SURFACE FINISHES
3D PRINTING

PROTOLABS™
Welcome to our guide to 3D printing surface finishes. Depending on the additive manufacturing technology, build direction, resolution, and materials you choose, part aesthetics can be impacted. Use this guide to get a quick look at your finishing options and what you can expect when your 3D-printed parts arrive.

Note: This guide does not show all materials and finish levels. It is intended to be representative of the types of materials and finish levels offered.

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*Custom finish on rigid durometer PolyJet parts only.*

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**FEATURED PARTS**

**PLASTIC TECHNOLOGY**

- Unfinished
- Natural
- Standard
- Custom Finish

**METAL TECHNOLOGY**

- DMLS
- SLS
- MJF

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* 3.85 in. wide (97.282 mm)
* 1.7 in. wide (43.18 mm)

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*Custom finish on rigid durometer PolyJet parts only.*
MATERIAL SHOWN: 316 Stainless Steel
RESOLUTION: High (0.00079 in. layer thickness)

DMLS TEXT FEATURES
For best results, text should be inset at 0.015 in. (0.381mm) deep, 10-point font or larger, and bold if possible. Also consider the space between each digit—a minimum of 0.006 in. (0.152mm) gap for high resolution and 0.012 in. (0.305mm) for normal resolution is recommended.
METAL PLATING

MATERIAL SHOWN: CuNi Plating over Ceramic-Like White (Advanced High-Temp PerFORM)

RESOLUTION: Normal (0.004 in. layer thickness)

FINISHING OPTIONS

Our standard metal-plating process for SLA/SLS/MJF coats the part with CuNi that gives parts the look, feel, and strength of metal, but without the weight. The combination of the material's strength, rigidity, and temperature resistance with CuNi plating takes strength, stiffness, and temperature resistance to a degree previously unattainable. Note: Custom polish, custom brushed, and custom semi-bright are finishing options for SLA metal-plated parts only.
**STEREOLITHOGRAPHY**

**MATERIAL SHOWN:** ABS-Like Translucent/Clear (WaterShed)

**RESOLUTION:** Normal (0.004 in. layer thickness)

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**CUSTOM**
Layer lines are removed and a clear coat is applied. All part surfaces will appear clear and glossy.

**STANDARD**
Parts with standard finish are grit blasted, and will appear matte or frosted in appearance.

**NATURAL**
With natural finishing, you get varying aesthetics based on build orientation. Parts are not grit blasted. All up-facing part surfaces will appear glossy.

**UNFINISHED**
With unfinished, you get varying aesthetics based on build orientation. Dots or standing nibs remain evident on the bottom of the part from the support structure remnants.
STEREOLITHOGRAPHY

MATERIAL SHOWN: PC-Like Advanced High-Temp (Accura 5530)
RESOLUTION: Normal (0.004 in. layer thickness)

THERMAL CURING

Boost heat deflection temperature by thermal curing parts. Once the PC-like advanced high-temp material is thermal cured, part appearance will transition from a light tan to darker amber. Note: Ceramic-Like White (Advanced High-Temp PerFORM) parts can also be thermal cured.
STEREOLITHOGRAPHY

MATERIAL SHOWN: ABS-Like Gray (Accura Xtreme Gray)
RESOLUTION: Normal (0.004 in layer thickness)

STANDARD
Supported surfaces are sanded, and the entire part is finely blasted for a consistent look. Note that layer lines are still present.

NATURAL
Supported surfaces are sanded down to eliminate the support nibs.

UNFINISHED
Dots, or standing nibs, remain evident on the bottom of the part from the support structure remnants.

MATERIAL SHOWN: ABS-Like Black (RenShape SL7820)
RESOLUTION: Normal (0.004 in. layer thickness)

DOWNFACING
Our standard process for ABS-like Black is to apply fixative to the downfacing side to restore surface finish resulting in a matte appearance.

UPFACING
Upfacing sides will have a glossy appearance.

SURFACE FINISHES

NATURAL
Supported surfaces are sanded down to eliminate the support nibs.

UNFINISHED
Dots, or standing nibs, remain evident on the bottom of the part from the support structure remnants.

STANDARD
Supported surfaces are sanded, and the entire part is finely blasted for a consistent look. Note that layer lines are still present.

UPFACING
Upfacing sides will have a glossy appearance.
MATERIAL SHOWN: ABS-Like MicroFine™ Gray and Green

RESOLUTION: Micro (0.001 in. layer thickness)

CUSTOM
Layer line removal, paint with color matching, and clear coat application is available.

STANDARD
Supported surfaces are sanded, and the entire part is finely blasted for a consistent look. Note that layer lines are still present.

NATURAL
Supported surfaces are sanded down to eliminate the support nibs.

UNFINISHED
Dots, or standing nibs, remain evident on the bottom of the part from the support structure remnants.

CUSTOM

STANDARD

NATURAL

UNFINISHED

CUSTOM

STANDARD

NATURAL

UNFINISHED
MATERIAL SHOWN: Rigid Polyurethane (Carbon RPU 70)
RESOLUTION: Normal (0.004 in. layer thickness)

UNFINISHED
With unfinished, you get varying aesthetics based on build orientation. Dots or standing nibs remain evident on the bottom of the part from the support structure remnants.

NATURAL
With natural finishing, you get varying aesthetics based on build orientation. Standing nibs are sanded flat.
MATERIAL SHOWN: PA 12 Black

RESOLUTION: Normal (0.00315 in. layer thickness)

Tapped and threaded inserts are available upon request.
MATERIAL SHOWN: PA12 40% Glass-Filled (PA614-GS)
RESOLUTION: Normal (0.004 in. layer thickness)
FINISH: Standard
MATERIAL SHOWN: PA11 Black (PA 850)
RESOLUTION: Normal (0.004 in. layer thickness)
FINISH: Standard
MATERIAL SHOWN: Digital Photopolymer (Clear Rigid)
RESOLUTION: Normal (0.00118 in. layer thickness)
FINISH: Standard

MATERIAL SHOWN: Digital Overmold
(Black 40 Shore A Durometer + Clear Rigid)
RESOLUTION: Normal (0.00118 in. layer thickness)
FINISH: Custom: clear coat applied to window
CUSTOM FINISHING

FINISHING OPTIONS
- Soft-touch paint
- Clear part finishing
- Painting
- Masking

MATERIAL SHOWN: ABS-Like Translucent/Clear (WaterShed)
RESOLUTION: Normal (0.004 in. layer thickness)
FINISH: Custom blue paint with texture added

Custom finishing options are possible for most plastic 3D printing processes. Surface prep is needed in order to eliminate appearance of layer lines through paint.

MATERIAL SHOWN: PA12 White (PA650)
RESOLUTION: Normal (0.004 in. layer thickness)
FINISH: Standard finish with red dye