Additive Manufacturing at your scale.

3D PRINTING MATERIALS 2021

15+ professional materials available for order on sculpteo.com

provided by

BASF We create chemistry

FORWARD AM Innovating Additive Manufacturing

sculpteo

A brand of BASF - We create chemistry

DISCOVER OUR FULL LINE OF 3D PRINTING MATERIALS

Industrial 3D printing is at your fingertips with High-Performance materials and professional technologies provided by **BASF Forward AM**, processed by **Sculpteo**.

Table of Contents

1. POWDER BED FUSION POLYMERS

Explore the line of performance polymers that are perfectly adapted to scaled 3D printing production for any application.

Polymers Technical Properties Comparison

	MATERIAL	TENSILE MODULUS	TENSILE STRENGTH	ELONGATION AT BREAK	MELTING POINT	HARDNESS SHORE	CHARPY IMPACT NOTCHED	CHARPY IMPACT UNNOTCHED	HDT B (0.45 MPa, DRY)
SLS	Ultrasint® TPU 88A	75 MPa	8 MPa	270 %	-	88-90 A	no break	-	-
	Ultrasint® PA6 FR	2450 MPa	41 MPa	2.6 %	218 °C	-	1.6 kJ/m²	7.4 kJ/m²	207 °C
	Ultrasint® PA6 MF	3300 MPa	62 MPa	7 %	219 °C	-	3.1 kJ/m²	27.8 kJ/m²	209 °C
	Ultrasint® PP nat 01	1400 MPa	28 MPa	X: 30 % Z: 10%	140 °C	-	3.3 kJ/m²	29 kJ/m²	102 °C
	Ultrasint® PA11	XY: 1750 MPa Z: 1800 MPa	XY: 52 MPa Z: 54 MPa	XY: >150% (Tensile) Z: 51% (Tensile)	203 °C	-	XY: 5.1 MPa Z: 3.9 MPa	XY: 184 MPa Z: 85 MPa	176 °C
	Ultrasint® PA11 ESD	XY: 3150 MPa Z: 2150 MPa	XY: 65 MPa Z: 55 MPa	XY: 37% (Tensile) Z: 49% (Tensile)	204 °C	-	XY: 6.6 MPa Z: 4.7 MPa	XY: 80 MPa Z: 90 MPa	186 °C
	Ultrasint® PA11 CF	XY: 5900 MPa Z: 2500 MPa	XY: 82 MPa Z: 55 MPa	XY: 7% (Tensile) Z: 11% (Tensile)	202 °C	-	XY: 6.4 MPa Z: 4.7 MPa	XY: 54 MPa Z: 33 MPa	189 °C
MJF	PP	1600 MPa	30 MPa	X/Y: 20% Z: 18%	187°C	-	-	-	100 °C
	Ultrasint® TPU01	75 MPa	9 MPa	220%	120-150 °C	88 A	no break	-	-
	PA11	XY: 1700 MPa Z: 1800 MPa	XY: 54 MPa Z: 54 MPa	XY: 40% Z: 25%	-	-	XY: 7.0 kJ/m² Z: 4.5 kJ/m² (Izod)	-	-
FDM	PLA Big-Rep	-	60 MPa	-	-	60 D	7.5 kJ/m²	-	40 °C

PA11

Ultrasint® PA11

Multi Jet Fusion PA11

Available with: SLS & MJF

Performance Aesthetic **Production** Prototype

Durable

Able to withstand high stress

Bio-sourced

Bio-derived from sustainable castor oil

High impact resistance

Charpy impact unnotched of 198 kJ/m2

Mechanical loads resistance

Exceptionally high toughness

Ultrasint® PA11

Suited For:

Healthcare

Automotive

Aerospace

Consumer goods

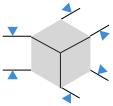
Architecture & Design

Sports

Applications

- Living hinges
- Car interiors and bumper components
- Orthopedic parts & External medical devices
- Sports equipment
- Functional prototypes and End-use products

Design Guidelines (SLS)



Maximum Size:

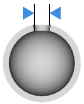
190 mm x 240 mm x 315 mm

Stemmed Elements:

Support: 0.8mm
Without support: 1.5mm

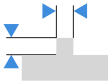
Minimum Wall Thickness:

0.8mm



Hollowing and assembly:

Hollowing: Yes: 0.5mm

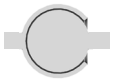


Embossed & Engraved Details:

Embossed: 0.5mm
Engraved: 0.5mm

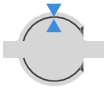
Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 0.3% (min of ± 0.3mm)



Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications (SLS)

Mechanical Properties	Conditions	Value (dry)
Elongation at break	ISO 527-2 (23°C)	X: 28% , Z: 24%
Tensile Modulus	ISO 527-2 (23°C)	X: 1750 MPa, Z: 1800 MPa
Tensile Strength	ISO 527-2 (23°C)	X: 52 MPa, Z: 54 MPa
Izod Impact strength (notched)	ISO 180	X: 6.5 kJ/m² , Z: 4.8 kJ/m²
Printed part density	DIN EN ISO 1183-1	1.02 g/cm³
Heat Resistance HDT / B	ISO 75-2	176 °C

