



PolyJet 3D Printers



SYSTEMS AND MATERIALS
OVERVIEW

stratasys

EMCO group

PolyJet 3D Printers

Transform your product development cycle

From design to production, PolyJet™ 3D Printers bring agility and aesthetics to every stage of the product development cycle – eliminating design barriers and improving communication and collaboration. PolyJet 3D Printers empower you to get products to market faster and reduce costs while keeping ideas and intellectual property in-house.

Application versatility

With the widest range of properties available, PolyJet materials empower you to create realistic prototypes to better evaluate future products; ergonomic tooling to streamline production; or even biocompatible surgical guides or other specialized parts. Material properties range from rubber-like to rigid, transparent to opaque, neutral to vibrantly colored and standard to biocompatible.

The most advanced PolyJet 3D Printers jet multiple materials simultaneously so you can build an array of diverse properties in one job – and even create whole multi-material products in one piece, with little or no post-processing. Connex3™ and Stratasys J750™ 3D Printers blend two or more materials to create composite Digital Materials with distinct, repeatable properties. Combine rigid and rubber-like materials to simulate a range of Shore A values; mix multiple hues for full color capabilities; or blend rubber-like materials with color to create vibrant, flexible prototypes that look and feel like your future products.

With photorealistic color and maximum material options on the Stratasys J750, you'll achieve unprecedented design freedom no matter the application or industry.

Meet precise requirements

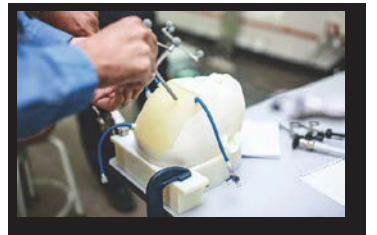
PolyJet technology enables you to create parts and prototypes with the best surface quality, finest details and widest range of material properties available. With layer resolution as fine as 14 microns and accuracy as high as 0.1 mm, you can produce thin walls and complex geometries – ideal for even your most intricate designs and production parts.

See the Results.



Improved design:

With PolyJet 3D Printing, Honda Access improved the quality of its designs by examining and modifying them in real time during the design process, saving time compared to outsourcing.



Advanced material properties:









Centre for Biomedical and Technology Integration used PolyJet 3D Printing to create models that mimic human tissue, for more realistic surgery simulation.



Precision prototyping:

Achieve the ultimate in realism through multiple materials, colors and textures, produced in a single operation.

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Material	Highlights
 <p>Digital Materials</p>	<ul style="list-style-type: none"> • 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™ • Vibrant colors in rigid or flexible materials, with over 360,000 color options on the Stratasys J750 • Available on PolyJet multi-jetting 3D Printers
 <p>Digital ABS</p>	<ul style="list-style-type: none"> • Simulates ABS plastics by combining strength with high temperature resistance • Digital ABS2™ 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
 <p>High Temperature</p>	<ul style="list-style-type: none"> • 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
 <p>Transparent</p>	<ul style="list-style-type: none"> • 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
 <p>Rigid Opaque</p>	<ul style="list-style-type: none"> • 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
 <p>Simulated Polypropylene</p>	<ul style="list-style-type: none"> • 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
 <p>Rubber-like</p>	<ul style="list-style-type: none"> • 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
 <p>Biocompatible</p>	<ul style="list-style-type: none"> • 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

PolyJet 3D Printers



	OBJET24™	OBJET30™	OBJET30 PRO™	OBJET30 PRIME™
Maximum Build Size (XYZ)	234 x 192 x 148.6 mm (9.21 x 7.55 x 5.85 in.)	294 x 192 x 148.6 mm (11.57 x 7.55 x 5.85 in.)	294 x 192 x 148.6 mm (11.57 x 7.55 x 5.85 in.)	294 x 192 x 148.6 mm (11.57 x 7.55 x 5.85 in.)
System Size and Weight	825 x 620 x 590 mm (32.28 x 24.4 x 23.22 in.) 93 kg (205 lbs.)	825 x 620 x 590 mm (32.5 x 23.6 x 24.4 in.) 106 kg (234 lbs.)	825 x 620 x 590 mm (32.5 x 23.6 x 24.4 in.) 106 kg (234 lbs.)	825 x 620 x 590 mm (32.28 x 24.4 x 23.22 in.) 106 kg (234 lbs.)
Layer Thickness	Horizontal build layers down to 28 microns (0.0011 in.)	28 microns (0.0011 in.)	28 microns (0.0011 in.); 16 microns for VeroClear material (.0006 in.)	28 microns (0.0011 in.) for Tango materials; 16 microns (0.0006 in.) for all other materials
Accuracy¹	0.1 mm (0.0039 in.)	0.1 mm (0.0039 in.)	0.1 mm (0.0039 in.)	0.1 mm (0.0039 in.)
Model Material Options	Rigid Opaque: VeroWhitePlus™	<ul style="list-style-type: none"> • Rigid Opaque: VeroWhitePlus, VeroGray™, VeroBlue™, VeroBlack™ • Simulated Polypropylene: Durus™ 	<ul style="list-style-type: none"> • Rigid Opaque: VeroWhitePlus, VeroBlackPlus™, VeroGray, VeroBlue • Transparent: VeroClear • Simulated Polypropylene: Rigur™ and Durus • High Temperature 	<ul style="list-style-type: none"> • Rigid Opaque: VeroWhitePlus, VeroGray, VeroBlue, VeroBlackPlus • Transparent: RGD720 and VeroClear • Simulated Polypropylene: Rigur and Durus • High Temperature • Rubber-like: TangoGray™ and TangoBlack™ • Biocompatible
Digital Material Options	—	—	—	—
Support Material	SUP705 (WaterJet removable)	SUP705 (WaterJet removable)	SUP705 (WaterJet removable)	SUP705 (WaterJet removable)
Software	Objet Studio™	Objet Studio	Objet Studio	Objet Studio

