

# All3DP Material Guide

A practical overview on 3D printing materials



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**W**hether plastic, rubber, wood, metal or ceramic, 3D printers can process a wide range of materials. In the following is a brief overview of the materials that you can use to 3D print objects yourself – or have 3D printed for you.

There are now more materials for 3D printing than ever before. In addition to plastics, objects can be printed in gold, silver, titanium, stainless steel, wood, brass, wax, rubber, synthetic resins, polymer plaster, composite materials and many other materials. Almost every week new materials become available for 3D printing.

Something to consider: Those who would prefer to print the 3D design themselves can either do it on their own 3D printer or, alternatively, have a professional printing service do it for you. Especially those just starting out with 3D printing should consider the latter, because not every material is suitable for every object – unfortunately, there's a pretty good chance that things may not turn out the way you hoped they would.

- **Printing on a personal 3D printer:** Those who have decided to buy a 3D printer typically use heated plastics (commonly ABS and PLA) for printing. For most everyday objects, these materials are perfectly adequate. Advantage: It doesn't take all that long to print out an object.

- **Ordering from a professional provider:** Those who want more than that should know the three major online 3D printing services Shapeways, Sculpteo and iMaterialise. These companies can directly print out uploaded files (usually .stl or .obj) and deliver the prints worldwide. Alternatively, you can order the ready-made design files on their online marketplaces – it's worth it to do a little comparison shopping on the internet.

The 3D printing service providers have, of course, huge industrial machines in their production units and are therefore well-equipped to process a whole range of 3D printing materials. They can create printouts in gold, silver, titanium, stainless steel, brass, wax, ceramics, rubber, resins or polymer plaster. Please note: In some cases, the prices vary significantly from printing service to printing service, so again it's not a bad idea to do a little research. Also, in some cases it could take days or even weeks until you actually receive the printed object.

Our guide describes the most important materials that you (or your provider) can use for 3D printing. If you have any comments or suggestions, please don't hesitate to contact us at [guide@all3dp.com](mailto:guide@all3dp.com).

We hope you find our material guide helpful and wish you Happy Printing!

## ABS



**Material names:** ABS, Extruded Plastic, Acrylonitrile Butadiene Styrene

<b>Properties:</b> Very versatile, jagged surface, opaque, paintable, somewhat flexible, water resistant, different colors	<b>Cost</b>	0	0	0	0	0
	<b>Level of detail</b>	Q	Q	Q	Q	Q
	<b>Strength</b>	↑	↑	↑	↑	↑
	<b>Delivery time</b>	⌚	⌚	⌚	⌚	⌚
	<b>Typical Applications:</b> Functional models, prototypes					

**Available at:** e.g. i.materialise, trinckle, local 3D print shops

## Alumide

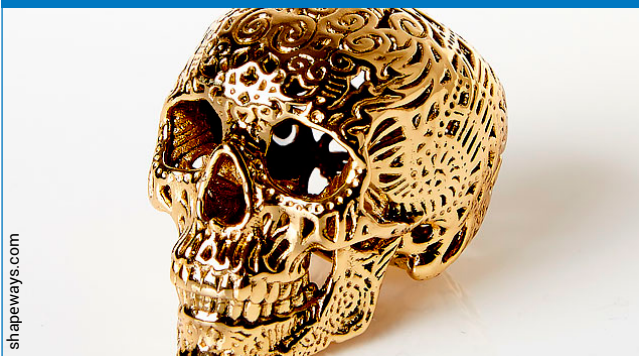


**Material names:** Alumide, Metallic Plastic, Alumide Sintering

<b>Properties:</b> Metallic look, rough surface, opaque, paintable, flexible, water resistant, different colors, metallic look (Alumide)	<b>Cost</b>	0	0	0	0	0
	<b>Level of detail</b>	Q	Q	Q	Q	Q
	<b>Strength</b>	↑	↑	↑	↑	↑
	<b>Delivery time</b>	⌚	⌚	⌚	⌚	⌚
	<b>Typical Applications:</b> Jewelry, decorative items, key fobs					

