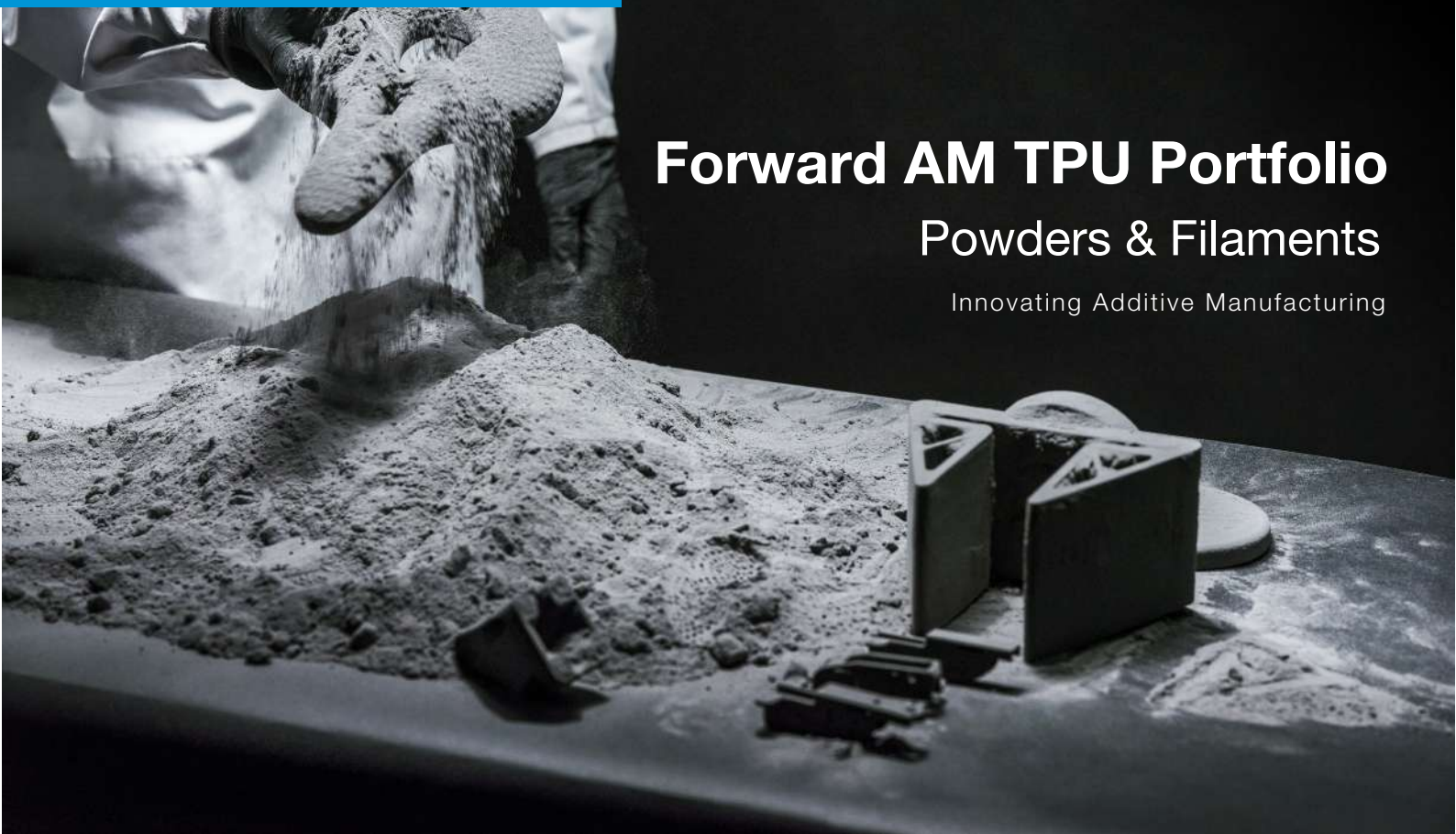




Forward AM TPU Portfolio

Powders & Filaments

Innovating Additive Manufacturing





Discover one of the largest portfolios of high-performance materials for Additive Manufacturing

At Forward AM, we accompany you from first idea to final printed part. Our portfolio includes materials and solutions for all major Additive Manufacturing technologies - from powders to plastic and metal filaments to photopolymers.



POWDER BED FUSION

Explore the Ultrasint® line of performance polymers that are perfectly adapted to scaled Additive Manufacturing production for any application.