¹Varies depending on part geometry, size, orientation, material and post-processing method.

PolyJet 3D Printers



	OBJET EDEN260VS™	OBJET260/350/500 CONNEX3	STRATASYS J750	OBJET1000 PLUS™
Maximum Build Size (XYZ)	255 x 252 x 200 mm (10.0 x 9.9 x 7.9 in.)	Objet260: 255 x 252 x 200 mm (10.0 x 9.9 x 7.9 in.) Objet350: 342 x 342 x 200 mm (13.4 x 13.4 x 7.9 in.) Objet500: 490 x 390 x 200 mm (19.3 x 15.4 x 7.9 in.)	490 x 390 x 200 mm (19.3 x 15.35 x 7.9 in.)	1000 x 800 x 500 mm (39.3 x 31.4 x 19.6 in.) Max model weight on tray: 135 kg
System Size and Weight	870 x 1200 x 735 mm (34.2 x 47.2 x 29 in.) 254 kg (559 lbs.)	Objet260: 870 x 1200 x 735 mm (34.2 x 47.2 x 29 in.); 264 kg (581 lbs.) <i>Material Cabinet:</i> 330 x 1170 x 640 mm (13 x 46.1 x 25.2 in.); 76 kg (168 lbs.) Objet350/500: 1400 x 1260 x 1100 mm (55.1 x 49.6 x 43.4 in.); 430 kg (948 lbs.) <i>Material Cabinet:</i> 330 x 1170 x 640 mm (13 x 46.1 x 26.2 in.); 76 kg (168 lbs.)	1400 x 1260 x 1100 mm (55.1 x 49.6 x 43.3 in.); 430 kg (948 lbs.) <i>Material Cabinet:</i> 670 x 1170 x 640 mm (26.4 x 46.1 x 25.2 in); 152 kg (335 lbs.)	1960 x 2868 x 2102 mm (77.5 x 113 x 83 in.); 2200 kg (4850 lbs.)
Layer Thickness	Horizontal build layers as fine as 16 microns (.0006 in.)	Horizontal build layers as fine as 16 microns (.0006 in.)	Horizontal build layers down to 14 microns (.00055 in.)	Horizontal build layers as fine as 16 microns (0.0006 in.)
Accuracy¹	20-85 microns for features below 50 mm; up to 200 microns for full model size	20-85 microns for features below 50 mm; up to 200 microns for full model size	20-85 micron for features below 50 mm; up to 200 microns for full model size (for rigid materials only)	Up to 85 microns for features smaller than 50 mm; up to 600 microns for full model size (for rigid materials only)
Model Material Options²	<ul style="list-style-type: none"> • Rigid Opaque: VeroWhitePlus, VeroBlackPlus, VeroGray, VeroBlue • Rubber-like: TangoPlus™, TangoBlackPlus™, TangoBlack, TangoGray • Transparent: VeroClear and RGD720 • Simulated Polypropylene: Rigur and Durus • High Temperature • Biocompatible 	<ul style="list-style-type: none"> • Rigid Opaque: VeroWhitePlus, VeroBlackPlus, VeroGray, VeroBlue, VeroCyan™, VeroMagenta™, VeroYellow™ • Rubber-like: TangoPlus, TangoBlackPlus, TangoBlack, TangoGray • Transparent: VeroClear and RGD720 • Simulated Polypropylene: Endur and Durus • High Temperature • Biocompatible 	<ul style="list-style-type: none"> • Vero family of opaque materials including neutral shades and vibrant colors • Rubber-like: TangoPlus, TangoBlackPlus • Transparent VeroClear and RGD720 	<ul style="list-style-type: none"> • Transparent rigid: VeroClear • Rubber-like: TangoPlus and TangoBlackPlus • Rigid Opaque: Vero family • Simulated Polypropylene: Rigur
Digital Material Options	—	<ul style="list-style-type: none"> • Vibrant blended colors in Rigid Opaque • Translucent colored tints • Rubber-like materials in a variety of Shore A values • Digital ABS for durability, including blends with rubber • Simulated polypropylene materials with improved heat resistance 	Unlimited number of composite materials including: <ul style="list-style-type: none"> • Over 360,000 colors • Digital ABS and Digital ABS2 in ivory and green • Rubber-like materials in a variety of Shore A values • Translucent color tints 	<ul style="list-style-type: none"> • Transparent shades and patterns • Rigid Opaque shades • Rubber-like blends in a range of Shore A values • Simulated Polypropylene blends in rigid and flexible options
Support Material	SUP705 (WaterJet removable) SUP707 (soluble)	SUP705 (WaterJet removable) SUP706 (soluble)	SUP705 (WaterJet removable)	SUP705 (WaterJet removable)
Software	Objet Studio	Objet Studio Stratasys Creative Colors™, powered by Adobe 3D Color Print Engine	PolyJet Studio™	Objet Studio

