you need a strong, stiff plastic that copes well to external impacts.

Used for prototypes, consumer goods, jigs & fixtures, casings, models requiring high-impact strength, gearing, toys, car interiors.

Dissolvable in acetone Exceptional impact strenght Good mechanical properties Good heat resistance

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	94 °C	201 °F	ISO 306
Heat deflection temperature	89 °C	192 °F	ISO 75
Mechanical			
Impact strength	20 kJ/m²	9,52 lbf/in²	ISO 179
Flexural modulus	1800 MPa	261 ksi	ISO 178
Physical			
Density	1,04 g/cm³	8,67 lb/gal	ISO 1183/B
Melt Flow Index	40 g/10 min	40 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	235 - 250 °C	455 - 482 °F
Bed Temperature	90-110 °C	194 - 230 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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PET-G

PET-G (Polyethylene Terephthalate Glycol) is a common thermoplastic that exhibits industrial strength, barely produces fumes, and is known for its ease of printability and water resistance. PET-G is a perfect choice for low-cost prototyping and complex mechanical components.

Used for bottles, containers, electronic devices housings, precise bearings and gears, photography accessories, transparent elements, models requiring stability of shape.

Stability dimensions · No shrink · Good thermal resistance · Scratch resistant · Rigidity · Good electrical properties

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	85 °C	185 °F	ISO 306
Heat deflection temperature	70 °C	158 °F	ISO 75
Mechanical			
Impact strength	11 kJ/m²	5,23 lbf/in²	ISO 179
Flexural modulus	1880 MPa	272 ksi	ISO 178
Physical			
Density	1,27 g/cm³	10,59 lb/gal	ISO 1183/B
Melt Flow Index	11 g/10 min	11 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	230 - 250 °C	446 - 482 °F
Bed Temperature	60 - 80 °C	140 - 176 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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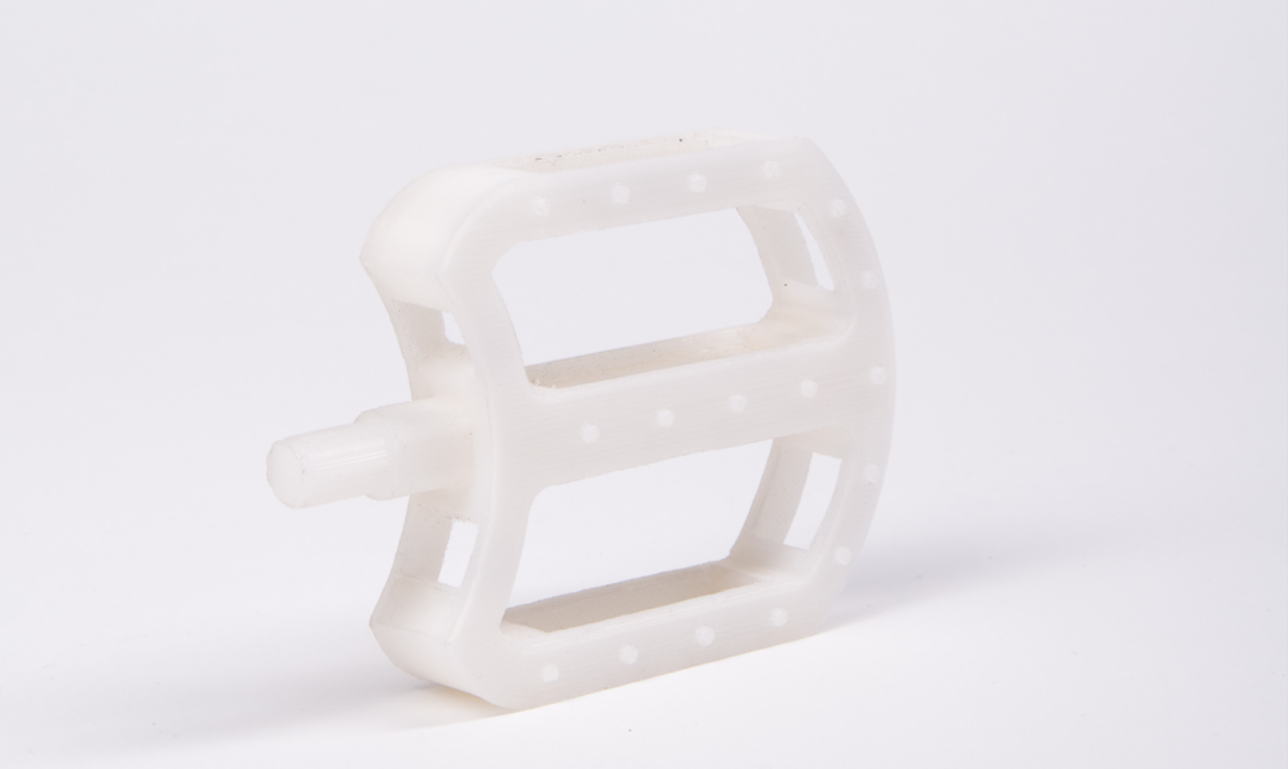
Nylon

Nylon (Polyamide) is a thermoplastic well known for its good chemical resistance, toughness, flexibility and abrasion resistance. Nylon is a perfect material choice for functional parts and mechanical applications.

Used for functional prototypes, gear wheels, plain bearings, models that require abrasion resistance, clips, hooks, screw nuts.

Great mechanical resistance · Good abrasion resistance · High impact strength · Fatigue resistance · Lightweight



Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	170 °C	338 °F	ISO 306
Heat deflection temperature	165 °C	329 °F	ISO 75
Mechanical			
Impact strength	11 kJ/m²	5,23 lbf/in²	ISO 179
Flexural modulus	1180 MPa	171 ksi	ISO 178
Physical			
Density	1,01 g/cm³	8,42 lb/gal	ISO 1183/B
Melt Flow Index	8 g/10 min	8 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	240 - 250 °C	464 - 482 °F
Bed Temperature	80 - 100 °C	176 - 212 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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3D Printing

HIPS

HIPS (High Impact Polystyrene) is a blend of polystyrene and rubber. It’s easy to print with good strength and stiffness profile, recyclable and non-hygroscopic. HIPS is mainly used as support material for ABS prints because it’s easily dissolvable in Limonene.

Used for support material, casings, containers, protective elements, mechanical parts, models that require abrasion resistance.

Dissolves in d’limonene Easy to postprocessing Lightweight Water resistance

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	94 °C	201 °F	ISO 306
Heat deflection temperature	89 °C	192 °F	ISO 75
Mechanical			
Impact strength	7 kJ/m²	3,33 lbf/in²	ISO 179
Flexural modulus	1800 MPa	261 ksi	ISO 178
Physical			
Density	1,04 g/cm³	8,67 lb/gal	ISO 1183/B
Melt Flow Index	7 g/10 min	7 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	235-250 °C	455 - 482 °F
Bed Temperature	65-110 °C	149 - 230 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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ASA

ASA (Acrylonitrile Styrene Acrylate) is a thermoplastic that exhibits exceptional chemical resistance and is known for its high impact and temperature resistance. ASA is commonly used for our outdoor applications as it can cope with harsh weather conditions along with UV resistance.

Used for outdoor applications, models that require high UV resistance, sporting elements.

Good impact strength
High temperature resistance
Weather and UV resistance
Dissolves in acetone

Material Properties Information

Printing Properties	Metric	Imperial
Printing Temperature	235 - 250 °C	455 - 482 °F
Bed Temperature	80-90 °C	176 - 194 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

PMMA

PMMA (Polymethyl Methacrylate) is a transparent scratch resistant thermoplastic that exhibits high tensile and flexural strength, UV tolerance, and impact resistant. PMMA is used for end products and prototyping.

Used for optical applications, UV resistant models, chemical equipment, lamps, protective glass, illuminated signs, electronic casings.

Transparency | UV resistance | High optical properties | Tough | Scratch resistance

Material Properties Information

Printing Properties	Metric	Imperial
Printing Temperature	230 - 250 °C	446 - 482 °F
Bed Temperature	60 °C	140 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

3D Printing

TPE

Flexible filament can be used to 3D print any parts or objects that need to be soft, flexible or moveable. It’s durable and resistant to wearing off, which makes it a good choice for technical and mechanical material.

Used for prototypes, end parts, connectors, covers, tools, robotic.

Good thermoplastic and elastic properties Vibration dampening

Good impact and tensile strength

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	103 °C	217 °F	ISO 306
Heat deflection temperature	100 °C	212 °F	ISO 75
Mechanical			
Flexural modulus	8 MPa	1,16 ksi	ISO 37
Physical			
Density	0,89 g/cm³	7,42 lb/gal	ISO 1183/B

Printing Properties	Metric	Imperial
Printing Temperature	235 - 250 °C	455 - 482 °F
Bed Temperature	100 - 115 °C	212 - 239 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Open	

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3D Printing

PC

PC (Polycarbonate) is a lightweight thermoplastic that has exceptional toughness and great resistance to heat. PC has a high impact strength and it’s extremely durable. This material is mainly is used for projects that require to retain their shape during subjecting to high temperatures.

Used for automotive components, molds for silicone casting, lifts, photography accessories.

