

SPEC SHEET
MEDICAL

Digital Anatomy Materials: TissueMatrix

Stratasys has developed a new series of Digital Anatomy™ materials designed to enrich the medical modeling field and empower the creation of more realistic anatomical models. Whether for surgical training or medical device development, Stratasys' Digital Anatomy materials provide a new level of accuracy, repeatability and functionality.

By mixing Digital Anatomy materials with Polyjet™ materials like Agilus30™ on the J850 Digital Anatomy™ Printer or Elastico®Clear (on the J5 Digital Anatomy™ Printer)" and the Vero™ family, users can produce a large range of shore values that can demonstrate almost any anatomy in the human body. Create models with mechanical properties similar to any type of human tissue and perform sutures, punctures, drills, stretches, and other mechanical tests for research, education and training, and medical device development.

TissueMatrix (MED310C)™

TissueMatrix is the softest commercially available 3D printing material. This material lets users create models of soft and solid internal organs that feel and behave like native organ tissue when force is applied.

Because of its stickiness and instability, this material cannot be printed as a pure material. TissueMatrix is mixed with stable materials like Agilus30 or ElasticoClear. Examples for anatomy presets are the Myocardium and Liver presets.

To ensure proper material curing while printing a preset that contains TissueMatrix using J850 Digital Anatomy Printer, users should only use one UV lamp, as assigned automatically in prints with TissueMatrix. Using two UV lamps may cause the edges of the model to burn.

Properties	J850 Digital Anatomy Printer	J5 Digital Anatomy Printer
Shore00	~27 (tested on a cube 50x50x7.2 mm)	
Print Mode	High Mix	High Quality Speed
Support material	SUP706	SUP710S
Number of UV lamps	1	
Color	Translucent	

Test	Properties	850 Digital Anatomy Printer	J5 digital Anatomy Printer
Tensile	Tensile strength [Mpa]	0.7-0.9	0.5-1.5
	Elongation to break [%]	140-170	350-488
Tear Resistance	Tear strength [N/m]	1900-2300	2300-2500
Shore	Shore00	40-50	51.5-54

Collaborations lead to advancements.

Stratasys worked with top research and medical institutes to develop a wide range of different anatomies that can be printed with Digital Anatomy and PolyJet materials for research, surgical planning and training, and education.

Scientists and engineers from Medtronic, a global leader in medical device manufacturing, performed a series of tests to compare the biomechanical properties of porcine tissue to Stratasys 3D-printed myocardium. The results found that Digital Anatomy printed models mimic real tissue better than any other material.

For more information, read the full report: **Polyjet 3D printing of tissue-mimicking materials.**

An additional study by Medtronic compared 3D-printed liver presets with a porcine liver tissue. The results showed that the 3D-printed livers perform remarkably similarly to porcine liver tissue.

For more information, read the white paper: **Mimicking porcine liver, epicardium and aorta.**

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