**Available at:** e.g. Shapeways, Sculpteo, i.materialise, trinckle

## Brass

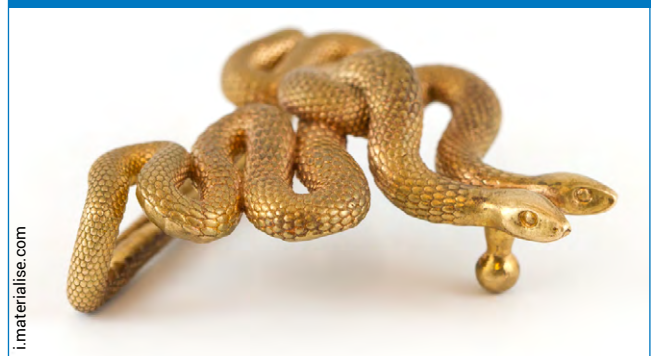


**Material names:** Brass

<b>Properties:</b> Slightly rough to very smooth surfaces, precious look, rigid, water resistant, may be gold plated or PU coated to prevent tarnishing	<b>Cost</b>	0	0	0	0	0
	<b>Level of detail</b>	Q	Q	Q	Q	Q
	<b>Strength</b>	↑	↑	↑	↑	↑
	<b>Delivery time</b>	⌚	⌚	⌚	⌚	⌚
	<b>Typical Applications:</b> Jewelry, decorative items					

**Available at:** e.g. Shapeways, i.materialise, Sculpteo

## Bronze



**Material names:** Bronze

<b>Properties:</b> Slightly rough to very smooth surfaces, rustic or precious look, rigid, water resistant, may be PU coated to prevent tarnishing	<b>Cost</b>	0	0	0	0	0
	<b>Level of detail</b>	Q	Q	Q	Q	Q
	<b>Strength</b>	↑	↑	↑	↑	↑
	<b>Delivery time</b>	⌚	⌚	⌚	⌚	⌚
	<b>Typical Applications:</b> Jewelry, buckles, decorative items					

**Available at:** e.g. Shapeways, i.materialise

## Ceramics



**Material names:** Ceramics

**Properties:** Smooth to surfaces, good paintability, food safe, different colors, rigid, water and heat resistant

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	⚡	⚡	⚡	⚡	⚡
Delivery time	🕒	🕒	🕒	🕒	🕒
<b>Typical Applications:</b> Cups, vases, decorative items					

**Available at:** e.g. aSculpteo, i.materialise

## Full Color



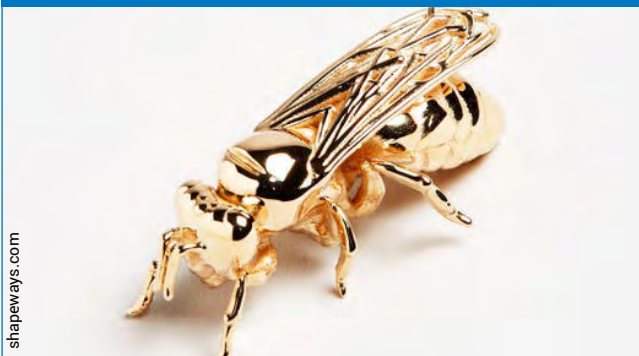
**Material names:** Full Color Plastic, Multicolor, Resin-bonded Plaster

**Properties:** Grainy surfaces, full color, rigid, brittle

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	⚡	⚡	⚡	⚡	⚡
Delivery time	🕒	🕒	🕒	🕒	🕒
<b>Typical Applications:</b> Figurines, architectural scale models					

**Available at:** e.g. Shapeways, i.materialise, Sculpteo, trinkle

## Gold



**Material names:** Gold

**Properties:** Very smooth surfaces, precious look, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	⚡	⚡	⚡	⚡	⚡
Delivery time	🕒	🕒	🕒	🕒	🕒
<b>Typical Applications:</b> Jewelry, decorative items					