High impact strength · Self-extinguishing · Good optical properties · Transparency · Dimensional stability · Resistance for weather conditions

Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	55 °C	131 °F	ISO 306
Heat deflection temperature	55 °C	131 °F	ISO 75
Mechanical			
Impact strength	16 kJ/m²	7,61 lbf/in²	ISO 179
Flexural modulus	3500 MPa	507,63 ksi	ISO 178
Physical			
Density	1,24 g/cm³	10,34 lb/gal	ISO 1183/B
Melt Flow Index	6 g/10 min	6 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	230 - 250 °C	446 - 482 °F
Bed Temperature	85 - 100 °C	185 - 212 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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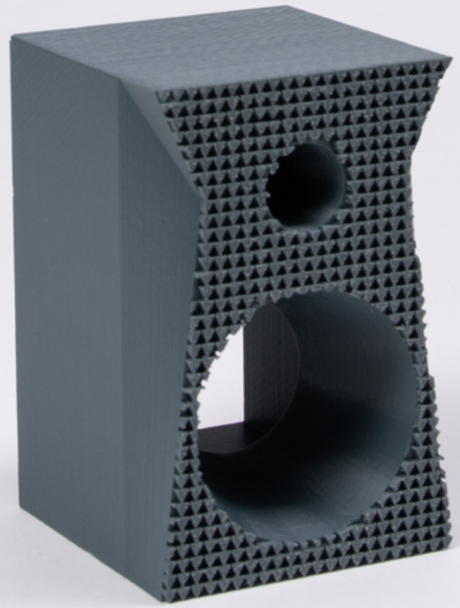
PC/ABS

PC/ABS (Polycarbonate + Acrylic Butadiene Styrene) alloy combines exceptional PC mechanical properties and heat resistance with the ABS printability. PC/ABS is an extremely durable material used for strong and resilient prints.

Used for cantilever elements, clasps, hooks, dashboards, keyboards, buttons, gears, propellers, housings.

Great mechanical durability · Heat resistance · Stiffness · Exceptional impact strenght · UV resistance



Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	115 °C	239 °F	ISO 306
Heat deflection temperature	98 °C	208 °F	ISO 75
Mechanical			
Impact strength	40 kJ/m²	19 lbf/in²	ISO 179
Flexural modulus	2650 MPa	384 ksi	ISO 178
Physical			
Density	1,19 g/cm³	9,93 lb/gal	ISO 1183/B
Melt Flow Index	11 g/10 min	11 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	240 - 250 °C	464 - 482 °F
Bed Temperature	110 °C	230 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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PP

PP (Polypropylene) is a durable and lightweight material that exhibits very good heat and fatigue resistance. PP has a high level of flexibility and is resistant to many chemicals. Thanks to its excellent properties PP is commonly used for prototyping, electronic components, and lab equipment.

Used for mechanical parts, covers, housings, chemical accessories, containers, caps, pump valves.

Lightweight
Good chemical resistance
Resistance to moisture
Good heat and fatigue resistance

Material Properties Information

Printing Properties	Metric	Imperial
Printing Temperature	230 - 250 °C	446 - 482 °F
Bed Temperature	100 - 120 °C	212 - 248 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Open	

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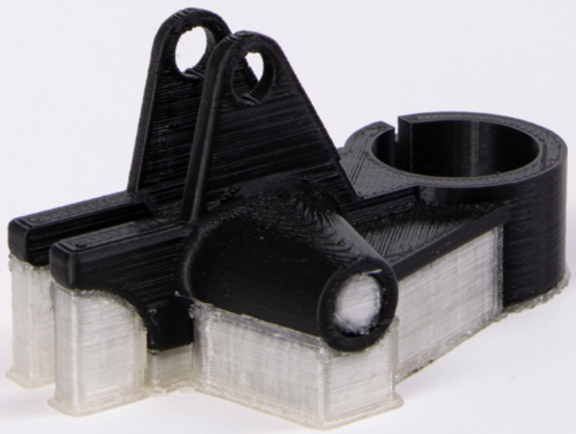
PVA

PVA (Polyvinyl Alcohol) is a biodegradable and water-soluble material for multi-extrusion 3D printing. PVA doesn't require special solvents as it's perfectly dissolvable in the water. PVA is the go-to support material for 3D printing complex designs with internal cavities, hollow spaces and large overhangs. It works great with PLA and Nylon.

Used for support for complex designs, molds for metal casting.

Dissolves in water Biodegradable



Material Properties Information

Material Properties	Metric	Imperial	Method
Thermal			
Vicat softening temperature	55 °C	131 °F	ISO 306
Heat deflection temperature	55 °C	131 °F	ISO 75
Mechanical			
Impact strength	16 kJ/m²	7,61 lbf/in²	ISO 179
Flexural modulus	3500 MPa	507,63 ksi	ISO 178
Physical			
Density	1,24 g/cm³	10,34 lb/gal	ISO 1183/B
Melt Flow Index	6 g/10 min	6 g/10 min	ISO 1133

Printing Properties	Metric	Imperial
Printing Temperature	195 - 215°C	383 - 419 °F
Bed Temperature	35 - 60 °C	95 - 140 °F
Nozzle	0,3 mm, 0,4 mm, 0,6 mm	
Printer Space	Closed	

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Zmorph Materials Library

CNC Milling

CNC (Computer numerical controlled machining) milling is one of the s one of the most common subtractive manufacturing technologies where the material is removed from a solid block using cutting tools to manufacture a part from a CAD model. Thanks to its versatility and repeatability CNC milling is widely used for low-to-mass production, prototyping, mechanical parts and more. The main advantages of CNC milling are:

Accuracy Versatility Repeatability Reproducibility

Turn Zmorph Fab All-in-One 3D Printer into a CNC milling unit with CNC Milling Toolhead, that works with a wide range of materials including plastics, composites, metals, and foams. Dedicated CNC worktable additionally ensures safety during the fabrication process.

Technical Specs	Metric	Imperial
X, Y, and Z operations strokes	235 x 250 x 85 mm	9.25 x 9.8 x 3.35 inch
Mechanical resolution	0.014 x 0.0006 mm	0.00055-0.0002 inch
Repeatable tolerance	+/- 0.1mm	0.004 inch
Work speed	0.1 - 20 mm/s	0.004 - 0.8 in/s
Maximum spindle rotation	9.200 rpm	
Spindle motor	DC motor Type 300W	
Cutting tool chuck	Collet method ER11	

Following materials may be dangerous for your health. During milling and engraving always make sure that you and your surroundings are protected against all hazardous factors.

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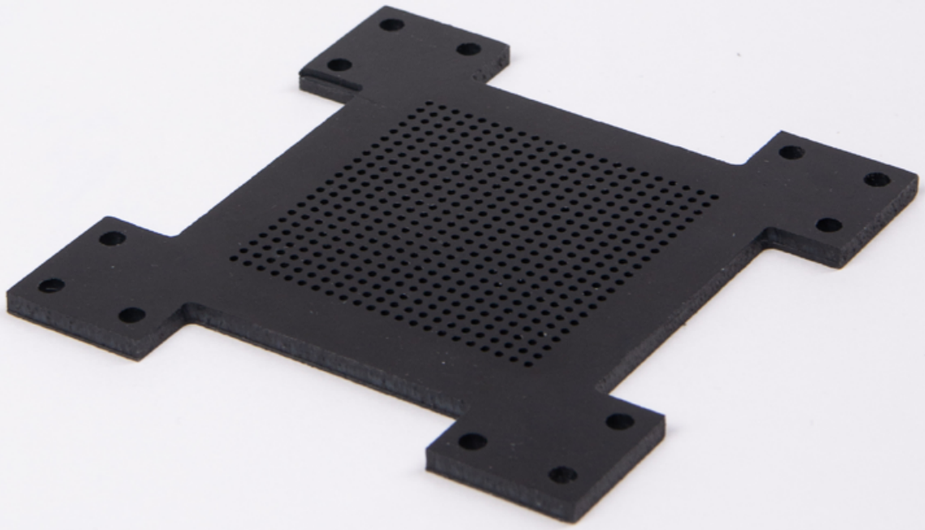
CNC Milling - Plastics

ABS

ABS (Acrylonitrile Butadiene Styrene) is a common thermoplastic known for its high impact strength, good heat resistance, and outstanding machinability. ABS is widely used for prototyping applications thanks to its properties and cost-effectiveness.

Used for casings, car parts, protective elements.

Good machinability | High stiffness | Good impact strength



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulity	■□□	
Tensile Strength	35 MPa	5,100 PSI
Elongation at Break	40%	
Hardness	Rockwell R100	
Density	0,97 g/cm³	0.035 lbs / cu. in
Maximum Temp	71 °C	160 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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Nylon

Nylon (Polyamide) is an engineering thermoplastic that offers excellent abrasion resistance, high impact strength, electrical insulation, and good mechanical properties. Nylon is easy to machine, and ideal for jigs, fixtures, and wear blocks.

Used for cogwheels, dampening elements.

High tensile strength Lightweight Low friction coefficient

Does not burn - it just melts

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■□	
Tensile Strength	77 MPa	11,200 PSI
Elongation at Break	50%	
Hardness	Rockwell R110	
Density	1,13 g/cm³	0.041 lbs / cu. in
Maximum Temp	85 °C	185 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-12

HDPE

HDPE (High-Density Polyethylene) is a thermoplastic with exceptional moisture and chemical resistance that has a good impact strength and large strength-to-density ratio. HDPE is resistant to many solvents, and it's popular for outdoor applications thanks to its good weather resistance.

Used for casings, tooling/fixturing, prototyping.

Sturdy Excellent machinability

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■□	
Tensile Strength	28 MPa	4,000 PSI
Elongation at Break	500%	
Hardness	Rockwell R65	
Density	0,97 g/cm³	0.035 lbs / cu. in
Maximum Temp	82 °C	180 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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PTFE

PTFE (Polytetrafluoroethylene) is an engineering thermoplastic characterized by chemical inertness, exceptional low friction coefficient, and high heat resistance. Teflon offers exceptional thermal resistance and is used in cold temperature environments.