For technical specifications and design guidelines of Multi Jet Fusion PA11, visit sculpteo.com

PA11 CF

Carbon Fiber

Available with: SLS

Performance Aesthetic **Production** Prototype

High strength

Tensile strength of X: 82 MPa, Z: 55 MPa

Bio-sourced

Bio-derived powder, made from castor oil

Extremely high rigidity

Young's modulus of 4500 MPa

High impact resistance

Charpy impact unnotched of 63 kJ/m² can be a good option to replace metal parts

Ultrasint® PA11 CF

Suited For:

Transportation

Automotive

Aerospace

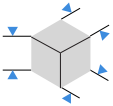
Appliances

Manufacturing

Applications

- Drones / UAV
- Tooling and spare parts
- Motorsport parts series
- Lightweight but rigid structures
- Aerodynamic components
- Metal replacement parts
- Partially electrically conductive parts

Design Guidelines



Maximum Size:

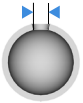
260 x 260 x 260 mm

Stemmed Elements:

Support: 1.5mm
Without support: 1.5mm

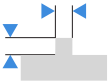
Minimum Wall Thickness:

1mm



Hollowing and assembly:

Hollowing: Yes: 5mm



Embossed & Engraved Details:

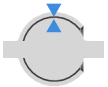
Embossed: 0.5mm
Engraved: 0.5mm

Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 0.3% (min of ± 0.3mm)

Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications

Mechanical Properties	Conditions	Value (dry)
Tensile Modulus	ISO 527-2	X: 5900 MPa, Z: 2500 MPa
Charpy Impact unnotched	ISO 179-1	X: 54 kJ/m² , Z: 33 kJ/m²
Elongation at break	ISO 527-2	X: 7% , Z: 11%
Tensile Strength	ISO 527-2	X: 82 MPa, Z: 55 MPa
Heat Resistance HDT / B	ISO 75-2	189 °C
Printed part density	DIN EN ISO 1183-1	1.07 g/cm³

PA11 ESD

Electrostatic Discharge

Available with: SLS

Performance Aesthetic **Production** Prototype

Durable

Optimal for the rapid construction of durable jigs and fixtures for electronics

Bio-sourced

Bio-derived powder, made from castor oil

High strength

Tensile strength of 55 MPa

Electrostatic discharging safety

ESD properties to reduce the risk of electrostatically induced failure and damage

Ultrasint® PA11 ESD

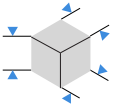
Suited For:

Electronics
Automotive
Aerospace
Robotics
Appliances
Manufacturing

Applications

- ESD safe functional prototypes
- End-use parts
- Electronic housings/casings
- Jigs and fixtures for electronics
- Tooling

Design Guidelines



Maximum Size:

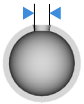
150 mm x 200 mm x 250 mm

Stemmed Elements:

Support: 0.7mm
Without support: 1mm

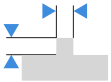
Minimum Wall Thickness:

0.7mm



Hollowing and assembly:

Hollowing: Yes: 5mm

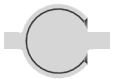


Embossed & Engraved Details:

Embossed: 0.5mm
Engraved: 0.5mm

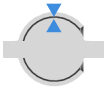
Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 0.4% (min of ± 0.4mm)



Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications

Mechanical Properties	Conditions	Value (dry)
Specific volume resistivity	IEC 62631-3-1	X: 2.3 - 106, Z: 2.1 - 104 Ω.m
Tensile Modulus	ISO 527-2 (23°C)	X: 3150 MPa, Z: 2150 MPa
Elongation at break	ISO 527-2 (23°C)	X: 20% , Z: 23%
Tensile Strength	ISO 527-2 (23°C)	X: 65 MPa, Z: 55 MPa
Charpy Impact unnotched	ISO 179-1	X: 80 kJ/m² , Z: 90 kJ/m²
Heat Resistance HDT / B	ISO 75-2	186 °C
Printed part density	DIN EN ISO 1183-1	1.07 g/cm³

Ultrasint® PP nat 01 (SLS)

Multi Jet Fusion PP

PP

Polypropylene

Available with: SLS & MJF

Performance Aesthetic **Production** Prototype

High rigidity

Exceptional media tightness, ductility and stiffness

High elongation at break

Elongation at break: 20% (XY), 18 (Z)

Low moisture absorption

Suitable for industrial manufacturing applications

High Chemical Resistance

Suitable for media flow and storage components

Ultrasint® PP

Suited For:

Automotive

Aerospace

Sports

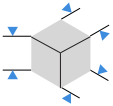
Consumer goods

Architecture & Design

Applications

- Dashboard parts and car interior components
- Structural/ mechanical parts
- Airflow and Fluid systems
- Pipes, tubes and machinery
- Tooling, jigs and fixtures
- Fluid reservoirs and manifolds

Design Guidelines (SLS)



Maximum Size:

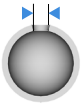
260 x 260 x 300 mm

Stemmed Elements:

Support: 1mm
Without support: 1.2mm

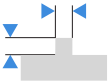
Minimum Wall Thickness:

Flexible: 1mm



Hollowing and assembly:

Hollowing: Yes



Embossed & Engraved Details:

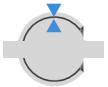
Embossed: 0.7mm
Engraved: 0.7mm

Printing Resolution:

Standard layer thickness: 120µm

Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



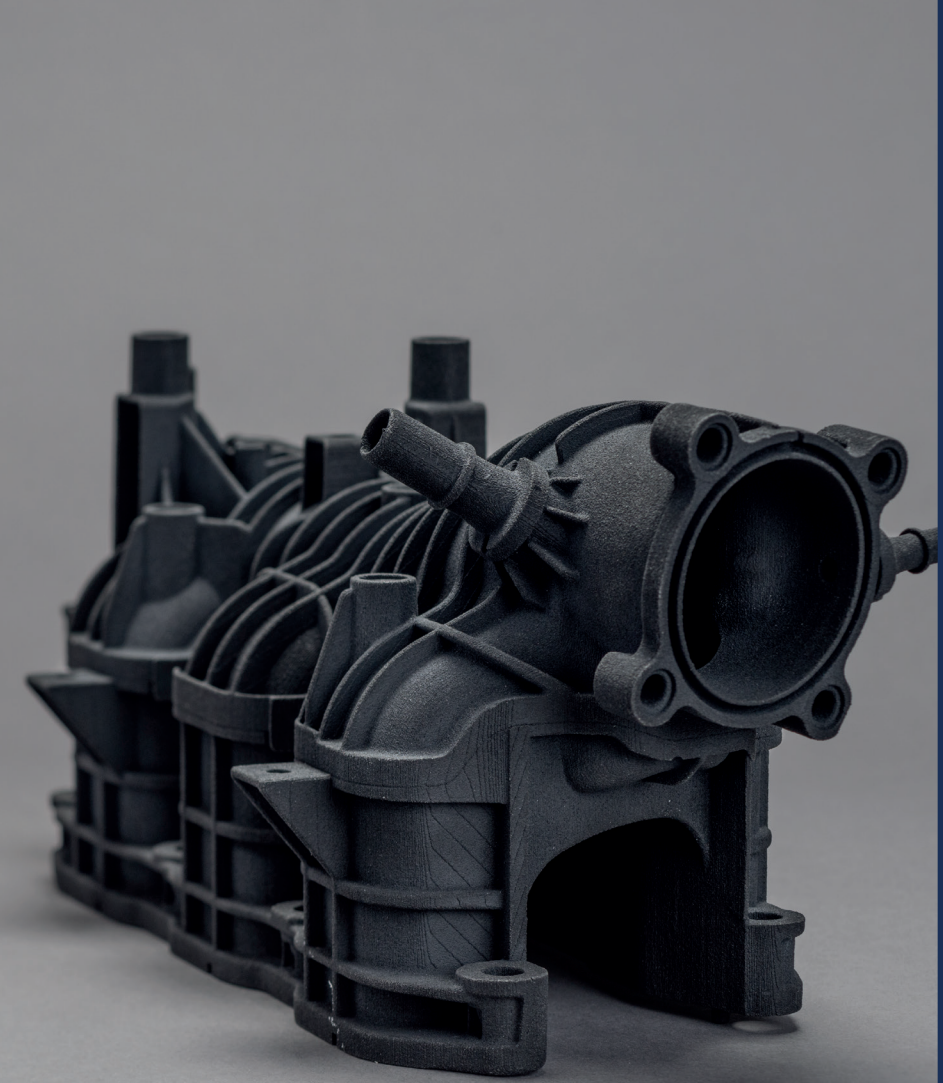
Clearances and spacing:

Minimum spacing: 0.7mm
Minimum Clearance: 0.7mm

Technical Specifications (SLS)

Mechanical Properties	Conditions	Value
Charpy Impact unnotched	ISO 179-1	29 kJ/m²
Tensile Modulus	DIN EN ISO 527-2	1400 MPa
Tensile strength	DIN EN ISO 527-2	28 MPa
Elongation at break	DIN EN ISO 527-2	X: 30% ; Z:10%
HDT B (0.45 MPa, dry)	ISO 75-2	102 °C

For technical specifications and design guidelines of Multi Jet Fusion PP, visit sculpteo.com



PA6 FR

Flame Retardant

Available with: SLS

Performance Aesthetic **Production** Prototype

Flame-Retardant

V2 rating (UL 94V) UL Blue Card certified

Halogen-Free

Halogen-free flame-retardant (FR) additive

Very High Rigidity

Tensile Modulus of 2450 MPa

Thermal Resistance

Melting temperature of 218 °C & Glow Wire Flammability Index (GWFI) up to 960 °C

Ultrasint® PA6 FR

Suited For:

Transportation

Automotive

Aerospace

Consumer goods

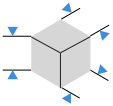
Construction

Electronics

Applications

- Air ducts
- Structural/ mechanical parts
- Tooling, jigs and fixtures
- Cables and pipes
- Electronic casings/housings
- Engine parts

Design Guidelines



Maximum Size:

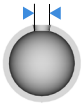
360 x 360 x 420 mm

Stemmed Elements:

Support: 1.5mm
Without support: 1.5mm

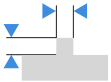
Minimum Wall Thickness:

Flexible: 1.5mm



Hollowing and assembly:

Hollowing: Yes

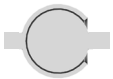


Embossed & Engraved Details:

Embossed: 0.5mm
Engraved: 0.5mm

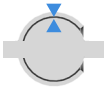
Printing Resolution:

Standard layer thickness: 100µm



Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications

Mechanical Properties	Conditions	Value
Charpy Impact unnotched	ISO 179-1	7.4 kJ/m^2
Tensile Modulus	DIN EN ISO 527-2	2450 MPa
Tensile strength	DIN EN ISO 527-2	41 MPa
Elongation at break	DIN EN ISO 527-2	2.6%
HDT B (0.45 MPa, dry)	ISO 75-2	207 °C

PA6 MF

Mineral Filled

Available with: SLS

Performance Aesthetic **Production** Prototype

Extremely High Rigidity

Tensile Modulus: 3300 MPa. Able to handle all heat, vibration and static loads

Media tightness

Well-suited to media flow and storage parts

Durable

Suitable for tooling equipment, molds, or any multi-purpose industrial goods

Heat Resistance

HDT/B: 207° C and melting point of 220 °C

Ultrasint® PA6 MF

Suited For:

Transportation

Automotive

Aerospace

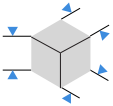
Electronics

Applications

- Tooling equipment and jigs
- Structural/ mechanical parts
- Functional prototypes
- Molds
- Engine bay parts
- Media flow and storage parts

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Design Guidelines



Maximum Size:

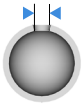
360 x 360 x 420 mm

Stemmed Elements:

Support: 1.5mm
Without support: 1.5mm

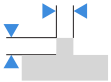
Minimum Wall Thickness:

1.5mm



Hollowing and assembly:

Hollowing: Yes



Embossed & Engraved Details:

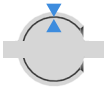
Embossed: 0.7mm
Engraved: 0.7mm

Printing Resolution:

Standard layer thickness: 100µm

Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications

Mechanical Properties	Conditions	Value
Charpy Impact unnotched	ISO 179-1	28 kJ/m²
Tensile Modulus	DIN EN ISO 527-2	3300 MPa
Tensile Strength	DIN EN ISO 527-2	62 MPa
Elongation at break	DIN EN ISO 527-2	7%
HDT B (0.45 MPa, dry)	ISO 75-2	209 °C

TPU

Ultrasint® TPU 88A

MJF TPU01

Available with: SLS & MJF

Performance Aesthetic **Production** Prototype

Resistant

Charpy Impact notched: No Break.

Highly flexible

Shore A 88: Rubber-like elasticity and flexibility

High UV stability

UV stable and also offers good hydrolysis resistance

Great shock absorption

Rebound resilience: 63%. High rebound, good fatigue behavior

Ultrasint® TPU

Suited For:

Automotive

Healthcare

Sports

Consumer goods

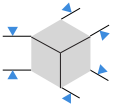
Aerospace

Electronics & Robotics

Applications

- Car interior components
- Air filter covers
- Bellows gimbals
- Industrial tooling, grippers and pipes
- Orthopedic models and shoe soles
- Sports protection equipment

Design Guidelines (SLS)



Maximum Size:

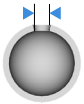
300 x 300 x 300 mm

Stemmed Elements:

Support: 1mm
Without support: 1.2mm

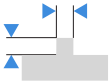
Minimum Wall Thickness:

0.8mm



Hollowing and assembly:

Hollowing: Yes



Embossed & Engraved Details:

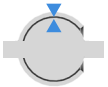
Embossed: 0.7mm
Engraved: 0.7mm

Printing Resolution:

Standard layer thickness: 100µm

Enclosed & Interlocking:

Enclosed parts: Yes
Interlocking parts: Yes



Clearances and spacing:

Minimum spacing: 0.5mm
Minimum Clearance: 0.5mm

Technical Specifications (SLS)

Mechanical Properties	Conditions	Value
Charpy Impact notched	DIN EN ISO 179-1	no break
Hardness Shore A	DIN EN ISO 7619-1	88-90
Tensile Modulus	ISO 527-2, 1A	75 MPa
Tensile Strength	DIN 53504, S2	8 MPa
Elongation at break	DIN 53504, S2	270%
Rebound Resilience	DIN 53512	63%

For technical specifications and design guidelines of MJF TPU01, visit sculpteo.com

2. PHOTOPOLYMERS (LFS) RESINS

Take a look at the wide range of resins BASF-Forward AM & Sculpteo has to offer for highly detailed parts comparable to injection molding.