**Available at:** e.g. Shapeways, i.materialise

## PLA



**Material names:** PLA, Polylactic Acid, Polylactide

**Properties:** Very versatile, jagged surface, opaque or translucent, paintable, somewhat flexible, water resistant, different colors, biodegradable

Cost	0	0	0	0	0
Level of detail					
Strength					
Delivery time	—				
Typical Applications: Functional models, prototypes					

**Available at:** local 3D print shops



## Platinum



**Material names:** Platinum

**Properties:** Very smooth surfaces, precious look, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	🔍	🔍	🔍	🔍	🔍
Strength	🔧	🔧	🔧	🔧	🔧
Delivery time	🕒	🕒	🕒	🕒	🕒
Typical Applications: Jewelry					

**Available at:** e.g. Shapeways

## Polyamide



**Material names:** Polyamide, Strong & Flexible Plastic, Plastic, Plastic Sintering

**Properties:** Very versatile, slightly rough surface, opaque, paintable, flexible, water resistant, different colors

Cost	0	0	0	0	0
Level of detail	🔍	🔍	🔍	🔍	🔍
Strength	🔧	🔧	🔧	🔧	🔧
Delivery time	🕒	🕒	🕒	🕒	🕒
Typical Applications: Phone cases, functional models, lamp shades					

**Available at:** e.g. Shapeways, Sculpteo, i.materialise, trinckle

## Resin



**Material names:** Detail Resin, Opaque Resin, High Detail Resin, Paintable Resin, Prime Gray

**Properties:** Smooth to very smooth surfaces, good paintability, different colors, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	🔍	🔍	🔍	🔍	🔍
Strength	🔧	🔧	🔧	🔧	🔧
Delivery time	🕒	🕒	🕒	🕒	🕒
Typical Applications: Table-top miniatures, jewelry					

**Available at:** e.g. Sculpteo, i.materialise

## Rubber-like



**Material names:** Rubber-like, Elasto Plastic, Thermoplastic Polyurethane

**Properties:** Elastic like rubber, rough and grainy finish, black or white, abrasive resistant, water resistant

Cost	0	0	0	0	0
Level of detail	🔍	🔍	🔍	🔍	🔍
Strength	🔧	🔧	🔧	🔧	🔧
Delivery time	🕒	🕒	🕒	🕒	🕒
Typical Applications: Accessories, mechanical parts, gadgets					

**Available at:** e.g. Shapeways, i.materialise

## Silver



**Material names:** Silver, Sterling Silver, Silver Casting, Premium Silver

**Properties:** Slightly rough to very smooth surfaces, precious look, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	↑	↑	↑	↑	↑
Delivery time	⌚	⌚	⌚	⌚	⌚
Typical Applications: Jewelry, decorative items					

**Available at:** e.g. Shapeways, i.materialise, Sculpteo, trinckle

## Stainless Steel



**Material names:** Stainless Steel

**Properties:** Rough to slightly rough surfaces, rustic look, rigid, water resistant, lots of finishes possible

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	↑	↑	↑	↑	↑
Delivery time	⌚	⌚	⌚	⌚	⌚
Typical Applications: Decorative items, bottle openers, tools, jewelry					

**Available at:** e.g. Shapeways, i.materialise

## Titanium



**Material names:** Titanium

**Properties:** Smooth to very smooth surfaces, precious look, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	↑	↑	↑	↑	↑
Delivery time	⌚	⌚	⌚	⌚	⌚
Typical Applications: Jewelry, spare parts, tools					

**Available at:** e.g. i.materialise

## Transparent Resin



**Material names:** Detail resin, Transparent Resin, Translucent resin, Resin Printing

**Properties:** Very smooth surfaces, good transparency or good paintability, different colors, rigid, water resistant

Cost	0	0	0	0	0
Level of detail	Q	Q	Q	Q	Q
Strength	↑	↑	↑	↑	↑
Delivery time	⌚	⌚	⌚	⌚	⌚
Typical Applications: Jewelry, decorative items					

**Available at:** e.g. Sculpteo, i.materialise, trinckle