Used for sliding elements, joints.

Good heat and chemical resistance Low friction coefficient Flexible

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	31 MPa	4,500 PSI
Elongation at Break	300%	
Hardness	Rockwell R60	
Density	1.27 g/cm³	0.046 lbs / cu. in
Maximum Temp	204 °C	400 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-12

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CNC Milling - Plastics

PC

PC (Polycarbonate) is a popular engineering thermoplastic that has an excellent impact strength, is heat resistant and it’s easy to machine. PC is a good choice for heat-resistant and outdoor applications.

Used for advertising materials, transparent protective elements.

Impact resistance Good creep FDA compliant

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	55 MPa	8000 PSI
Elongation at Break	110%	
Hardness	Rockwell R120	
Density	1,24 g/cm³	0.045 lbs / cu. in
Maximum Temp	82 °C	180 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

PP

PP (Polypropylene) is a thermoplastic polymer with great chemical and solvent resistance that offers good impact strength and thermal resistance. Thanks to its properties PP is widely used for laboratory and manufacturing applications.

Used for dampening elements, casings, clamps.

Moisture resistance FDA compliant grades available

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■□	
Tensile Strength	17 MPa	2,500 PSI
Elongation at Break	34%	
Hardness	Rockwell R55	
Density	1,16 g/cm³	0.042 lbs / cu. in
Maximum Temp	80 °C	176 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	6-12

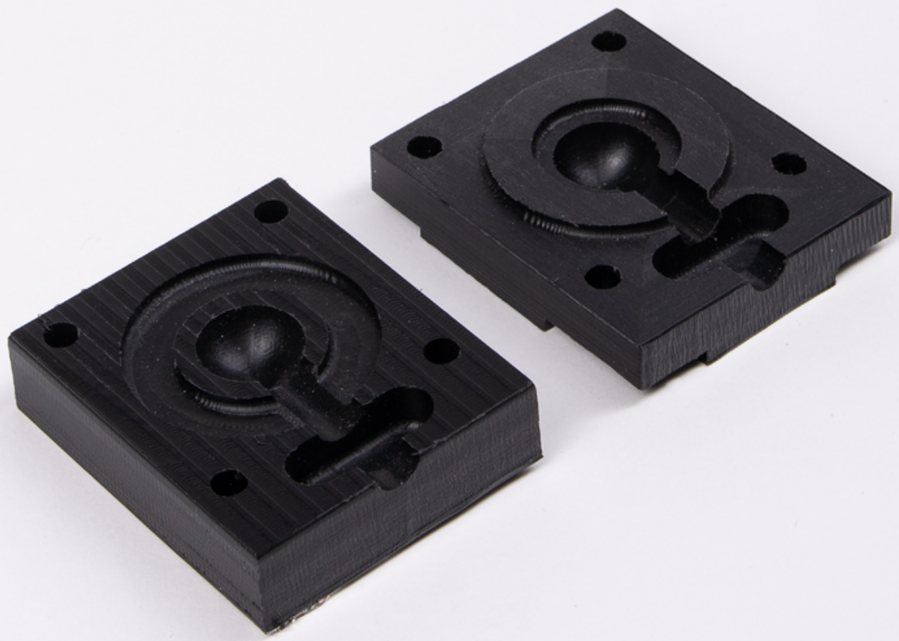
CNC Milling - Plastics

POM

POM (Polyoxymethylene) is an engineering thermoplastic characterized by high stiffness, low friction, and dimensional stability. POM is an easily machinable material perfect for wide applications like mechanical gears, sliding and guiding elements or medical applications.

Used for cogwheels, bearing supports, connector elements.

Chemical resistance Abrasion resistance Excellent rigidity



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	62 MPa	9,000 PSI
Elongation at Break	25%	
Hardness	Rockwell M90	
Density	1,41 g/cm³	0.051 lbs / cu. in
Maximum Temp	82 °C	180 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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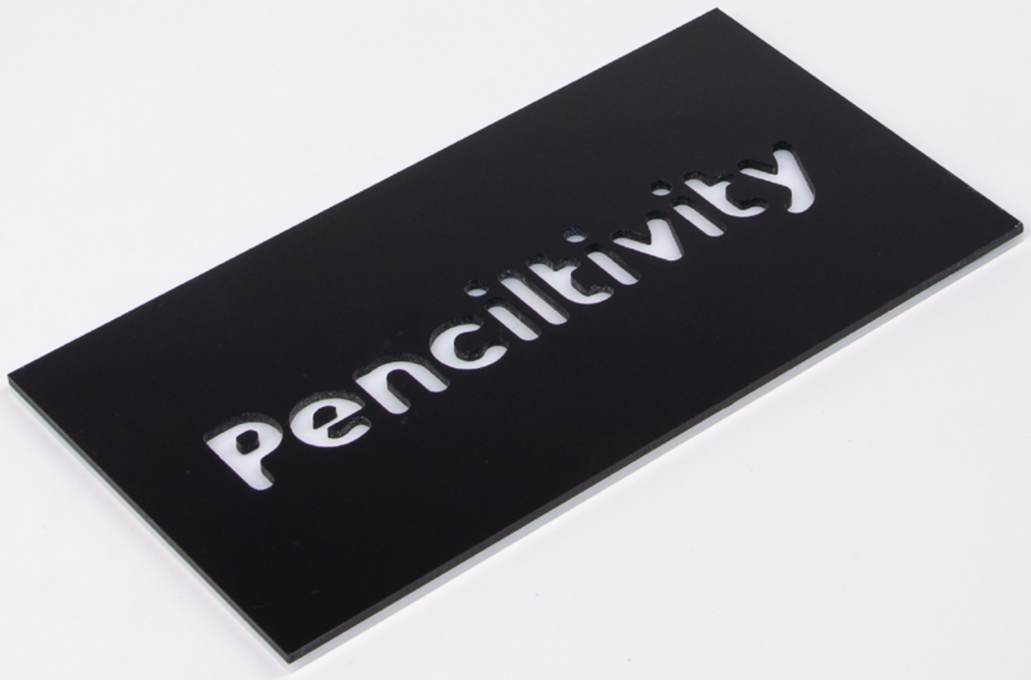
PMMA

PMMA (Polymethylmethacrylate) is a mostly optically clear or opaque plastic that comes in a variety of colors and textures. Acrylic is mostly used for art, jewelry, and optical applications.

Used for advertising materials, casings, office equipment.

Good hardness and stiffnes | Low water absorption | Exceptional UV resistance



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■□	
Tensile Strength	55 MPa	8,000 PSI
Elongation at Break	6%	
Hardness	Rockwell M95	
Density	1,19 g/cm³	0.043 lbs / cu. in
Maximum Temp	77 °C	170 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	5-15

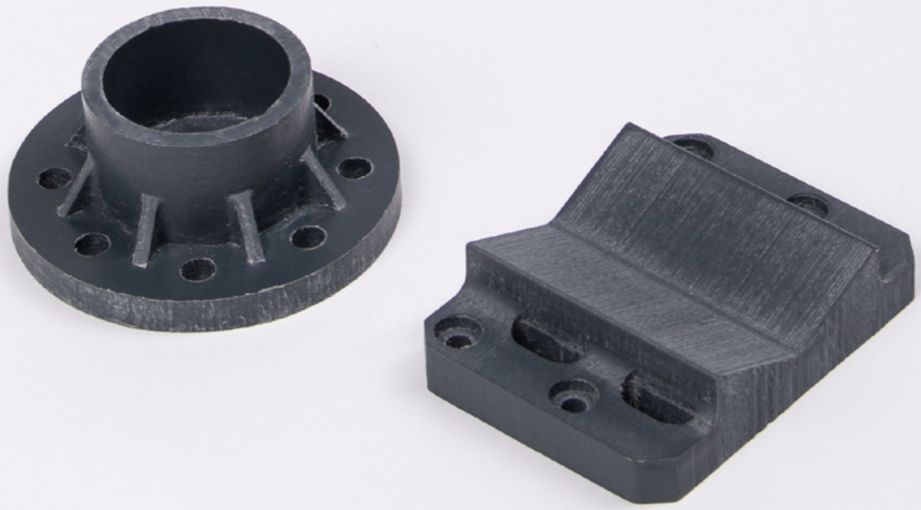
CNC Milling - Plastics

PVC

PVC (Polyvinyl Chloride) is a common plastic polymer that exhibits high hardness and mechanical properties along with high chemical resistance and exceptional insulating properties. PVC is easily machinable material making it a popular choice for manufacturing.

Used for advertising materials, casings, office equipment.