Mechanical Properties Comparison

		PP Line	AP Line	PA11 Line				TPU Line			
		PP 1400 Black	AP26	PA11 (Conditioned)	PA11 Black (Conditioned)	PA11 CF (Conditioned)	PA11 ESD (Conditioned)	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
HDT A [°C] ISO 75-2		62	57	76	62	151	111	97 ⁽³⁾	98 ⁽³⁾	101,7 ⁽³⁾	
HDT B [°C] ISO 75-2		102	94	176	177	189	186				
Shore A Hardness DIN ISO 7619-1		-	-	-	-	-	-	88-90	88-90	86-88	90
Tensile Strength [MPa] ISO 527-2 (23 °C)	XY	29	40	45	45	71	55	9	8	8	9
	ZX	29	30	46	45	48	47	7	7	5	7
Elongation at Break [%] ISO 527-2 (23 °C)	XY	25	2,5	45	42	11	22	280 ⁽¹⁾	270 ⁽¹⁾	360 ⁽¹⁾	280 ⁽¹⁾
	ZX	25	2,0	31	34	17	31	150 ⁽¹⁾	130 ⁽¹⁾	100 ⁽¹⁾	120 ⁽¹⁾
E Modulus [MPa] ISO 527-2 (23 °C)	XY	1250	2500	1100	1150	4500	2300	85 ⁽²⁾	75 ⁽²⁾	85 ⁽²⁾	110 ⁽¹⁾
	ZX	1300	2500	1250	1200	2000	1500	-	-	-	
Charpy Impact Strength (notched) [kJ/m ²] ISO 179-1	XY	4,0	2,2	8,3	11	6,7	7,3	No break	No break	No break	No break
	ZX	4,0	-	4,5	11	4,7	5,3	No break	No break	No break	No break
Charpy Impact Strength (unnotched) [kJ/m ²] ISO 179-1	XY	34	12	198	No break	63	101	-	-	-	-
	ZX	28	-	85	75	51	107	-	-	-	-

(1) DIN 53504, S2

(2) ISO 527-2, 1A

(3) Vicat/A (10 N) / °C - DIN EN ISO 306

(4) Izod Test Method A with notched ASTM D256

Printer Compatibility

- Compatible
- Open parameter kit required

		PP Line	AP Line	PA11 Line				TPU Line			
		PP 1400 Black	AP26	PA11	PA11 Black	PA11 CF	PA11 ESD	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
HP	5200 Series							■			
Prodways	P1000 / P100X	□	□	□	□	□	□		□	□	
3D Systems	Sinterstations / Vanguard / sPro 60	■	■	■	■	■	■		■	■	
XYZp	MfgPro230 xS		■	■	■	■	■		■	■	■
	MfgPro236 xS		■	■	■	■	■		■	■	■
Farsoon	Flight Series	■			■	■				■	
	HT403P / HT/ST25xP	■	■	■	■	■	■		■	■	■
	SS403P / eForm	■	■	■	■	■	■		■	■	■
EOS	P1xx		□	□	□				□	□	□
	P3xx/P7xx			□	□				□	□	□

Tests & Certification Summary

- Statement Available
- Test in Progress

		PP Line	AP Line	PA11 Line				TPU Line			
		PP 1400 Black	AP26	PA11	PA11 Black	PA11 CF	PA11 ESD	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
Product Statements	Skin Contact	■		■				■	■	■	■
	USP Class IV			■							
	Food Contact			■							
	UL Blue Card							■			
Application Specific Testing	Long Term Heat Aging										
	UV Resistance ISO 4892-2	■		■	■			■	■	■	■
	Hydrolysis Resistance							■	■		■
	Air Tightness / Burst Pressure							■	■		
	Temperature Performance High Temperature Mechanicals	■	■	■		■	■	■	■		

		PP Line	AP Line	PA11 Line				TPU Line			
		PP 1400 Black	AP26	PA11	PA11 Black	PA11 CF	PA11 ESD	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
Electrical	Specific Volume Resistivity IEC 62631-3-1	■	■	■	■	■	■	■			
	Specific Surface Resistivity IEC 62631-3-2	■	■	■	■	■	■				
	Dielectric Strength IEC 60234-1	■	■	■	■	■	■	■			
	CTI IEC 60112										
Flame Retardance	Fatigue Rossflex							■	■	■	■
	Flammability UL 94	■	□	■	■	■	■	■	■		
	Flammability FMVSS 302							■	■		

Sustainability Summary

- Currently Available
- In Progress

	PP Line	AP Line	PA11 Line				TPU Line			
	PP 1400 Black	AP26	PA11	PA11 Black	PA11 CF	PA11 ESD	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
Recyclable	■	■	■	■	■	■	■	■	■	■
Refresh Rate (Old/New in %) *	60/40	100/0	50/50	50/50	50/50	50/50	80/20	80/20	80/20	80/20
Take Back Program			■	■			■	■	■	■
Life Cycle Assessment	■		■	■			■	■	■	
Carbon Compensation	■						■	□	□	□

*Typical value. The exact refresh rate depends on the machine type and printing technology, processing parameters, material usage intensity, packing density, part geometry and individual part property requirements.

Life Cycle Assessment (LCA): Study that calculates how much environmental impact is associated with every step of a product. The environmental score for these materials is representative of the stages of “Raw material extraction and production” and “Material preparation for 3D printing”.

Carbon Compensation: A strategy to reduce carbon emissions by investing in practices that absorb or mitigate CO2.

Take Back Program: The collection of powder and end parts to reduce plastic waste and promote sustainability.

Refresh Rate: minimum ratio of fresh / virgin powder one needs to add to your pre-used, unsintered powder to maintain its best printing quality.