Resins Technical Properties Comparison

	MATERIAL	TENSILE MODULUS	TENSILE STRENGTH	ELONGATION AT BREAK	HARDNESS SHORE	IMPACT STRENGTH (Izod Notched)	GLASS TRANSITION TEMPERATURE	HDT-B	DENSITY	FLEXURAL MODULUS	FLEXURAL STRENGTH	TEAR STRENGTH, DIE C
DLP / LCD	Ultracur3D ® EPD 1006 3D	1500 MPa	40 MPa	25.2%	79 (Shore D)	35 J/m (23° Machined)	-	44° C	1.2 g/cm3	1460 MPa	52 MPa	-
	Ultracur3D ® ST 45	2300 MPa	62 MPa	25%	81 (Shore D)	20.8 J/m (23° Machined)	-	73°C	1.2 g/cm3	2430 MPa	109 MPa	-
	Ultracur3D ® ST 45 B	2040 MPa	52.5 MPa	21.4%	81 (Shore D)	20.56 J/m (23° Machined)	-	63°C	1.2 g/cm3	2140 MPa	93.9 MPa	-
	Ultracur3D ® RG 35	2600 MPa	80 MPa	6%	85 (Shore D)	10 J/m (23° Machined)	-	83°C	1.2 g/cm3	2400 MPa	110 MPa	-

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Ultracur3D® EPD 1006

Available with: LCD

Performance | **Aesthetic** | **Production** | Prototype

Flexibility

Elongation at Break of 25.2% and a Shore D of 79

XL parts

Large-scale 3D printing up to 510 x 280 x 350 mm

Good Toughness

With a Tensile Strength of 40 MPa

Highly Detailed

Minimum size of details of 0.3 mm & Accuracy of 100µm

Ultracur3D® EPD 1006

Suited For:

Automotive

Industrial Prototyping

Manufacturing

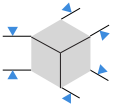
Consumer goods

Applications

- Mechanical parts
- Functional prototyping
- Functional end-use parts
- Jigs and fixtures

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Design Guidelines



Maximum Size:

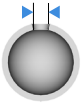
510 x 280 x 350 mm

Stemmed Elements:

Support: 0.6mm
Without support: 1mm

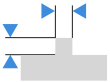
Minimum Wall Thickness:

0.6mm



Hollowing and assembly:

Hollowing: No



Embossed & Engraved Details:

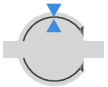
Embossed : 0.3 mm
Engraved : 0.3 mm

Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 100µm (Over 90% of scanned data within +/- µm)

Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No



Clearances and spacing:

Minimum spacing: 0.4mm
Minimum Clearance: 0.4mm

Technical Specifications

Mechanical Properties	Conditions	Value
HDT B (0.45 MPa)	ASTM D648	44°C
Elastic Modulus	ASTM D638	1500 MPa
Tensile strength	ASTM D638	40 MPa
Elongation at break	ASTM D638	25.2 %
Charpy notched, 23 °C	ISO 179-1	2.5 kJ/m2

Ultracur3D® RG 35

Available with: DLP

Performance | **Aesthetic** | **Production** | Prototype

high stability and stiffness

Tensile Strength of 80 MPa and E Modulus of 2600 MPa

UV stability

Keeps its mechanical properties even when exposed to UV light

Low water intake

Adapted to produce parts in situations where humidity or fluids are involved

Light management

Suited to manufacture translucent parts requiring light diffusion

Ultracur3D® RG 35

Suited For:

Manufacturing

Industrial Prototyping

Consumer goods

Automotive

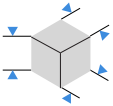
Aerospace

Electronics

Applications

- Transparent storage
- Pipes
- Automotive housings
- Electronic casings
- Structural/ mechanical parts
- Tooling, jigs and fixtures
- Engine parts

Design Guidelines



Maximum Size:

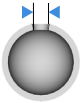
192 × 108 × 330 mm

Stemmed Elements:

Support: 0.6mm
Without support: 1mm

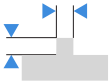
Minimum Wall Thickness:

0.6mm



Hollowing and assembly:

Hollowing: No
Assembly: No



Embossed & Engraved Details:

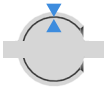
Embossed: 0.3mm
Engraved: 0.3mm

Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 200µm

Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No

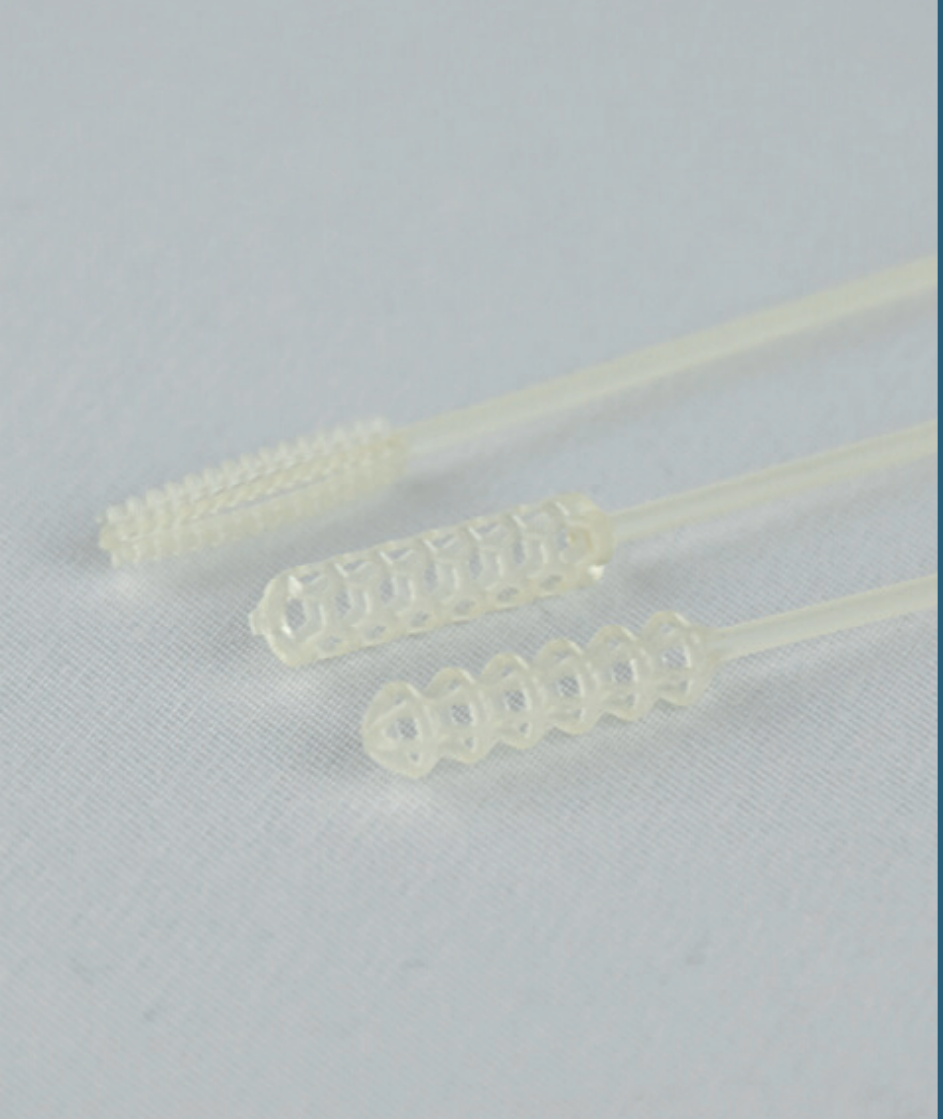


Clearances and spacing:

Minimum spacing: 0.4mm
Minimum Clearance: -mm

Technical Specifications

Mechanical Properties	Conditions	Value (post-cured)
Elongation at Break	ASTM D 638	6%
Tensile Strength	ASTM D 638	80 MPa
E Modulus	ASTM D 638	2 600 MPa
Charpy notched, 23 °C	ISO 179-1	0.6 kJ/m2
HDT (0.45 MPa)	ASTM D 648	83°C



Ultracur3D®
ST 45

Available with: DLP

Performance | **Aesthetic** | **Production** | Prototype

Impact Resistance

Charpy notched of 1.39 kJ/ m2 & Elongation at break of 25%

Long-term toughness

Tensile Strength of 62 MPa

Highly Detailed

Offers a great freedom of design and allows high level of details

Biocompatible

Suited for medical projects

Ultracur3D® ST 45

Suited For:

Consumer goods

Healthcare

Electronics

Manufacturing

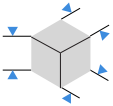
Industrial Prototyping

Applications

- Medical tools
- Prototyping
- End-use products
- Functional testing, patterns, and models
- Transparent parts
- Electronic casings
- Jigs and fixtures

Important: This material is not adapted for parts in contact with fluids.

Design Guidelines

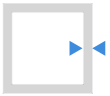


Maximum Size:

192 × 108 × 330 mm

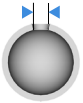
Stemmed Elements:

Support: 0.6mm
Without support: 1mm



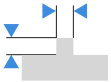
Minimum Wall Thickness:

0.6mm



Hollowing and assembly:

Hollowing: Yes
Assembly: -



Embossed & Engraved Details:

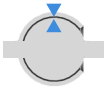
Embossing: 0.3mm
Engraving: 0.3mm

Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 200µm

Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No



Clearances and spacing:

Minimum spacing: 0.4mm
Minimum Clearance: -mm

Technical Specifications

Mechanical Properties	Conditions	Value
Tensile Strength	ASTM D638	62 MPa
E Modulus	ASTM D638	2 300 MPa
Elongation at Break	ASTM D638	25 %
Charpy notched, 23 °C	ISO 179-1	1.39 kJ/m2
HDT (0.45 MPa)	ASTM D648	73°C

Ultracur3D®
ST 45 B

Available with: DLP

Performance Aesthetic **Production** Prototype

Impact Resistance

Charpy notched of 2.66 kJ/m2 & Elongation at break of 21.4 %

Long-term toughness

Tensile Strength of 52.5 MPa

Complex parts

Perfect for complex aesthetic parts with a good surface finishing

Highly Detailed

High accuracy of ± 200µm

Ultracur3D® ST 45 B

Suited For:

Consumer goods

Healthcare

Electronics

Manufacturing

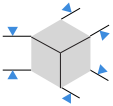
Industrial Prototyping

Applications

- Prototyping
- End-use products
- Functional testing, patterns, and models
- Transparent parts
- Electronic casings
- Jigs and fixtures

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Design Guidelines



Maximum Size:

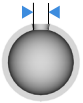
192 × 108 × 330 mm

Stemmed Elements:

Support: 0.6mm
Without support: 1mm

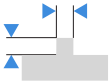
Minimum Wall Thickness:

0.6mm



Hollowing and assembly:

Hollowing: Yes
Assembly: -



Embossed & Engraved Details:

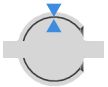
Embossing: 0.3mm
Engraving: 0.3mm

Printing Resolution:

Standard layer thickness: 100µm
Accuracy : ± 200µm

Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No



Clearances and spacing:

Minimum spacing: 0.4mm
Minimum Clearance: -mm

Technical Specifications

Mechanical Properties	Conditions	Value
Tensile Strength	ASTM D638	52.5 MPa
E Modulus	ASTM D638	2 040 MPa
Elongation at Break	ASTM D638	21.4 %
Charpy notched, 23 °C	ISO 179-1	2.66 kJ/m2
HDT (0.45 MPa)	ASTM D648	63°C

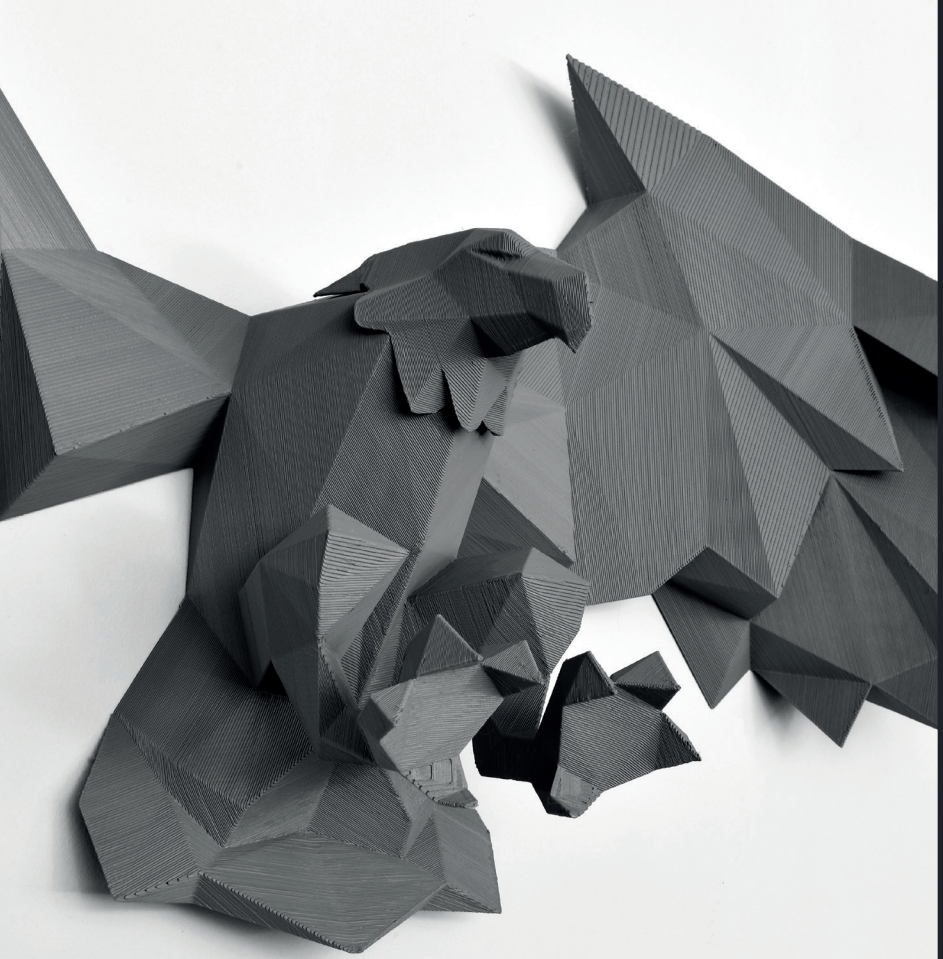
3. FUSED FILAMENTS FABRICATION (FFF)

Discover the line of 3D printing metal and polymers materials for FDM technologies.

Metals Technical Properties Comparison

	MATERIAL	TENSILE MODULUS	TENSILE STRENGTH	ELONGATION AT BREAK	MELTING POINT	YIELD STRENGTH	CHARPY IMPACT NOTCHED	HARDNESS	DENSITY	COMPOSITION
FDM	Ultrafuse® 316L	-	XY: 561 MPa Z: 521 MPa	XY: 53% ZX: 36%	-	XY: 251 MPa Z: 234 MPa	111 J/cm2	XY: 128 HV10 Z: 128 HV10	7.85 g/cm³ (Sintered part)	-
	Ultrafuse® 17-4 PH	-	XY: 760 MPa Z: 730 MPa	XY: 4% ZX: 3%	-	XY: 680 MPa Z: 700 MPa	TBA	257 HV 10 (Vickers)	>7.6 g/cm³ (Sintered part)	-

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.