Lightweight Weather resistance Abrasion resistance



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	41 MPa	6,000 PSI
Elongation at Break	272%	
Hardness	Rockwell R115	
Density	1,38 g/cm³	0.050 lbs / cu. in
Maximum Temp	60 °C	140 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	1-12
1.5	1-3

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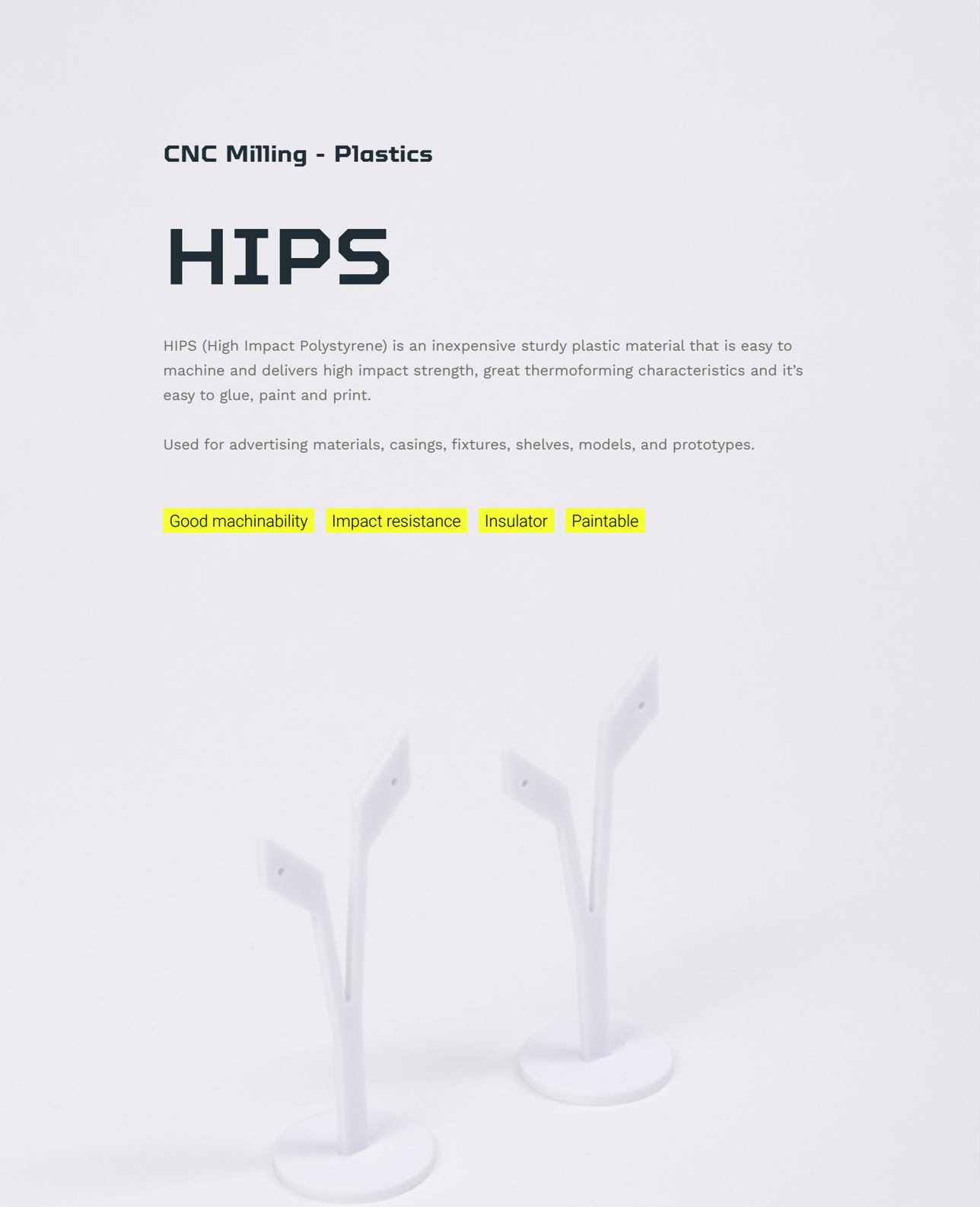
HIPS

HIPS (High Impact Polystyrene) is an inexpensive sturdy plastic material that is easy to machine and delivers high impact strength, great thermoforming characteristics and it's easy to glue, paint and print.

Used for advertising materials, casings, fixtures, shelves, models, and prototypes.

Good machinability | Impact resistance | Insulator | Paintable



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	35 MPa	5,100 PSI
Elongation at Break	40%	
Hardness	Rockwell R100	
Density	0,97 g/cm³	0.035 lbs / cu. in
Maximum Temp	71 °C	160 °F

Work Parameters

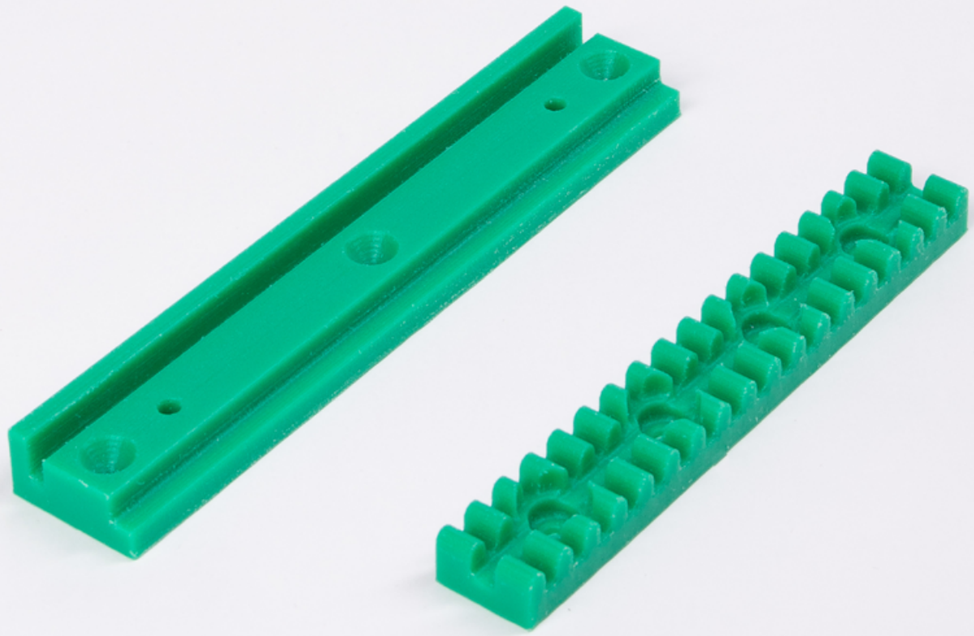
Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

LDPE

LDPE (Low-density Polyethylene) has excellent moisture resistance, plus it is softer, more malleable, and easier to form than other types of polyethylene. LDPE is a low-cost material that offers a good stability to temperature. It's often used for tanks, laboratory containers, bearings, and sliding rails.

Used for sliding rails, gibs, applications requiring low temperature flexibility, toughness, and durability.

Moisture resistance FDA compliant



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	10 MPa	1,450 PSI
Elongation at Break	549 %	
Hardness	Rockwell R10	
Density	0,91 g/cm³	0.033 lbs / cu. in
Maximum Temp	80 °C	176 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	7-12

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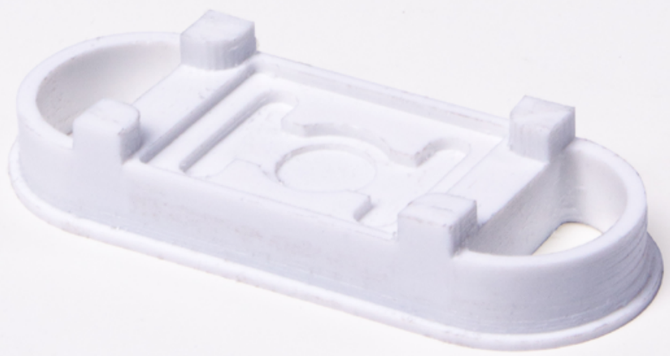
PET

PET (Polyethylene Terephthalate) is a common thermoplastic polymer that's very strong and lightweight and exhibits excellent electrical insulating properties. PET has exceptional resistance to alcohols, oils and greases, and is widely used as cosmetic containers, gear housings, and engine covers.

Used for casings, forms.

Water resistance Durable Good thermal isolating properties FDA compliant Immune to fracturing



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■■	
Tensile Strength	55 MPa	8,000 PSI
Elongation at Break	125%	
Hardness	Rockwell R125	
Density	0.05 g/cm³	1,38 lbs / cu. in
Maximum Temp	150 °C	302 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	3-12
1.5	5-12

CNC Milling - Composites

Carbon

Carbon fiber is a composite material with an excellent strength-to-weight ratio, high impact strength, low weight, and high-temperature tolerance. It's used as a lightweight alternative to materials like aluminum and for applications like industrial automation and robotics, drones, aerospace tooling, and manufacturing fixtures.

Used for drones, construction plates, industrial automation, robotics, aerospace tooling.

Lightweight Sturdy High stress resistance

Material Properties Information

Mechanical Properties

Machining Difficulty	■■□
Tensile Strength	
Elongation at Break	
Hardness	
Density	
Maximum Temp	

All properties are strongly dependent on force direction and material of composite matrix

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	1-3

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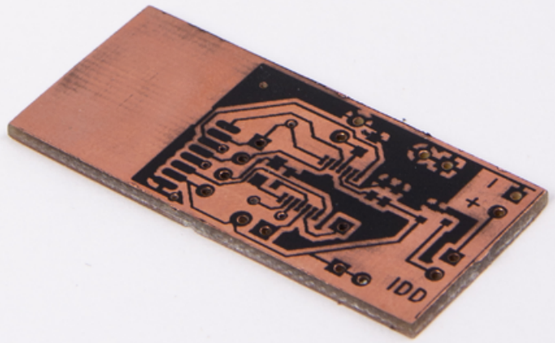
CNC Milling - Composites

CCL FR4

FR4 is a composite material composed of woven fiberglass cloth with an epoxy resin binder. It exhibits electrical isolation and mechanical strength and its the go-to option for short-run PCB production and prototyping.

Used for PCBs.