Post-Processing Summary

■ Compatible

	PP Line	AP Line	PA11 Line				TPU Line			
	PP 1400 Black	AP26	PA11	PA11 Black	PA11 CF	PA11 ESD	TPU01 for HP MJF	TPU 88A	TPU 88A Black	TPU 90A LT
Chemical Smoothing	■	■	■	■	■	■	■	■	■	■
Ultracur3D® Coat F+			■	■			■	■	■	■
Dyeing		■	■				■	■		■

Materials enabled by BASF

Available through Printer Manufacturers



HP 3D HR PP



Prodways PP 1200



FLEXA Performance
PA11 Onyx
PA11 CF
PA11 ESD



Ultrasint® TPU01

Technology:

Powder Bed Fusion

Color:

Gray

Machine Compatibility:

MJF Machines

HP Jet Fusion 5200 Series



Highly flexible

Shore A 88 hardness



High Reusability

Up to 80% of powder
reusability



Lattice Structures

Enabled by
BASF Ultrasim®

Ultrasint® TPU01

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Technical Specifications

Mechanical properties	Standard	X / Z
Charpy Impact Strength Notched -10°C (kJ/m ²)	ISO 179-1	46 / 44
E-Modulus (MPa)	ISO 527-2, 1A	85 / 85
Tensile Strength (MPa)	DIN 53504, S2	9 / 7
Elongation at Break (%)	DIN 53504, S2	280 / 150



Complete TDS

Tests & Certifications

Skin Contact

UV Stability

ISO 10993-10

ISO 4892-2B Cycle 3

& ISO 10993-5

ISO 4892-2A Cycle 1

Post-Processing and Related Services

Chemical Smoothing



Both mechanical and chemical smoothing will improve material performance while enhancing the appeal, durability, surface roughness and overall quality.

Whitepaper available.

Ultracur3D® Coat F+



Flexible waterborn 2k-basecoat designed to offer exceptional flexibility for elastic 3D Printing Materials and enables new possibilities for advanced applications.

Ultrasim® 3D Lattice Design



Lattice engineering unlocks the potential of high-performance materials for any application. Customized lattices can be engineered to specific mechanical properties.

Ultrasint® TPU 88A



Technology:

Powder Bed Fusion

Color:

White

Machine Compatibility:

All SLS machines

Farsoon - EOS - 3D Systems - XYZprinting



High Reusability

Up to 80% of powder
reusability



**Excellent
Surface Quality
and High Level
of Detail**



Highly flexible

Shore A 88 hardness

Ultrasint® TPU 88A

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Technical Specifications

Mechanical properties	Standard	X / Z
Charpy Impact Strength Notched -10°C (kJ/m ²)	DIN EN ISO 179-1	60 / 58
E-Modulus (MPa)	ISO 527-2, 1A	75 / 75
Tensile Strength (MPa)	DIN 53504, S2	8 / 7
Elongation at Break (%)	DIN 53504, S2	270 / 130



Complete TDS

Tests & Certifications

Skin Contact

ISO 10993-10
& ISO 10993-5

UV Stability

ISO 4892-2B Cycle 3
ISO 4892-2A Cycle 1

Post-Processing and Related Services

Chemical Smoothing



Both mechanical and chemical smoothing will improve material performance while enhancing the appeal, durability, surface roughness and overall quality.

Ultracur3D® Coat F+



The Forward AM Ultracur3D® Coat F+ is a flexible waterborn 2k-basecoat designed to offer exceptional flexibility for 3D Printing Materials and enables new possibilities for advanced applications.

Dyeing



Liquid dyeing ensures that color evenly reaches all surfaces of the parts including small cavities, lattices, and hollowed parts.

Ultrasim® 3D Lattice Design



Lattice engineering unlocks the potential of high-performance materials for any application. Customized lattices can be engineered to specific mechanical properties.

Ultrasint® TPU 88A Black

Technology:

Powder Bed Fusion

Color:

Black

Machine Compatibility:

SLS machines including Desktop Machines

EOS - Farsoon - XYZprinting - 3D Systems



**Suitable for
Desktop
Machines**



High Reusability
Up to 80% of powder
reusability



**High Elasticity
and Rebound**

Elongation at Break

- up to 360%

Ultrasint® TPU 88A Black

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated February 2023.

Technical Specifications

Mechanical properties	Standard	X / Z
Charpy Impact Strength Notched -30°C (kJ/m ²)	DIN EN ISO 179-1	No break / No break
E-Modulus (MPa)	ISO 527-2, 1A	85/85
Tensile Strength (MPa)	DIN 53504, S2	8/5
Elongation at Break (%)	DIN 53504, S2	360/100



[Complete TDS](#)

Tests & Certifications

[UV Stability](#)

[Skin Contact](#)

ISO 4892-2A Cycle 1

ISO 10993-10
& ISO 10993-5

Post-Processing

[Chemical Smoothing](#)



Read the whitepaper to learn in detail how to surface treat thermoplastic polymer 3D-printed parts and obtain parts with improved airtightness.

Whitepaper available.

[Ultracur3D® Coat F+](#)



Flexible waterborn 2k-basecoat designed to offer exceptional flexibility for elastic 3D Printing Materials and enables new possibilities for advanced applications.



