



Materials Data Sheet

Resin Properties



INTRODUCTION

UNIZ has achieved incredible results in developing high performance resins for the SLASH and SLTV printers.

We currently have five types of resin for a variety of applications and fields:



zABS



zPMMA



zENG



zUDP



zOrtho



zWAX



VARIETY AND CHARACTER

GENERAL RESIN



zABS for general applications

zABS comes in five colors: green, white, gray, amber and ivory. It has strong advantages in rapid forming and durability. Its properties mirror that of ABS plastic, but instead prints with smooth and matte surfaces that are more pleasing to touch and paint.



zABS IVORY					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	30.38 MPa	53.75MPa	4405.1psi	7793.75psi	ASTM D 638-14
Elongation at Break	53.55 %	25.84%	53.55 %	25.84%	ASTM D 638-14
Modulus	205.39 MPa	367.15MPa	29781.55psi	53236.75psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	23.04 MPa	59.41MPa	3340.8psi	8614.45psi	ASTM D 790-15
Flexural modulus	823.9 MPa	1887.88MPa	119.47ksi	273.74ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	34.49J/m	22.3 J/m	0.65 ft-lbf/in	0.42 ft-lbf/in	ASTM-D256-10

NOTES:

1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained from green parts, printed using, 100 µm, Clear settings, without additional treatment.
3. Data was obtained from green parts, printed using, 100 µm, Clear settings and post-cured with 600 mW/cm² of 405 nm LED light at 25°C for 10 min.



zABS GREEN					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	32.6 MPa	38.4 MPa	4727 psi	5569psi	ASTM D 638-14
Elongation at Break	21.1 %	14.5 %	21.1 %	14.5 %	ASTM D 638-14
Modulus	252.7MPa	342.3 MPa	36641.5psi	49633.5psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	26.96 MPa	61.05 MPa	3909.2 psi	8852.25 psi	ASTM D 790-15
Flexural modulus	829.76 MPa	2502.29 MPa	120.32 ksi	362.83 ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	33.45 J/m	16.16 J/m	0.63 ft-lbf/in	0.30 ft-lbf/in	ASTM-D256-10

NOTES:

1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 µm, Clear settings, without additional treatment.
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zABS WHITE					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	25.69 MPa	44.89MPa	3725.05psi	6509.05psi	ASTM D 638-14
Elongation at Break	51.85 %	30.9%	51.85 %	30.9%	ASTM D 638-14
Modulus	160.06 MPa	326.39MPa	23208.7psi	47326.55psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	24.91 MPa	48.77MPa	3611.95psi	7071.65psi	ASTM D 790-15
Flexural modulus	887.73 MPa	1677.68MPa	128.72ksi	243.26ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	30.28J/m	21.08 J/m	0.57 ft-lbf/in	0.40 ft-lbf/in	ASTM-D256-10

NOTES:

1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 µm, Clear settings, without additional treatment.
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zABS GRAY					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	24.85 MPa	55.51 MPa	3603.25psi	8048.95psi	ASTM D 638-14
Elongation at Break	45.5 %	26.17%	45.5%	26.17%	ASTM D 638-14
Modulus	169.42 MPa	377.66 MPa	24565.9psi	54760.7psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	25.91 MPa	53.08 MPa	3756.95psi	7696.6psi	ASTM D 790-15
Flexural modulus	899.96 MPa	1812.55 MPa	130.49 ksi	262.82ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	30.28 J/m	17.47 J/m	0.57 ft-lbf/in	0.33 ft-lbf/in	ASTM-D256-10

NOTES:

1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 µm, Clear settings, without additional treatment.
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zABS AMBER					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	28.72 MPa	48.33MPa	4164.4psi	7007.85psi	ASTM D 638-14
Elongation at Break	42.95 %	22.22%	42.95 %	22.22%	ASTM D 638-14
Modulus	208.85 MPa	364.62MPa	30283.25psi	52869.9psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	21.97 MPa	58.09MPa	3185.65psi	8423.05psi	ASTM D 790-15
Flexural modulus	861.49 MPa	1899.05MPa	124.92ksi	275.36ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	39.49J/m	17.46 J/m	0.74 ft-lbf/in	0.33 ft-lbf/in	ASTM-D256-10

NOTES:

1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 µm, Clear settings, without additional treatment.
3. Data was obtained form green parts, printed using, 100 µm, Clear settings and post-cured with 600 mW/cm2 of 405 nm LED light at 25°C for 10 min.



VARIETY AND CHARACTER

TRANSPARENT RESIN



The zPMMA clear resin is designed for any project or model that prefers transparency over the opaqueness of solid colors.

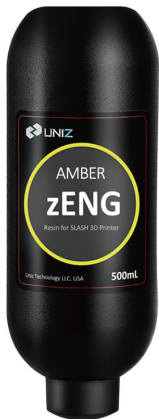
zPMMA CLEAR					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	25.84 MPa	40.25MPa	3746.8psi	5836.25psi	ASTM D 638-14
Elongation at Break	23.42 %	17.85%	23.42 %	17.85%	ASTM D 638-14
Modulus	180.35 MPa	327.3MPa	26150.75psi	47458.5psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	23.41 MPa	51.84MPa	3394.45psi	7516.8psi	ASTM D 790-15
Flexural modulus	860.75 MPa	1988.74MPa	124.81ksi	288.37ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	10.39J/m	4.89 J/m	0.19 ft-lbf/in	0.09 ft-lbf/in	ASTM-D256-10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 μm, Clear settings, without additional treatment.
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VARIETY AND CHARACTER

ENGINEERING RESIN



zENG provides greatly enhanced mechanical properties, It's featured with high ductility and impact strength without sacrificing precision. This resin is ideal for creating parts that match the design specs perfectly.