Sturdy Bending resistance



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulity	■□□	
Tensile Strength	262 MPa	38,000 PSI
Elongation at Break	0.01%	
Hardness	Rockwell M110	
Density	1,88 g/cm³	0.068 lbs / cu. in
Maximum Temp	122 °C	252 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1	1-5
1.5	1-4

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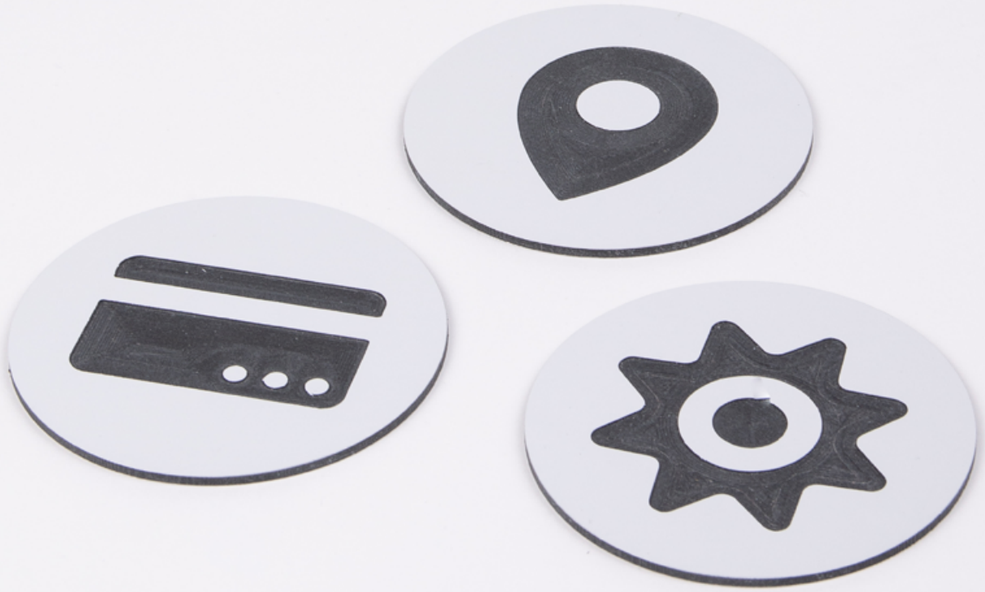
CNC Milling - Composites

Dibond

Dibond is a brushed aluminum composite sheet with polyethylene core known for its high-strength and low-weight ratio. It’s easily machinable and presents great damage resistance. Dibond is waterproof, and it’s ideal for outdoor signage and advertising displays.

Used for casings, advertising materials, signs.

Lightweight Sturdy



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■□	
Tensile Strength	160 MPa	23,200 PSI
Elongation at Break	3%	
Hardness	Rockwell M110	
Density	Dependant on thickness of the material	
Maximum Temp	80 °C	176 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-5

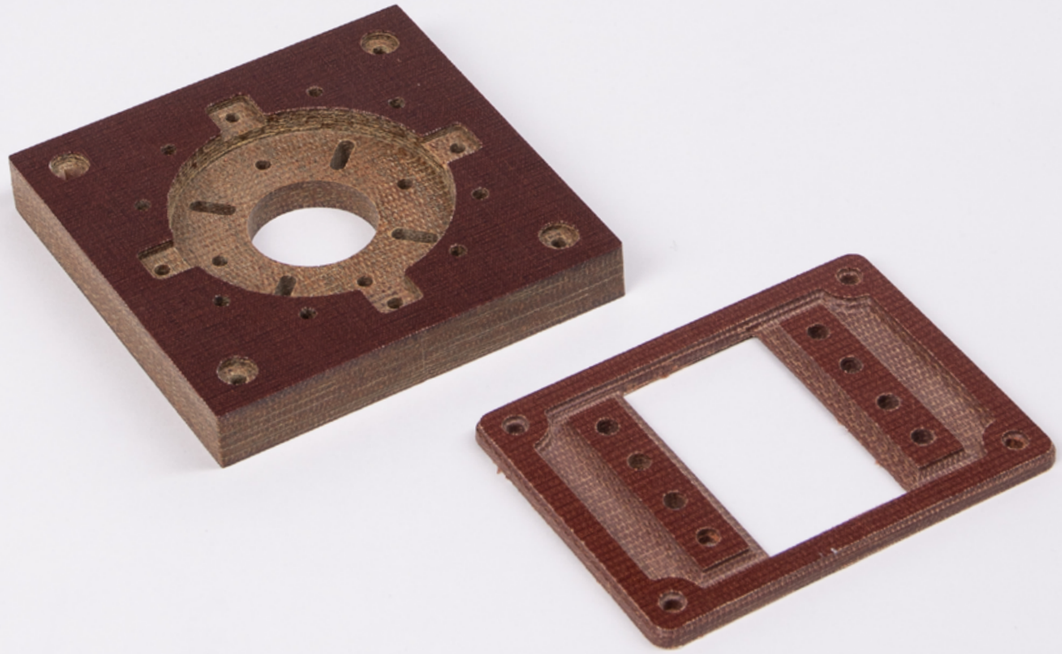
CNC Milling - Composites

TCF

TCF (Textolite Laminated Sheet) structural material that exhibits good mechanical and anti-friction characteristics. It’s easy machinable and resistant to heat. TCF is used mainly for insulators, electrical winding insulation, and dielectric panels.

Used for electrical isolations, stencils.

High thermal durability



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	-	-
Elongation at Break	-	
Hardness	Brinell HB25	
Density	1,30 g/cm³	.047 lbs/cu. in.
Maximum Temp	150 °C	302 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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Wood

Wood is one of the most common material for CNC milling and it’s easily machinable. There are two different types of wood (hardwood and softwood), that differ from each other with hardness and density. Wood is commonly used for art projects, furniture, prototypes and more.

Used for art, reliefs, panels, casings.

Fully biodegradable Good machinability

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	35 MPa	5,100 PSI
Elongation at Break		
Hardness	Depends on the type of wood	
Density		
Maximum Temp		

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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Plywood

Plywood is a low-cost material made up from thin layers of wood sheets glued together. It’s an exceptionally versatile material and a common choice for a wide range of applications such as packages, boxes, modeling, and constructing.

Used for mockups, prototypes, casings, constructing.

Excellent machinability Lightweight

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulity	■□□	
Tensile Strength	27 - 34 MPa	4000 - 5000 PSI
Elongation at Break		
Hardness	Depends on the type of plywood	
Density		
Maximum Temp		

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

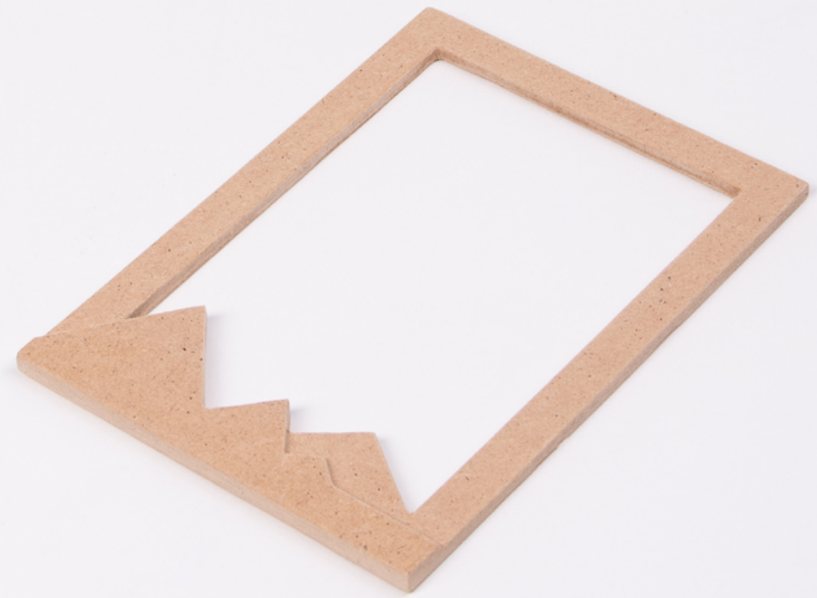
CNC Milling - Wood derivatives

Wood fiber board

Wood fiber board is a type of engineered wood product made from wood fiber extracted from wood waste. The material offers high dimensional stability, strength characteristics, and exceptional processing properties.

Used for furniture, mockups, casings, art.

Paintable



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	-	-
Elongation at Break	-	-
Hardness	-	-
Density	10,49 g/cm³	0.018 lbs/cu. in.
Maximum Temp	-	-

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5 - 1.5	1-15

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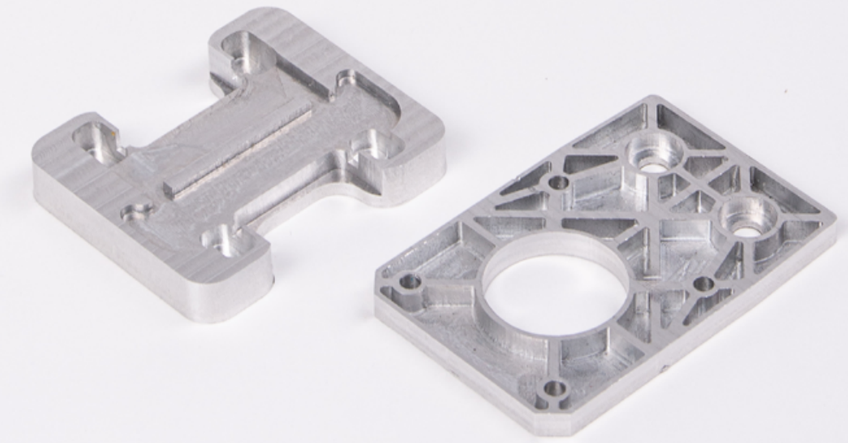
CNC Milling - Metals

Aluminum

Aluminum 5754 is one of the most popular metals in the world with an exceptional strength-to-weight ratio, excellent machinability, and great corrosion resistance. Aluminum 5754 exhibits higher strength than 5251 and it's often used for prototyping and end parts manufacturing.