Ultrasint® TPU 90A LT

Technology:

Powder Bed Fusion

Color:

White

Machine Compatibility:

All SLS machines

Farsoon - EOS - 3D Systems - XYZprinting



Lightweight



High Rebound



Highly flexible

Ultrasint® TPU 90A LT

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Technical Specifications

Mechanical properties	Standard	X / Z
Tensile Modulus (MPa)	ISO 527-2, 1A	110
Energy Return (%)	DIN 53512	66
Density (g/kg)	DIN EN ISO 1183-1	1.05
Elongation at Break (%)	DIN 53504, S2	280



[Complete TDS](#)

Tests & Certifications

Cytotoxicity

Passed

Post-Processing and Related Services

Chemical Smoothing



Both mechanical and chemical smoothing will improve material performance while enhancing the appeal, durability, surface roughness and overall quality.

Ultracur3D® Coat F+



The Forward AM Ultracur3D® Coat F+ is a flexible waterborn 2k-basecoat designed to offer exceptional flexibility for 3D Printing Materials and enables new possibilities for advanced applications.

Dyeing



Liquid dyeing ensures that color evenly reaches all surfaces of the parts including small cavities, lattices, and hollowed parts.

Ultrasim® 3D Lattice Design



Lattice engineering unlocks the potential of high-performance materials for any application. Customized lattices can be engineered to specific mechanical properties.



FUSED FILAMENT FABRICATION

Explore one of the broadest portfolios for Fused Filament Fabrication. Our Ultrafuse® line comprises filaments ranging from engineering-grade materials, through reinforced and support materials, to advanced metal filaments for a variety of industrial applications.

		Ultrafuse® Flexible Filaments			
		TPU 85A	TPU 64D	TPU 95A	TPS 90A
Shore A Hardness (3 s) ISO 7619-1		85,0	58 (Shore D)	92,0	89,0
Abrasion Resistance [mm³] ISO 4649		82,0	43,0	64,0	111,0
Compression Set at 23 °C, 72 h [%] ISO 815		26,0	25,0	38,0	75,0
Elongation at Break TPE [%] ISO 527	XY	600,0	399,0	611,0	-
	ZX	320,0	115,0	192,0	-
Stress at Break TPE [MPa] ISO 527	XY	34,0	37,0	44,2	7,0
	ZX	10,0	19,0	12,2	2,0
Tear Strength [kN/m] ISO 34-1	XY	80,0	66,0	90,0	10,0
	XZ	18,0	37,0	8,0	5,0
	ZX	30,0	79,0	14,0	4,0

Ultrafuse® TPU 85A

Flexible Filaments

Technology:

Fused Filament Fabrication

Color:

Natural



High tensile strength and outstanding resistance to tear propagation



Excellent damping characteristics



High resistance to oils, greases, oxygen and ozone



Very good low-temperature flexibility

Ultrafuse® TPU 85A

Suited for:



Automotive,
industrial
manufacturing
agriculture and
construction

Footwear,
sports and
leisure

Functional
flexible parts

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated February 2023.

Technical Specifications

Mechanical properties	Standard	Value XY / XZ / ZX
Compression Set at 23 °C, 72 h (%)	ISO 815	26,0
Abrasion Resistance (mm ³)	ISO 4649	82,0
Shore A Hardness (3 s)	ISO 7619-1	85,0
Elongation at Break TPE (%)	ISO 527	600 / - / 320
Stress at Break TPE (MPa)	ISO 527	34 / - / 10
Tear Strength (kN/m)	ISO 34-1	80 / 18 / 30



[Complete TDS](#)

Advanced Testing

Volume resistivity [Ωcm]	Dielectric strength (orthogonal) [kV/mm]	Skin Contact / Biocompatibility
IEC 62631-3-1	IEC 62631-3-1	ISO 10993-5; ISO 10993-10
2,60E+11 / - / 2,10E+11	21,0	Passed

Print Settings

Nozzle Temperature [°C]	Build Chamber Temperature [°C]	Bed Temperature [°C]	Bed Material	Nozzle Diameter [mm]	Print Speed [mm/s]
200-220	-	40	glass	≥0,4	15-40

This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated February 2023.

Ultrafuse® TPU 64D

Flexible Filaments

Technology:

Fused Filament Fabrication

Color:

White, Black



High resistance
to oils, greases,
oxygen and
ozone



Compatible with
water soluble
support



High impact
resistance



High wear
and abrasion
resistance

Ultrafuse® TPU 64D

Suited for:



Tooling, jigs
and fixtures



Functional
flexible parts



Wear and tear
application

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Technical Specifications

Mechanical properties	Standard	Value XY / XZ / ZX
Compression Set at 23 °C, 72 h (%)	ISO 815	25,0
Abrasion Resistance (mm ³)	ISO 4649	43,0
Elongation at Break TPE (%)	ISO 527	399 / - / 115
Stress at Break TPE (MPa)	ISO 527	37 / - / 19
Tear Strength (kN/m)	ISO 34-1	66 / 37 / 79



[Complete TDS](#)

Advanced Testing

Skin Contact / Biocompatibility

ISO 10993-5; ISO
10993-10

Passed

Print Settings

Nozzle Temperature [°C]	Build Chamber Temperature [°C]	Bed Temperature [°C]	Bed Material	Nozzle Diameter [mm]	Print Speed [mm/s]
230-255	-	55	glass	≥0,4	30-60



Ultrafuse® TPU 95A

Flexible Filaments

Technology:

Fused Filament Fabrication

Color:

White, Black



Perfect for fast printing



High abrasion resistance



Good resistance to oils and common industrially used chemicals



Printable on direct drive and bowden style printers

Ultrafuse® TPU 95A

Suited for:



Wear and tear
application



Functional
flexible parts

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated February 2023.