zENG AMBER					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	15.3 MPa	35.4 MPa	2219 psi	5133 psi	ASTM D 638-14
Elongation at Break	39.5 %	11.1 %	39.5 %	11.1 %	ASTM D 638-14
Modulus	107.44 MPa	389.69 MPa	15578.8 psi	56505.05 psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	15.23 MPa	56.18 MPa	2208.35 psi	8146.1 psi	ASTM D 790-15
Flexural modulus	570.44 MPa	1937.61 MPa	827.14 ksi	280.95 ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	38.54 J/m	18.38 J/m	0.72 ft-lbf/in	0.34 ft-lbf/in	ASTM-D256-10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 μm, Clear settings, without additional treatment.
3. Data was obtained form green parts, printed using, 100 μm, Clear settings and post-cured with 600 mW/cm2 of 405 nm LED light at 25°C for 10 min.



VARIETY AND CHARACTER

RESIN FOR UDP MODE



The zUDP is especially designed for extremely fast printing in UDP mode.

The zUDP Gray’s mechanical properties are similar to that of the zABS. Its faster rendering speed makes it suitable for applications in art, concept models and more.

zUDP GRAY					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	24.61MPa	18.42MPa	3568.45psi	2670.9psi	ASTM D 638–14
Elongation at Break	19.4%	9.3%	19.4%	9.3%	ASTM D 638–14
	181.35MPa	291.75MPa	26295.75psi	42303.75psi	ASTM D 638–14
Flexural Properties					
Flexural Strength	26.79MPa	37.11MPa	3884.55psi	5380.95psi	ASTM D 790–15
Flexural modulus	921.06MPa	2620.33MPa	133.55ksi	379.95ksi	ASTM D 790–15
Impact properties					
Notched izod (Machined)	6.91 J/m	3.9 J/m	0.13 ft–lbf/in	0.07 ft–lbf/in	ASTM–D256–10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 μm, Clear settings, without additional treatment.
3. Data was obtained form green parts, printed using, 100 μm, Clear settings and post-cured with 600 mW/cm2 of 405 nm LED light at 25°C for 10 min.



VARIETY AND CHARACTER

RESIN FOR UDP MODE



The zUDP Orange is perfect for extremely fast, high resolution prints in a dashing orange color. This is for those who prefer a brighter surface color for their jewelry and figurines.

zUDP ORANGE					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	16.83MPa	29.28MPa	2440.35psi	4245.6psi	ASTM D 638-14
Elongation at Break	25.1%	13.0%	25.1%	13.0%	ASTM D 638-14
Modulus	117.37MPa	292.48MPa	17018.65psi	42409.6psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	14.06MPa	40.93MPa	2038.7psi	5934.85psi	ASTM D 790-15
Flexural modulus	536.59MPa	1577.15MPa	77.81ksi	228.69ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	2.4J/m	2.4J/m	0.04ft-lbf/in	0.04ft-lbf/in	ASTM-D256-10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
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VARIETY AND CHARACTER

DENTAL RESIN



The zOrtho resin is specifically designed for use in dentistry and orthodontics. This resin is featured with high-precision, low-viscosity and delivers high temperature resistance.

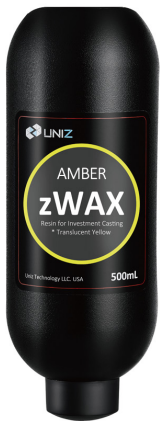
zORTHO GRAY					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	28.0 MPa	48.9 MPa	4060 psi	7090.5 psi	ASTM D 638-14
Elongation at Break	51.2%	25.5 %	51.2%	25.5 %	ASTM D 638-14
Modulus	189.6 MPa	347.3 MPa	27492 psi	50358.5 psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	34.63 MPa	77.19 MPa	5021.35 psi	11192.55 psi	ASTM D 790-15
Flexural modulus	1097.2 MPa	2302.59 MPa	159.09 ksi	333.88 ksi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	12.68 J/m	6.94 J/m	0.24 ft-lbf/in	0.13 ft-lbf/in	ASTM-D256-10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
2. Data was obtained form green parts, printed using, 100 μm, Clear settings, without additional treatment.
3. Data was obtained form green parts, printed using, 100 μm, Clear settings and post-cured with 600 mW/cm2 of 405 nm LED light at 25°C for 10 min.



VARIETY AND CHARACTER

JEWELRY RESIN



The zWAX is designed for low investment, high return casting in practices such as jewelry. It burns clean and leaves no residue or ashes afterwards, which makes it great for on-the-spot rapid production.

zWAX AMBER					
	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Tensile Strength	2.81MPa	8.48 MPa	407.45psi	1229.6 psi	ASTM D 638-14
Elongation at Break	11.3%	15.0 %	11.3%	15.0 %	ASTM D 638-14
Modulus	27.91MPa	71.91 MPa	4046.95psi	10426.95 psi	ASTM D 638-14
Flexural Properties					
Flexural Strength	2.79 MPa	5.39 MPa	404.55 psi	781.55 psi	ASTM D 790-15
Flexural modulus	54.62 MPa	121.24 MPa	7919.9 psi	17579.8 psi	ASTM D 790-15
Impact properties					
Notched izod (Machined)	12.37 J/m	11.07 J/m	0.23 ft-lbf/in	0.21 ft-lbf/in	ASTM-D256-10

NOTES:
1. Material properties can vary with part geometry, print orientation, print settings and temperature.
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3. Data was obtained from green parts, printed using, 100 µm, Clear settings and post-cured with 600 mW/cm2 of 405 nm LED light at 25°C for 10 min.



COMING SOON:



zDental Cast



zSG



zDental C&B