Used for casings, radiators, fastenings, art.

Lightweight Good machinability Good heat transfer



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■■	
Tensile Strength	310 MPa	45,000 PSI
Elongation at Break	12%	
Hardness	Rockwell B60	
Density	2,71 g/cm³	0.098 lbs / cu. in
Maximum Temp	200 °C	392 °F

Work Parameters

Operation	Cutting/Engraving
Cutting Speed	1.50 mm/s
Lead in/out speed	1.25 mm/s
Max. step down	0.15 mm

Brass

Brass M63 is an alloy of Copper and Zinc that is easily machinable, corrosion resistant and exhibits low friction. Thanks to its properties brass is often used for decorative items, gears, locks, and bushings.

Used for heating elements, casings, reliefs, sliding elements.

Good heat transfer Self lubricating

Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■■	
Tensile Strength	496 MPa	72,000 PSI
Elongation at Break	53% (UNS C36000)	
Hardness	Rockwell B70	
Density	7,75 g/cm³	0.28 lbs / cu. in
Maximum Temp	149 °C	300 °F

Work Parameters (Brass M63)

Operation	Cutting/Engraving
Cutting Speed	1.50 mm/s
Lead in/out speed	1.00 mm/s
Max. step down	0.10 mm

Work Parameters (Brass MZN12)

Operation	Cutting/Engraving
Cutting Speed	1.00 mm/s
Lead in/out speed	0.8 mm/s
Max. step down	0.05 mm

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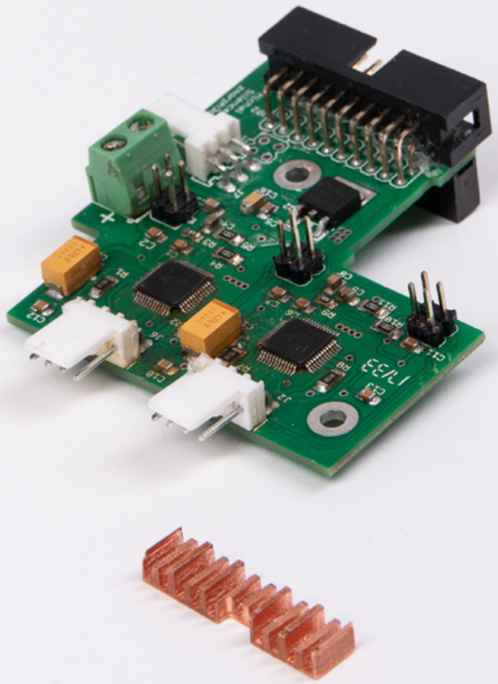
Copper

Copper M1ER is a popular metal with exceptional electric conductivity, high corrosion resistance, and great thermal conductivity. Copper is easily machinable and often used in applications like cooling systems, heat exchangers, valves and radiators.

Used for radiators, heating elements.

Great heat transfer Good machinability



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■■■	
Tensile Strength	210 MPa	30,500 PSI
Elongation at Break	60 %	
Hardness	Rockwell B51	
Density	8,96 g/cm³	0.324 lbs / cu. in
Maximum Temp	260 °C	500 °F

Work Parameters

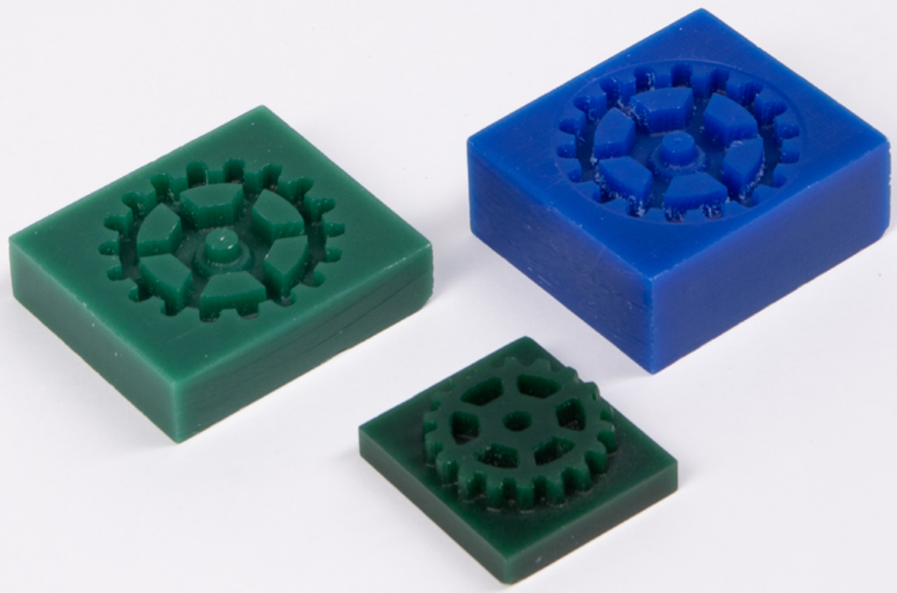
Operation	Cutting/Engraving
Cutting Speed	1.75 mm/s
Lead in/out speed	1.25 mm/s
Max. step down	0.15 mm

Machining Wax

Machining Wax is an exceptionally hard synthetic wax mixed with plastic that delivers excellent machining properties, quality of finish and dimensional accuracy. Machining Wax is recyclable and reusable, and it’s used to produce accurate molds, prototypes, and jewelry.

Used for casting, casting cores, molds, CNC program proofs.

Excellent machinability



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	-	-
Elongation at Break	-	-
Hardness	Rockwell B110-113	
Density	0,91 g/cm³	0.034 lbs / cu. in
Maximum Temp	69 °C	157 °F

Work Parameters

Operation	Cutting/Engraving
Cutting Speed	1.75 mm/s
Lead in/out speed	1.25 mm/s
Max. step down	0.15 mm

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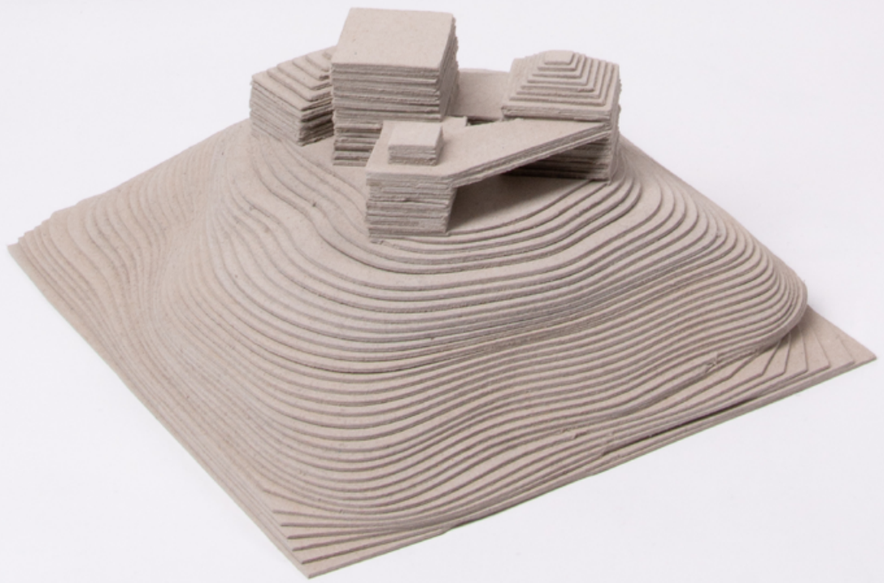
CNC Milling - Others

Cardboard

Cardboard is a paper-based material exhibiting good mechanical attributes. Cardboard is a durable and fully recyclable material that can be easily customized.

Used for packaging goods, hardcovers for books, advertising materials.

Eco-friendly Cheap Insulating



Material Properties Information

Mechanical Properties

Machining Difficulty	
Tensile Strength	
Elongation at Break	All properties are strongly dependent on type of cardboard
Hardness	
Density	
Maximum Temp	

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5	1-15
1	1-15
1.5	1-15

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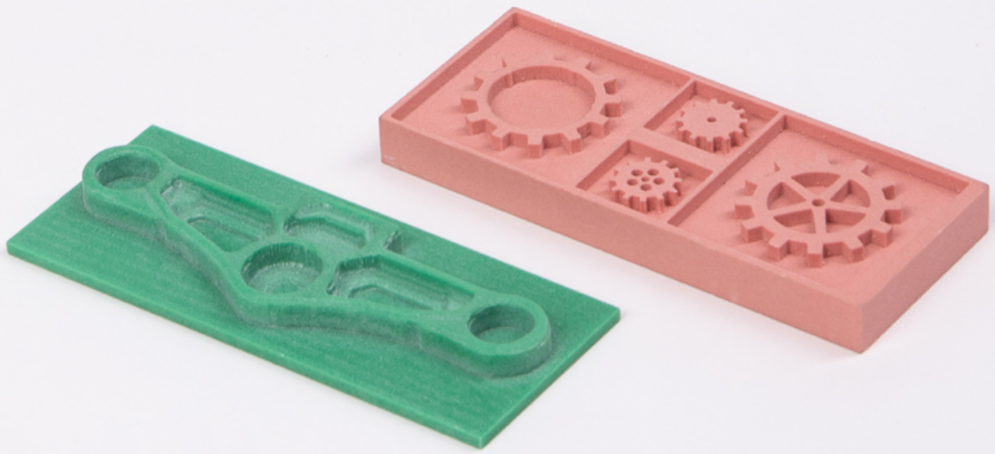
CNC Milling - Others

Modelling Board

Modelling Board (Polyurethane Tooling Block) is a highly machinable pored polyurethane-based light molding material compatible with a wide range of finishes and releases agents. Modelling Board offers great surface finish and is used mainly for molding whenever quick and accurate prototypes are needed. Modeling Boards differs from each other with density and temperature resistance.