Technical Specifications

Mechanical properties	Standard	Value <small>XY / XZ / ZX</small>
Compression Set at 23 °C, 72 h (%)	ISO 815	38,0
Abrasion Resistance (mm ³)	ISO 4649	64,0
Shore A Hardness (3 s)	ISO 7619-1	92,0
Elongation at Break TPE (%)	ISO 527	611 / - / 192
Stress at Break TPE (MPa)	ISO 527	44,2 / - / 12,2
Tear Strength (kN/m)	ISO 34-1	90 / 8 / 14



[Complete TDS](#)

Advanced Testing

Skin Contact / Biocompatibility

ISO 10993-5; ISO
10993-10

Passed

Print Settings

Nozzle Temperature [°C]	Build Chamber Temperature [°C]	Bed Temperature [°C]	Bed Material	Nozzle Diameter [mm]	Print Speed [mm/s]
210-230	-	40	glass	≥0,4	15-40

Ultrafuse® TPS 90A

Flexible Filaments



Technology:

Fused Filament Fabrication

Color:

Natural White



Non-slip
properties



Reduced
moisture uptake



Excellent layer
adhesion



Very good low-
temperature
flexibility

Ultrafuse® TPS 90A

Suited for:



Functional flexible parts



Handles of appliances



Seals and gaskets



Tooling, jigs and fixtures

Access all resources by scanning the QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated February 2023.

Technical Specifications

Mechanical properties	Standard	Value <small>XY / XZ / ZX</small>
Compression Set at 23 °C, 72 h (%)	ISO 815	75,0
Abrasion Resistance (mm ³)	ISO 4649	111,0
Shore A Hardness (3 s)	ISO 7619-1	89,0
Strain at Break TPE (%)	ISO 527	280 / - / 9
Stress at Break TPE (MPa)	ISO 527	7 / - / 2
Tear Strength (kN/m)	ISO 34-1	10 / 5 / 4



[Complete TDS](#)

Advanced Testing

Skin Contact / Biocompatibility

ISO 10993-5; ISO 10993-10

Passed

Print Settings

Nozzle Temperature [°C]	Build Chamber Temperature [°C]	Bed Temperature [°C]	Bed Material	Nozzle Diameter [mm]	Print Speed [mm/s]
260-280	-	70-90	PEI, PI or glue	≥0,4	10-30