¹Varies depending on part geometry, size, orientation, material and post-processing method.

²See PolyJet Color Spec Sheet for additional material color information relevant to Connex3 systems.



PolyJet 3D Printers

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.

Materials	Digital ABS	High Temperature	Transparent		Rigid Opaque (Vero family)	
	Digital ABS, Green, made of RGD515 & RGD535 Digital ABS, Ivory, made of RGD515 & RGD531	RGD525	RGD720	VeroClear RGD810	VeroGray RGD850, VeroBlackPlus RGD875, VeroWhitePlus RGD835, VeroYellow RGD836, VeroCyan RGD841, VeroMagenta RGD851	VeroBlue RGD840
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)	50-65 MPa (7,250-9,450 psi)	50-60 MPa (7,250-8,700 psi)
Elongation at Break	25-40%	10-15%	15-25%	10-25%	10-25%	15-25%
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)	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)	75-110 MPa (11,000-16,000 psi)	60-70 MPa (8,700-10,200 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)	2,200-3,200 MPa (320,000-465,000 psi)	1,900-2,500 MPa (265,000-365,000 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)	45-50 °C (113-122 °F)	45-50 °C (113-122 °F)
Izod Notched Impact	65-80 J/m (1.22-1.50 ft lb/inch)	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)	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%	1.1-1.5%	1.5-2.2%
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)	52-54 °C (126-129 °F)	48-50 °C (118-122 °F)
Shore Hardness	85-87 Scale D	87-88 Scale D	83-86 Scale D	83-86 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	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	1.17-1.18 g/cm ³	1.18-1.19 g/cm ³
Ash content	—	0.38-0.42%	0.01-0.02%	0.02-0.06%	0.23-0.26% (VeroGray, VeroWhitePlus), 0.01-0.02% (VeroBlackPlus)	0.21-0.22%

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Materials	Simulated Polypropylene			Rubber-like		Biocompatible
	Durus White RGD430	Rigur RGD450	TangoBlackPlus FLX980 & TangoPlus FLX930	TangoBlack FLX973	TangoGray FLX950	MED610
Tensile Strength	20-30 MPa (2,900-4,350 psi)	40-45 MPa (5,800-6,500 psi)	0.8-1.5 MPa (115-220 psi)	1.8-2.4 MPa (115-350 psi)	3.0-5.0 MPa (435-725 psi)	50-65 MPa (7,300-9,400 psi)
Elongation at Break	40-50%	20-35%	170-220%	45-55%	45-55%	10-25%
Modulus of Elasticity	1,000-1,200 MPa (145,000-175,000 psi)	1,700-2,100 MPa (246,000-305,000 psi)	—	—	—	—
Flexural Strength	30-40 MPa (4,350-5,800 psi)	52-59 MPa (7,500-8,500 psi)	—	—	—	—
Flexural Modulus	1,200-1,600 MPa (175,000-230,000 psi)	1,500-1,700 MPa (217,000-246,000 psi)	—	—	—	—
HDT, °C @ 1.82 MPa	32-34 °C (90-93 °F)	45-50 °C (113-122 °F)	—	—	—	40-50 °C (113-122 °F)
Izod Notched Impact	40-50 J/m (0.749-0.937 ft lb/inch)	30-35 J/m (0.561-0.656 ft lb/inch)	—	—	—	—
Water Absorption	1.5-1.9%	—	—	—	—	—
Tg	35-37 °C (95-99 °F)	48-52 °C (118-126 °F)	—	—	—	—
Shore Hardness	74-78 Scale D	80-84 Scale D	26-28 Scale A	60-62 Scale A	73-77 Scale A	83-86 Scale D
Rockwell Hardness	—	58-62 Scale M	—	—	—	—
Polymerized Density	1.15-1.17 g/cm ³	1.20-1.21 g/cm ³	1.12-1.13 g/cm ³	1.14-1.15 g/cm ³	1.16-1.17 g/cm ³	—
Ash content	0.10-0.12%	0.3-0.4%	—	—	—	—

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