PLA

Available with: Big-Rep® FDM

Performance | **Aesthetic** | Production | Prototype

XXL parts

Large-scale 3D printing up to 1m x 1m x 1m

Bio-sourced & Recyclable

Affordable and reliable bioplastic that can be recycled

Food safe

Safe for contact with food

Highly versatile properties

Has good strength and stiffness

PLA Big-Rep®

Suited For:

Construction

Signage

Arts

Consumer goods

Architecture & Design

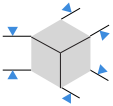
Marketing displays

Applications

- Promotional items
- Artistic projects
- Pattern making
- Tooling parts
- End-use products
- Industrial parts

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Design Guidelines



Maximum Size:

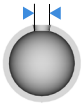
1 x 1 x 1 m

Stemmed Elements:

2.2mm

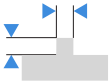
Minimum Wall Thickness:

2.2mm



Hollowing and assembly:

Hollowing: No
Assembly: Yes, min space: 1mm



Embossed & Engraved Details:

Embossed: 2.4mm
Engraved: 2.4mm

Printing Resolution:

Standard layer thickness: 0.6mm

Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No

Technical Specifications

Mechanical Properties	Conditions	Value
Density	-	1.24 g/cm³
Flexural Modulus	ISO 178	3800 MPa
Tensile strength	ISO 527	60 MPa
Impact Strength Notched	-	7.5 kJ/m²
Heat Resistance HDT / B	ISO 75	40 °C
Hardness Shore D	-	60

Stainless Steel 316L

Available with: FDM

Performance Aesthetic Production Prototype

Impact Resistance

Impact Strength Charpy (notched) of 111 J/cm²

Hardness and strength

Vickers Hardness HV10 of 128

Corrosion Resistant

Composed of high amounts of chromium

Heat resistant

Very high melting point of 1371 °C

Ultrafuse® 316L

Suited For:

Medical

Automotive

Aerospace

Consumer goods

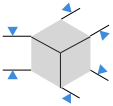
Electronics

Applications

- Tooling and Molds
- Structural/ mechanical parts
- Exhaust manifolds
- Surgical elements
- Heat Exchangers
- Fasteners and Mounting

This information and values are presented as guidance only and based on Sculpteo's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated April 2021.

Design Guidelines (FDM)



Maximum Size:

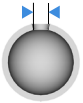
80x80x80mm

Stemmed Elements:

Support: 0.8mm
Without support: 1mm

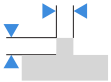
Minimum Wall Thickness:

1 mm



Hollowing and assembly:

Hollowing: No
Assembly: No

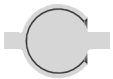


Embossed & Engraved Details:

Embossed: 0.60 mm – 1 mm
Engraved: 0.40 mm – 1 mm

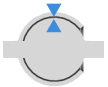
Printing Resolution:

Standard layer thickness: 150µm



Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No



Clearances and spacing:

Minimum spacing: 0.6mm
Minimum hole diameter : 1.5mm

Technical Specifications (FDM)

Mechanical Properties	Conditions	Value
Yield Strength, Rp 0.2	DIN EN ISO 6892-1	XY: 251 MPa / ZX: 234 MPa
Tensile Strength	DIN EN ISO 6892-1	XY: 561 MPa / ZX: 521 MPa
Impact Charpy notched	DIN EN ISO 148:201	111 J/cm^2
Elongation at break	DIN EN ISO 6892-1	XY: 53% / ZX: 36%
Vickers Hardness	DIN EN ISO 6507-1	128 HV10

Stainless Steel 17-4 PH

Available with: FDM

Performance | Aesthetic | Production | Prototype

Strong

Tensile strength of 950 MPa

Hardness

Vickers Hardness HV10 of 257

Durable

Excellent mechanical properties for advanced applications

Low Deformability

Yield strength of 720 MPa

Ultrafuse® 17-4 PH

Suited For:

Medical

Automotive

Aerospace

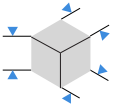
Consumer goods

Oil and gas

Applications

- Tooling, Jigs and Fixtures
- Molds
- Replacement parts
- End-use parts
- Small batches and series production
- Functional parts and prototypes

Design Guidelines



Maximum Size:

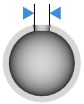
80x80x80mm or
115x115x40mm

Stemmed Elements:

Support: 0.8mm
Without support: 1mm

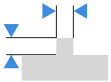
Minimum Wall Thickness:

1 mm



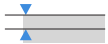
Hollowing and assembly:

Hollowing: No
Assembly: No



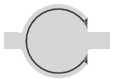
Embossed & Engraved Details:

Embossed: 0.60 mm – 1 mm
Engraved: 0.40 mm – 1 mm



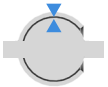
Printing Resolution:

Standard layer thickness:
150µm



Enclosed & Interlocking:

Enclosed parts: No
Interlocking parts: No



Clearances and spacing:

Minimum spacing: 0.6mm
Minimum hole diameter : 1.5mm

Technical Specifications

Mechanical Properties	Conditions	Value
Yield Strength, Rp 0.2	DIN EN ISO 6892-1	XY: 680 MPa / ZX: 700 MPa
Tensile Strength	DIN EN ISO 6892-1	XY: 760 MPa / ZX: 730 MPa
Impact Charpy notched	DIN EN ISO 148:2017-05	TBA
Elongation at break	DIN EN ISO 6892-1	XY: 4% / ZX: 3%
Vickers Hardness	DIN EN ISO 6507-1	257 HV10

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