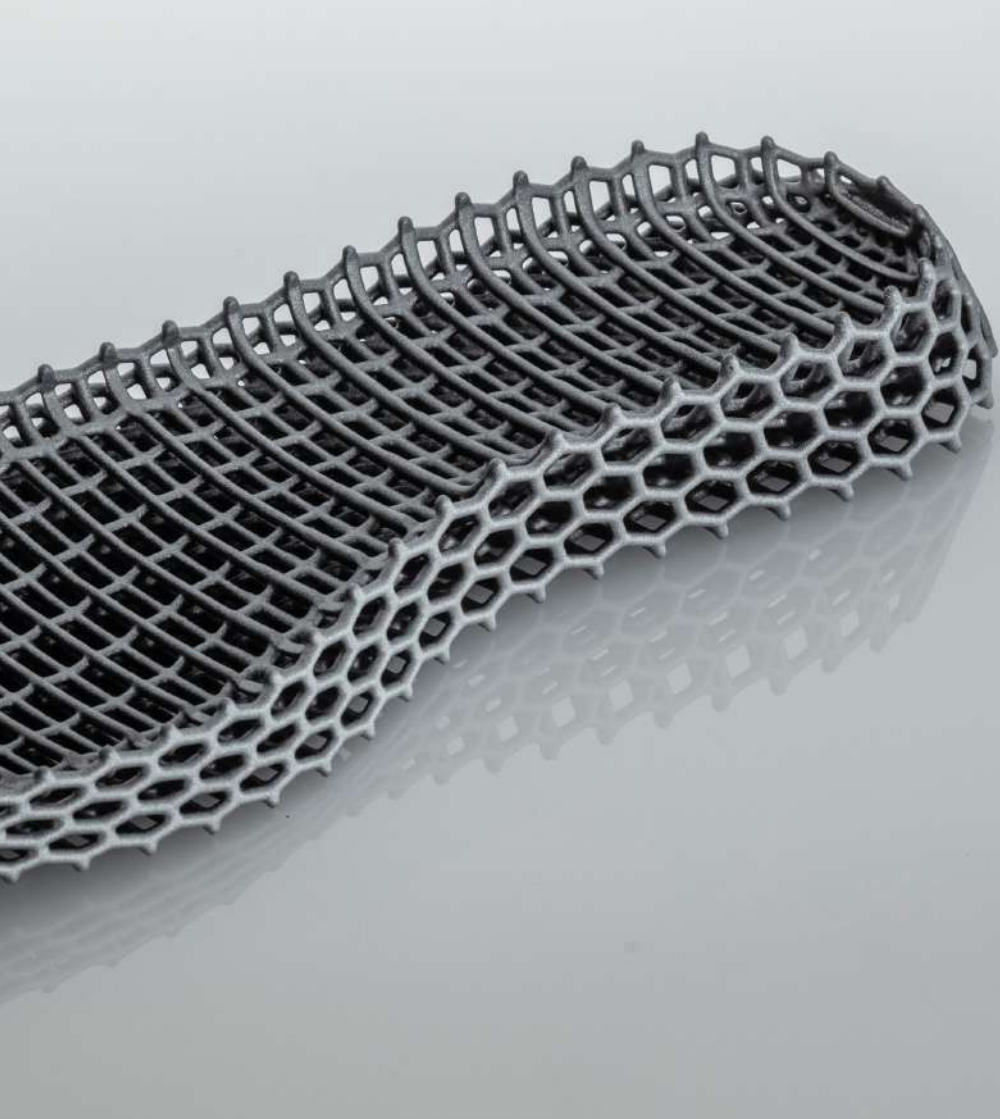


SOLUTIONS & SERVICES

More than just material – From design
to the finished product

Discover the full range of Ultrasim® 3D
Services to support customers, from
design for AM and simulation of part
behavior to post-processing the final
part.





Ultrasim® 3D Lattice Design

Technologies:

HP MJF Technologies
SLS Technologies

- Increased Comfort
- Aeration
- Weight Reduction
- Optimized Material Performance

Ultrasim® 3D Lattice Design

Suited for:



Footwear



Industrial



Sports



Automotive



Medical Applications



Consumer Goods

Access all resources by scanning the QR code

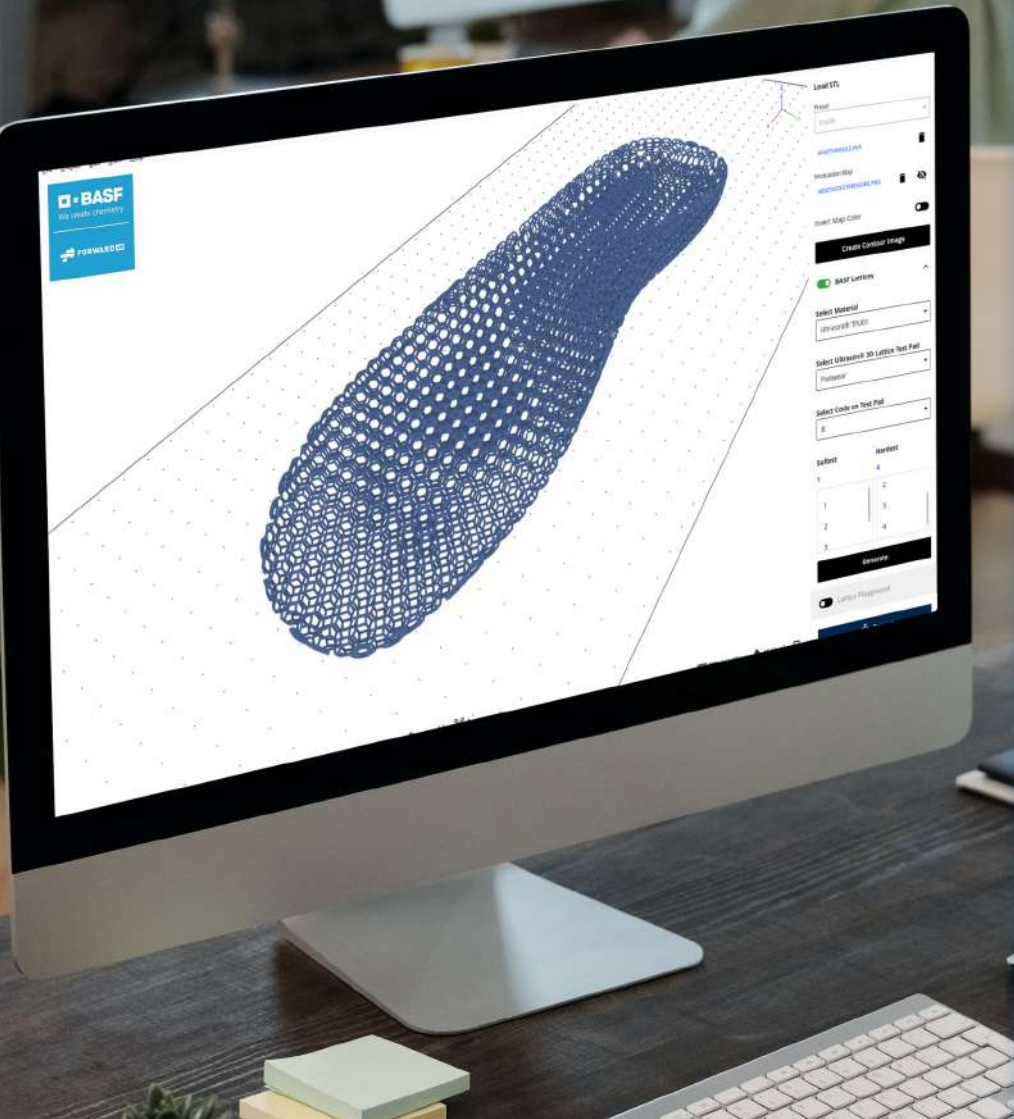


This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Offers

	Starter: Lattice Design Service	Premium: Foam Replacement	Enterprise: Full Engineering Support
Description	Custom designed lattice including partial and multi-zone lattices	Custom foam replacement lattice design using proprietary FEA and lattice library	Complete product design development lattice engineering
STL file of digital lattice part	■	■	■
Digital Stress-Strain Curves of all lattices	■	■	■
Customized 3D Printed Lattice sample		■	■
Digital Stress-Strain Curves of tested foam		■	■
Full Engineering			■
Material Compatibility	Full Ultrasim® Powders line	Ultrasim® TPU01	Full Ultrasim® Powders line Full Ultracur3D® Photopolymers line Full Ultrafuse® Filaments line

Ultrasim® 3D Lattice Engine



Material Compatibility:

Ultrasim® Powders

- Pre-selected, validated lattices
- One-click lattice engineering
- On-premise software solution

Ultrasim® 3D Lattice Engine

Suited for:



Footwear



Seating



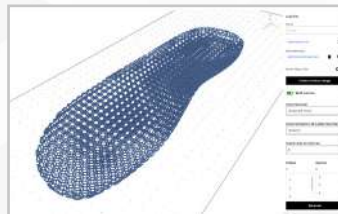
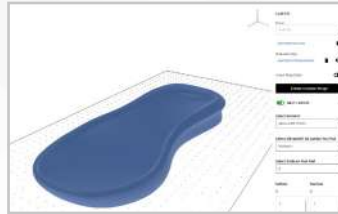
Protection

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Workflow



1. Upload STL

Upload your solid STL file and choose the material the part will be produced in.

2. Select Lattice

Choose from pre-engineered lattices designed specifically for different applications by using either:

a) The Ultrasim® 3D Lattice Test Pad to select the desired lattice by feel.

b) The Ultrasim® 3D Lattice Library to select by mechanical data of stress-strain curves and specifying different mechanical properties.

3. Generate and Download Lattice File

The selected lattice is automatically generated into the part. You can download the ready-to-print STL and print your part.

Ultrasim® 3D Simulation (FEA)



Material Compatibility:

Ultrasim® Powders

Ultracur3D® Photopolymers

- Ensure your design works
- Material data & modeling
- Quicker development cycles
- 3D design optimization

Ultrasim® 3D Simulation (FEA)

Suited for:



Footwear



Industrial



Sports



Automotive



Medical Applications



Consumer Goods

Access all resources by scanning the QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Offers

	Starter: Raw Material Data	Premium: 3D Simulation as a Service	Enterprise: Material Model as a Service
Description	Get the curves behind our TDS data to start basic simulation work. Add additional temperatures or strain-rates to the starter solution.	We run the simulation for you. We help you to speed up your engineering process and increases confidence in part performance using a digital twin of your part.	Use our in-house developed material models for 3D-Printing including anisotropy of the process and our experience in virtual Engineering.
Material Data at room temperature	■	■	■
3D Simulation (FEA) support		■	■
Ultrasim 3D material model as a service (incl. installation)			■
Material Compatibility <i>(Preliminary Compatibility)</i>	Ultrasim® TPU01 Ultrasim® PA6 MF Ultracur3D® RG 35 Ultracur3D® RG 1100 Ultracur3D® ST 45 Ultracur3D® ST 80 Ultracur3D® EPD 2006 --- Ultrasim® PA11 Ultrasim® PA11 ESD Ultrasim® PA11 CF	Ultrasim® TPU01 Ultrasim® PA6 MF Ultracur3D® RG 35 Ultracur3D® RG 1100 Ultracur3D® ST 45 Ultracur3D® ST 80 Ultracur3D® EPD 2006 --- Ultrasim® PA11 Ultrasim® PA11 ESD Ultrasim® PA11 CF	Ultrasim® TPU01 Ultrasim® PA6 MF Ultracur3D® RG 35 --- Ultrasim® PA11 Ultrasim® PA11 ESD Ultrasim® PA11 CF



Ultrasim® 3D Cost Analysis (TCO)

Material Compatibility:

Ultrasint® Powders

Ultracur3D® Photopolymers

Ultrafuse® Filaments

- Transparent cost breakdown
- Compare AM technologies
- Sensitivity Analysis
- Cost potential of commercialization

Ultrasim® 3D Cost Analysis (TCO)

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications



Consumer
Goods

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Offers

Starter:
Single Cost Pricing

Premium:
Cost
Benchmarking

Enterprise:
AM Cost Tool

	Starter: Single Cost Pricing	Premium: Cost Benchmarking	Enterprise: AM Cost Tool
Description	Understanding the cost structure of your 3D printed part and what drives the costs.	Compare the costs of several AM technologies and understand what technology might be most suitable for you.	Use our in-house developed AM Cost Tool for your own calculations.
PDF Cost report	■	■	■
Cost comparison of two AM technologies		■	■
Sensitivity analysis		■	■
AM cost tool			■