Used for casting, casting cores, molds.

Excellent machinability



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulity	■□□	
Tensile Strength	19 - 75 MPa	2,800 - 10,900 PSI
Elongation at Break	-	
Hardness	-	
Density	-	-
Maximum Temp	-	-

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5	1-15
1	1-15
1.5	1-15

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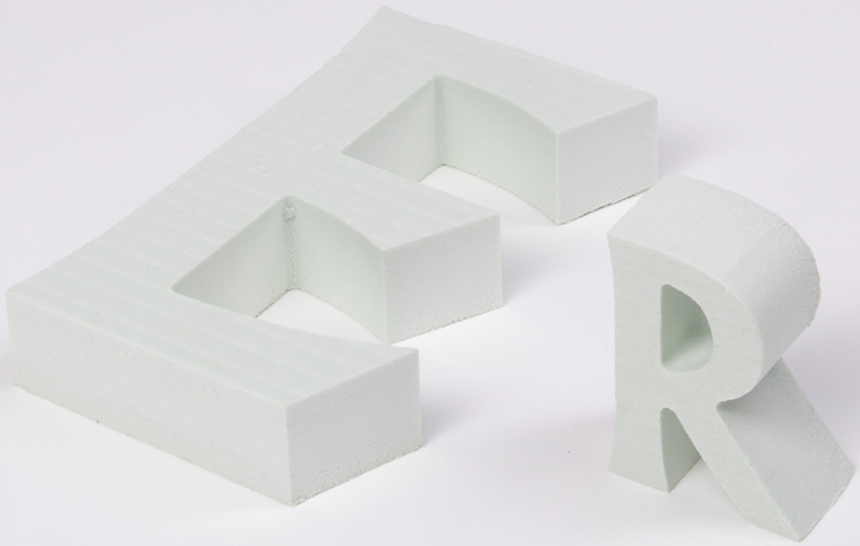
CNC Milling - Composites

Styrodur

Extruded Polystyrene Foam also known as Styrodur offers high stiffness, surface roughness, and reduced thermal conductivity. Extruded Polystyrene Foam is used for crafts, architectural models, and for advertising applications.

Used for advertising materials, composite cores, acoustic diffuser.

Great insulator



Material Properties Information

Mechanical Properties	Metric	Imperial
Machining Difficulty	■□□	
Tensile Strength	-	-
Elongation at Break	-	-
Hardness	-	-
Density	0,04 g/cm³	0.001 lbs / cu. in
Maximum Temp	75 °C	167 °F

Work Parameters

Stepdown [mm]	Speeds [mm/s]
0.5	1-15
1	1-15
1.5	1-15

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Laser Cutting & Engraving

Laser engraving workflow uses a laser diode to engrave objects. The laser is programmed in software to follow a pre-designed path in a 2D model. The same workflow applies to laser cutting, but in this type of subtractive manufacturing, the laser usually follows the path more than once or much lower speed is applied. Laser cutting & engraving are fast and clean processes that allow a much more precise job than manual labor. This type of manufacturing is mostly used for signage & customization. The main advantages of laser are:

Accuracy Speed Repeatability Clean process

Laser Toolhead enables to turn Zmorph Fab All-in-One 3D Printer into a laser cutter & engraver that works with a wide range of materials including plastics, composites or foams. A dedicated worktable comes with preset holes for better material holding.

Technical Specs	Metric	Imperial
Working area	235 x 250 x 85mm	9.25 x 9.8 x 3.35 inch
Laser power	2.8W Blue Diode	
Working speed	15 mm/s	0.6 in/s
Resolution	0.12 mm	0.0047 inch
Noise level	36 db	36 db
Wavelength	450 nm	450 nm

Following materials may be dangerous for your health. During laser cutting and engraving always make sure that you and your surroundings are protected against all hazardous factors.

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Leather

A very versatile, tough and durable material that can be used for various leather goods like purses, wallets, cases, belts, labels or decorative elements. Both genuine and artificial leather can be laser cut or engraved on.

Used for jewelry, engraved accessories, leather labels

Engraving Cutting

Felt

A soft textile material used mostly for decorations. It’s made of fibers condensed and pressed together. It can be efficiently laser cut in order to obtain custom shapes.

Used for jewelry and decorations, furniture pads, coasters.

Engraving Cutting

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Laser Foil

An elastic and flexible material ready for laser engraving and cutting. It’s thin and resistant to high temperatures, dissolvents and abrasion.

Used for stickers, advertising materials.

Engraving Cutting

Laser Cutting & Engraving

Cardboard

The biggest advantage is the price. It can be easily cut with laser and therefore works great as stencils.

Used for blanking dies, stencils, French curves.

Engraving Cutting

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Foamiran

A delicate and elastic foam that can be laser-cut with ease. Its structure and features make it a good choice for decorative elements.

Used for jewelry and decorations, paddings.

Engraving Cutting

Wood fiber board

A composite wood product made from sawmill shavings or wood chips. It’s used in furniture and can be laser engraved on to achieve custom designs or signatures.

Used for stencils, frame engraving.

Engraving

Laser Cutting & Engraving

Plywood

Composed of thin layers of wood veneer. Laser engraving & cutting in plywood is mostly used for decorative elements, art and crafts.

Used for decorations, pictures.

Engraving

back to material list ››

Laser Cutting & Engraving

Wood

Wood can be easily engraved on and therefore allows for custom designed shapes and signage. Wood comes in various shapes and forms and it’s best to laser engrave on end products.

Used for engraving on end products.

Engraving

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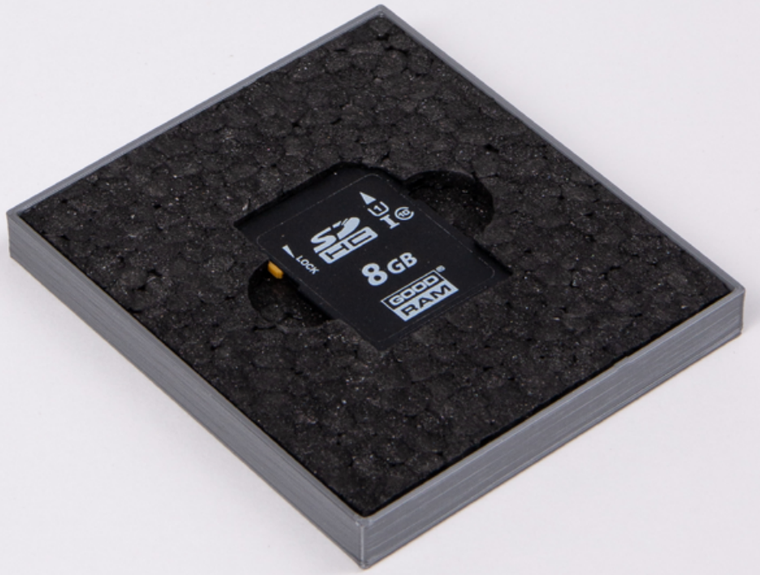
EPP

EPP is resistant to most solvents, water and humidity. EPP usually comes in blocks that can be laser cut out to custom shapes. Use it as a filling in packages to safely store small elements or products.

Used for package fillings for better product holding (e.g. small SD cards).

Engraving Cutting



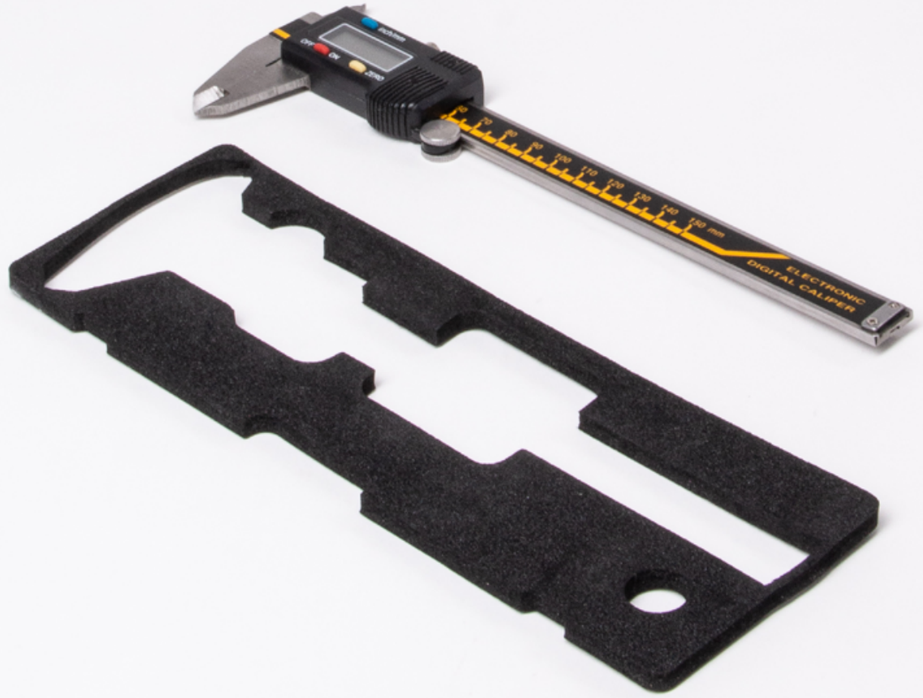
Laser Cutting & Engraving

EVA Foam

Thanks to a high density of cells, EVA foam is a good material for laser cutting. It’s main characteristsic are very low water absorption, softness, good shock-absorption and resistance to atmospheric agent.

