PolyJet 3D Printers
Systems and Materials Overview

PolyJet 3D Printers use photopolymers, which are capable of simulating properties ranging from rubber-like to transparent – even high toughness and heat resistance.

Digital Materials expand the possibilities by blending two or more base resins to create thousands of material combinations. Achieve full color capabilities, translucencies, Shore A values and other properties for maximum product realism.

Material	Highlights
Digital Materials	• Wide range of flexibility, from Shore A 27 to Shore A 95 • Rigid materials ranging from simulated standard plastics to the toughness and temperature resistance of Digital ABS Plus • Vibrant colors in rigid or flexible materials, with over 500,000 color options on the Stratasys J750 • Available on PolyJet multi-jetting 3D printers
Digital ABS Plus	• Simulates ABS plastics by combining strength with high temperature resistance • Digital ABS2 Plus offers enhanced dimensional stability for thin-walled parts • Ideal for functional prototypes, snap-fit parts for high or low temperature usage, electrical parts, castings, mobile telephone casings and engine parts and covers
High Temperature	• Exceptional dimensional stability for thermal functional testing • Combine with PolyJet rubber-like materials to produce varying Shore A values, gray shades and high temperature parts with overmolding • Ideal for form, fit and thermal functional testing, high-definition models requiring excellent surface quality, exhibition models that endure strong lighting conditions, taps, pipes and household appliances, hot air and hot water testing
Transparent	• Print clear and tinted parts and prototypes with VeroClear and RGD720 • Combine with color materials for stunning transparent shades • Ideal for form and fit testing of see-through parts, like glass, consumer products, eyewear, light covers and cases, visualization of liquid flow, medical applications, artistic and exhibition modeling
Rigid Opaque	• Brilliant color options for unprecedented design freedom • Combine with rubber-like materials for overmolding, soft touch handles and more • Ideal for fit and form testing, moving and assembled parts, sales, marketing and exhibition models assembly of electronic components and silicone molding
Simulated Polypropylene	• Simulates the appearance and functionality of polypropylene • Ideal for prototyping containers and packaging, flexible snap-fit applications and living hinges, toys, battery cases, laboratory equipment, loudspeakers and automotive components
Rubber-like	• Offers various levels of elastomer characteristics • Combine with rigid materials for a variety of Shore A values, from Shore A 27 to Shore A 95 • Ideal for rubber surrounds and overmolding, soft-touch coatings and nonslip surfaces, knobs, grips, pulls, handles, gaskets, seals, hoses, footwear, and exhibition and communication models
Biocompatible	• Features high dimensional stability and colorless transparency • Has five medical approvals including cytotoxicity, genotoxicity, delayed type hypersensitivity, irritation and USP plastic class VI • Ideal for applications requiring prolonged skin contact of more than 30 days and short-term mucosal-membrane contact of up to 24 hours

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	Digital ABS Plus	High Temperature	Transparent	
Materials	Digital ABS Plus, Green, made of RGD515 Plus & RGD535 Digital ABS Plus, Ivory, made of RGD515 Plus & RGD531	RGD525	RGD720	VeroClear RGD810
Tensile Strength	55 – 60 MPa (8,000 – 8,700 psi)	70 – 80 MPa (10,000 – 11,500 psi)	50 – 65 MPa (7,250 – 9,450 psi)	50 – 65 MPa (7,250 – 9,450 psi)
Elongation at Break	25 – 40%	10 – 15%	15 – 25%	10 – 25%
Modulus of Elasticity	2,600 – 3,000 MPa (375,000 – 435,000 psi)	3,200 – 3,500 MPa (465,000 – 510,000 psi)	2,000 – 3,000 MPa (290,000 – 435,000 psi)	2,000 – 3,000 MPa (290,000 – 435,000 psi)
Flexural Strength	65 – 75 MPa (9,500 – 11,000 psi)	110 – 130 MPa (16,000 – 19,000 psi)	80 – 110 MPa (12,000 – 16,000 psi)	75 – 110 MPa (11,000 – 16,000 psi)
Flexural Modulus	1,700 – 2,200 MPa (245,000 – 320,000 psi)	3,100 – 3,500 MPa (450,000 – 510,000 psi)	2,700 – 3,300 MPa (390,000 – 480,000 psi)	2,200 – 3,200 MPa (320,000 – 465,000 psi)
HDT, °C @ 1.82 MPa	51 – 55 °C (124 – 131 °F)	55 – 57 °C (131 – 135 °F)	45 – 50 °C (113 – 122 °F)	45 – 50 °C 113 – 122 °F)
Izod Notched Impact	90-110 J/m (1.69-2.06 ft lb/in)	14-16 J/m (0.262-0.300 ft lb/inch)	20-30 J/m (0.375-0.562 ft lb/inch)	20-30 J/m (0.375-0.562 ft lb/inch)
Water Absorption	–	1.2 – 1.4%	1.5 – 2.2%	1.1 – 1.5%
Tg	47 – 53 °C (117 – 127 °F)	62 – 65 °C (144 – 149 °F)	48 – 50 °C (118 – 122 °F)	52 – 54 °C (126 – 129 °F)
Shore Hardness	85 – 87 Scale D	87 – 88 Scale D	83 – 86 Scale D	83 – 86 Scale D
Rockwell Hardness	67 – 69 Scale M	78 – 83 Scale M	73 – 76 Scale M	73 – 76 Scale M
Polymerized Density	1.17 – 1.18 g/cm^3	1.17 – 1.18 g/cm^3	1.18 – 1.19 g/cm^3	1.18 – 1.19 g/cm^3
Ash Content	–	0.38 – 0.42%	0.01 – 0.02%	0.02 – 0.06%