Material Compatibility

Full Ultrasim® Powders line

Full Ultrasim® Powders line

Coming Soon

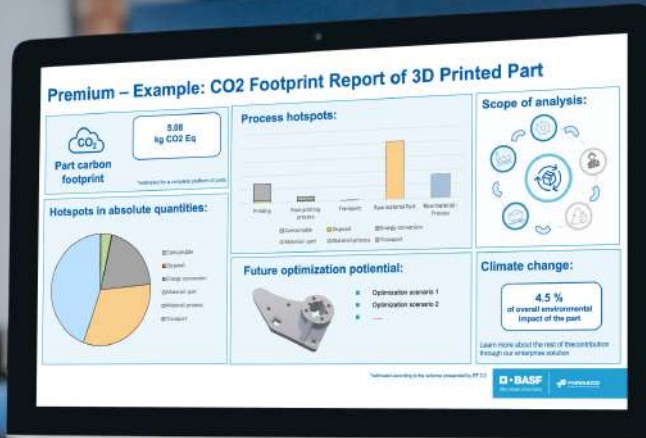
Full Ultrasim3D®
Photopolymers line

Full Ultrasim3D®
Photopolymers line

Full Ultrasim® Filaments line

Full Ultrasim® Filaments line

Ultrasim® Sustainability Analysis



Material Compatibility:

Ultrasim® Powders

Ultrafuse® Filaments

- Transparency of sustainability by material and part
- Critically-reviewed Lifecycle Assessment Study: ISO 14040:2006 & ISO 14044:2006
- Analysis of 16 environmental impact categories according to EF 3.0

Ultrasim® 3D Sustainability Analysis

Suited for:



Footwear



Industrial



Sports



Automotive



Medical
Applications



Consumer
Goods

Access all resources by scanning the
QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Offers

	Starter: Material LCA	Premium: Part LCA Service (CO2)	Enterprise: Become a Partner
LCA Material One-Pager	■	■	■
CO2 footprint report of 3D printed part		■	■
Add your printer			■
Implement LCA data with your software			■

Material Compatibility

Ultrasint® TPU01
Ultrasint® TPU 88A
Ultrasint® PP 1400 Black
Ultrasint® PA11
Ultrasint® PA11 Black

Ultrafuse® PLA
Ultrafuse® ABS
Ultrafuse® PET
Ultrafuse® rPET

Ultrasint® TPU01
Ultrafuse® PLA
Ultrafuse® ABS
Ultrafuse® PET
Ultrafuse® rPET

Coming Soon:
Ultrasint® TPU 88A
Ultrasint® PP 1400 Black
Ultrasint® PA11
Ultrasint® PA11 Black

BASF Forward AM Materials



Ultracur3D® Coat F+

Material Compatibility:

Ultrasint® Powders

Ultracur3D® Photopolymers

Ultrafuse® Filaments

Colors:

10+ Standard Colors

Custom Color services available

Application Method:

Spraying



Highly Flexible



Waterbased

Low VOC content



Broad Color
Portfolio

Ultracur3D® Coat F+

Suited for:



Footwear



Industrial



Sports



Automotive



Medical Applications



Consumer Goods

Access all resources by scanning the QR code



This information and values are presented as guidance only and based on Forward AM's knowledge and experience. It is believed to be accurate, however all guarantees are explicitly denied. This document was updated September 2023.

Technical Specifications

Mechanical properties	Standard	Typical Value
Ph Value	DIN EN ISO 3251	7.0 – 8.0
Viscosity at 23°C, 1000 1/s	Spindle Viscometer	100 – 300 mPas
Density at 23°C	DIN EN ISO 2811-3	1.0 – 1.3 g/cm ³
Solid content	DIN EN ISO 3251	34 – 48%
Flashpoint	ISO 3679	> 95°C



[Complete TDS](#)

Tests & Certifications

Skin Contact	UV Stability	Hydrolysis Resistance
ISO 10993-5	ISO 4892-2A ISO 4892-2B Cycle 3	70°C / 95% rH / 168h

User Guidelines

Mixing Ratio	Hardener	Reducer	Potlife at 20°C	Shelf life (5-35°C)	
100 : 4 by weight	Ultracur3D® Hardener F+	DI-Water	2 h	6 months	
Nozzle pressure	Nozzle size	Spray passes	Flash off at 23°C	Dry film thickness	Drying conditions
2 – 2.5 bar	1.3 mm	1.5 - 2	5 min	25 ± 5 µm	30 minutes at 80°C

Material Compatibility

Ultrasint® TPU01
Ultrasint® TPU 88A
Ultrasint® PA11
Ultrasint® PA11 Black CF

Ultracur3D® RG 35
Ultracur3D® ST 45
Ultracur3D® FL 300
Ultracur3D® FL 60

Ultracur3D® EL 60
Ultracur3D® EL 4000
Ultracur3D® EPD 1086

Ultrafuse® ASA
Ultrafuse® TPU 85A
Ultrafuse® TPU 90A
Ultrafuse® TPU 64D
Ultrafuse® TPS 90A



Have a 3D printing project in mind?

At Forward AM, we drive the industrialization of Additive Manufacturing.

We accompany customers from first idea to final printed part - on global scale, at highest quality.

Get in touch with us:

sales@basf-3dps.com



Speyerer Straße 4
69115 Heidelberg, Germany

+49 6221 67417900

sales@basf-3dps.com

forward-am.com