Used for accessories, casings.

Engraving Cutting



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Laser Cutting & Engraving

Neoprene

Neoprene is a type of synthetic rubber. The fabric resembles light, soft, and elastic foam, that exposes its traits such as stain resistance and general durability. Moreover, it has excellent temperature insulation properties and is effective against shock damages.
It comes in a variety of colors which adds to esthetical values. The wide variety of applications include consumer goods, insulators, and the automotive industry.

Used for: wetsuits, face masks, electrical insulation, fan belts, laptop sleeves

Engraving Cutting

Handy Resources

The Official Zmorph Applications Catalog

Discover true versatility - explore 90+ pages of stunning creations made with Zmorph Multitool 3D Printer. Concept models, functional prototypes, low volume production and more. It's all in the catalog.

Click here to start exploring Zmorph Applications Catalog.

Zmorph Academy

Comprehensive online platform for Zmorph users. With almost 100 courses full of videos, pictures, and exercises, Zmorph Academy is designed to create and build your skills with 3D printing, CNC milling, and laser engraving. After finishing, the user will be able to make custom working PCBs and other complex projects.

Click here to enroll for free at academy.Zmorph3d.com.

Voxelizer Software

Zmorph's original Voxelizer software is the intelligence behind the machine. It allows you to control all fabrication methods of Zmorph All-in-One 3D Printers and gives you access to the most advanced 3D printing capabilities.

Click here to get Voxelizer at zmorph3d.com/voxelizer

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ZMORPH FAB
Technical Specification

3D PRINTING

3D printing technology	FFF (Fused Filament Fabrication)
Toolheads	Single Extruder Toolhead 1.75, Dual Extruder Toolhead Toolhead
Layer resolution	0.05 - 0.4 [mm] *
Maximum printing temperature	250 [°C]
Work area	235 x 250 x 165 [mm]
Maximum bed temperature	115 [°C]
Minimum wall thickness	0.4 [mm] *
Dimensional accuracy	+/- 0.2 [mm]
Work area leveling method	Automatic, Manual
Material container	Spool, reel
Material diameter	1.75, 3.00 [mm]
Nozzle diameter	0.3, 0.4, 0.6 [mm]
Support structures	Mechanically and chemically removed - printed with the same material as the model
Connectivity	USB, Ethernet, SD card
Available Materials	PLA, ABS, PET, Nylon, PVA, HIPS, ASA, TPE, PP, PC, PMMA, PC/ABS
Third party materials	Applicable
Work speed	40 [mm/s]
Travel speed	120 [mm/s]

TEMPERATURE PARAMETERS

Ambient Operation Temperature	15 ~ 30 [°C]
Storage Temperature	-10 ~ 40 [°C]

CNC MILLING

Toolhead	CNC spindle
Spindle max power	300 [W]
Noise	70 [dB]
Work area leveling method	Manual
Work area	235 x 250 x 85 [mm] **
Work speed	0.1 ~ 20 [mm/s]
Travel speed	120 [mm/s]
Available Materials	ABS, Nylon, HDPE, PTFE, PC, PP, POM, PMMA, PVC, HIPS, LDPE, PET, Carbon, CCL FR4, Dibond, TCF, Wood, Wood-like, Aluminum, Brass, Copper, Cardboard, Wax, Modeling board, Styrodur
Tool holding	ER-11 collet

LASER ENGRAVING / CUTTING

Toolhead	Laser
Laser spot size for 50mm	0.1 x 0.1 [mm]
Laser spot size for 80mm	0.1 x 0.18 [mm]
Wavelength	450 [nm]
Laser class	4
Laser power	2.8 [W]
Noise	40 [dB]
Work area leveling method	Manual
Work area	235 x 250 x 85 [mm]
Work speed	15 [mm/s]
Travel speed	120 [mm/s]
Available Materials	Wood, wood-like, leather, EPP, paper, cardboard, felt, foil, laminate, EVA Foam, CCL FR4***

WEIGHT AND PHYSICAL DIMENSIONS

Printer without a spool holder	520 x 500 x 450 [mm]
Printer with a spool holder	520 x 500 x 570 [mm]
Printer with a HEPA filter	570 x 500 x 570 [mm]
Dimensions of the transport box	600 x 600 x 570 [mm]
Full set weight	28.70 [kg]
Printer weight	14.45 [kg]
Single Extruder Toolhead 1.75 weight	0.70 [kg]
Dual Extruder Toolhead Toolhead	1.00 [kg]
CNC Milling Toolhead	0.90 [kg]
Laser Toolhead	0.32 [kg]
Thick Paste Extruder Toolhead	0.60 [kg]

SOFTWARE

Software Bundle	Voxelizer
Supported File Types	.stl, .obj, .step, .dxf, .png, .bmp
Supported Operating Systems	Windows 7/10 (64 bit) or higher macOS 10.13 or higher

ELECTRICAL PARAMETERS

AC Input	100 [VAC] ~ 4 [A] 50/60 [Hz] 240 [VAC] ~ 2 [A] 50/60 [Hz]
Maximum Power Consumption	350 [W]
Power Consumption with single-head extruder	220 [W]
Power Consumption with Dual-head extruder	230 [W]
Power Consumption with CNC toolhead	330 [W]
Power Consumption with Laser toolhead	80 [W]

FILTRATION PARAMETERS

Filter type	HEPA/Carbon
Ventilation power	1.54 [W]
Filter dimensions	80 x 80 x 25 [mm]
Filter system dimensions	85 x 85 x 50 [mm]
Filtration control	Temperature

* Depending on the diameter of the nozzle,

** Depending on the mounted endmill and material,

*** Engraving - only when the surface is covered with black paint.

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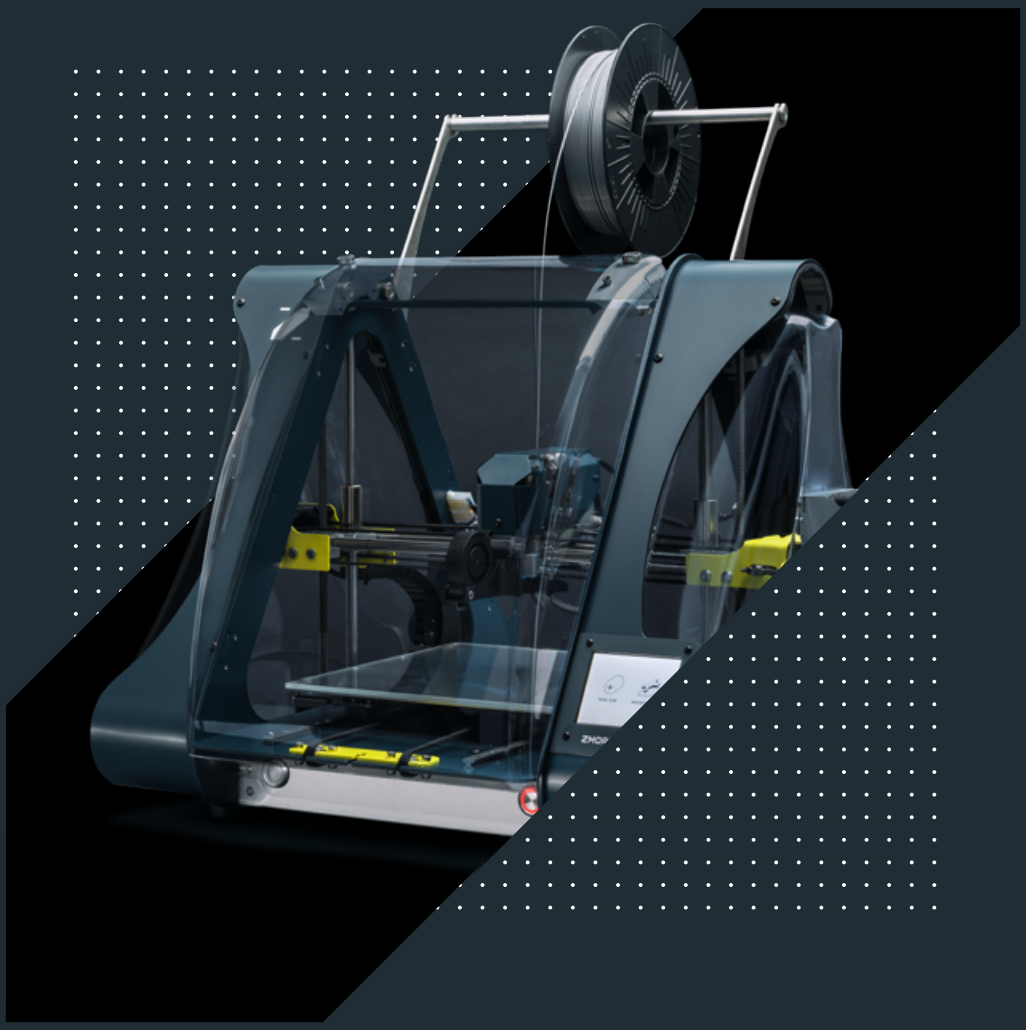
3D PRINTERS
THAT DELIVER



Zmorph Fab

All-in-One 3D Printer

Multifunctional environment with dedicated software ready to be the center of manufacturing companies, science labs, FabLabs, and academic institutions

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