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	Rigid Opaque (Vero family)		Simulated Polypropylene	
Materials	Vero PureWhite™ RGD837, VeroGray RGD850, VeroBlackPlus RGD875, VeroWhitePlus RGD835, VeroYellow RGD836, VeroCyan RGD841, VeroMagenta RGD851, VeroMagentaV, VeroYellowV, VeroCyanV™	VeroBlue RGD840	Durus White RGD430	MED610
Tensile Strength	50 – 65 MPa (7,250 – 9,450 psi)	50 – 60 MPa (7,250 – 8,700 psi)	20 – 30 MPa (2,900 – 4,350 psi)	50 – 65 MPa (7,252 – 9,427 psi)
Elongation at Break	10 – 25%	15 – 25%	40 – 50%	10 – 25%
Modulus of Elasticity	2,000 – 3,000 MPa (290,000 – 435,000 psi)	2,000 – 3,000 MPa (290,000 – 435,000 psi)	1,000 – 1,200 MPa (145,000 – 175,000 psi)	2,000 – 3,000 MPa (290.1 – 435.1 ksi)
Flexural Strength	75 – 110 MPa (11,000 – 16,000 psi)	60 – 70 MPa (8,700 – 10,200 psi)	30 – 40 MPa (4,350 – 5,800 psi)	75 – 110 MPa (10,878 – 15,954 psi)
Flexural Modulus	2,200 – 3,200 MPa (320,000 – 465,000 psi)	1,900 – 2,500 MPa (265,000 – 365,000 psi)	1,200 – 1,600 MPa (175,000 – 230,000 psi)	2,200 – 3,200 MPa (319.1 – 464.1 ksi)
HDT, °C @ 1.82 MPa	45 – 50 °C (113 – 122 °F)	45 – 50 °C (113 – 122 °F)	32 – 34 °C (90 – 93 °F)	40 – 50 °C (113 – 122 °F)
Izod Notched Impact	20 – 30 J/m (0.375 – 0.562 ft lb/inch)	20 – 30 J/m (0.375 – 0.562 ft lb/inch)	40 – 50 J/m (0.749 – 0.937 ft lb/inch)	20 – 30 (0.37 – 0.56 ft-lb/in)
Water Absorption	1.1 – 1.5%	1.5 – 2.2%	1.5 – 1.9%	1.1 – 1.5%
Tg	52 – 54 °C (126 – 129 °F)	48 – 50 °C (118 – 122 °F)	35 – 37 °C (95 – 99 °F)	52 – 54 °C 126 – 130 °F)
Shore Hardness	83 – 86 Scale D	83 – 86 Scale D	74 – 78 Scale D	83 – 86 Scale D
Rockwell Hardness	73 – 76 Scale M	73 – 76 Scale M	–	73 – 76 M
Polymerized Density	1.17 – 1.18 g/cm^3	1.18 – 1.19 g/cm^3	1.15 – 1.17 g/cm^3	1.17 – 1.18 (g/cm^3) (0.676 – 0.682 oz/in^3)
Ash Content	0.23 – 0.26% (VeroGray, VeroWhitePlus), 0.01 – 0.02% (VeroBlackPlus, VeroMagentaV, VeroYellowV)	0.21 – 0.22%	0.10 – 0.12%	–

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Rubber-like					
Materials	TangoBlack FLX973	TangoGray FLX950	Agilus30 FLX985, Agilus30 FLX935	Agilus30 White FLX945	TangoBlackPlus FLX980, TangoPlus FLX930
Tensile Strength	1.8 – 2.4 MPa (115 – 350 psi)	3.0 – 5.0 MPa (435 – 725 psi)	2.4 – 3.1 MPa (348 – 450 psi)	2.1 – 2.6 MPa (305 – 377 psi)	0.8 – 1.5 MPa (115 – 220 psi)
Elongation at Break	45 – 55%	45 – 55%	220 – 240%	185 – 230%	170 – 220%
Modulus of Elasticity	–	–		–	–
Flexural Strength	–	–		–	–
Flexural Modulus	–	–		–	–
HDT, °C @ 1.82 MPa	–	–		–	–
Izod Notched Impact	–	–		–	–
Water Absorption	–	–		–	–
Tg	–	–		–	–
Shore Hardness	60 – 62 Scale A	73 – 77 Scale A	30 – 35 Scale A	30 – 40 Scale A	26 – 28 Scale A
Rockwell Hardness	–	–		–	–
Polymerized Density	1.14 – 1.15 g/cm^3	1.16 – 1.17 g/cm^3	1.14 – 1.15 g/cm^3	1.14 – 1.15 g/cm^3	1.12 – 1.13 g/cm^3
Ash Content	–	–	–	–	–

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VeroFlex, VeroFlexVivid™		
	Test Method	**Value**
Tensile Strength	D-6338-03	43 – 64 MPa (6,237 – 9,282 psi)
Elongation at Break	D-638-05	8 – 20%
Modulus of Elasticity	D-638-04	950 – 1600 MPa (137,786 – 232,060 psi)
Flexural Strength	D-790-03	48 – 88 MPa (6962 – 12,763 psi)
Flexural Modulus	D-790-04	1,600 – 2,300 MPa (232,061 – 333,587 psi)
Shore Hardness	D-2240	75 – 85 Scale D
HDT, @ 0.45 MPa	D-648-06	42 – 50 °C (108 – 122 °F)
Izod Notched Impact	D-256-06	20 – 30 J/m (0.375 – 0.562 lb/in)

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