	Dongguan Imai Intelligent Technology Co.,Ltd	Document and Revision Number	IR-HTLHPF010 REV-02
IEMAI®	Tensile Strength Test	Revision Date	2024.12.26

Tensile Strength Test

Test Purpose: This test aims to obtain high reproducibility value of tensile stress and tensile modulus of specific material.

Responsible /Issuing Person: info@iemai3d.com

Test Specifications The machine should meet the requirements of ISO7500-1 and ISO9513.

Test Period: 11/12/24 to 25/12/24

1. Printing Setting

Machine and Operation			
Printer Model:	MAGIC-HT-L	Storage Medium:	SD Card
Nozzle Heating Method:	Ordinary Heating Rod	Chamber Temperature:	90℃
Nozzle Size:	0.4mm	Printing Temperature:	405℃
Nozzle Material:	Copper Alloy	Hot Bed Temperature:	110℃
Platform Gluing Method:	Spray		
Printing Material			
Test Material:	PEEK	Material Type/Dia.:	Filament / 1.74mm
New Unsealing:	No	Batch Number:	Nil
Continuous Baking during printing:	Yes	Bake or not:	Yes
Continuous Baking Temperature:	90℃	Bake Temperature /Time:	120℃ / 8hrs

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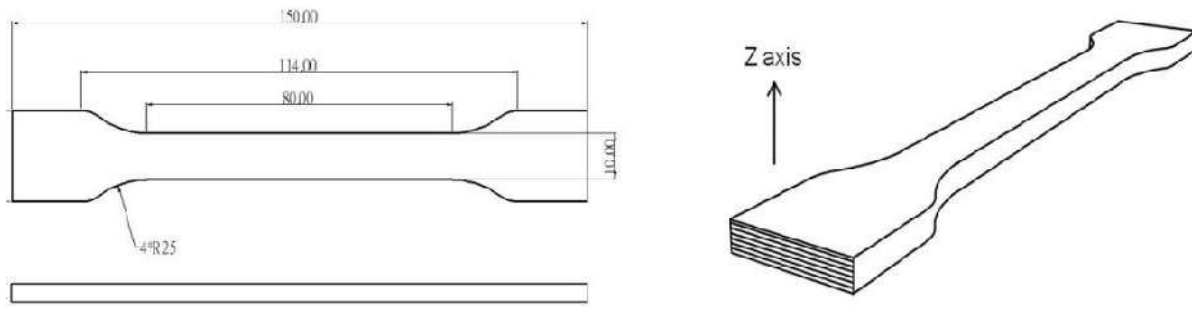
Slicing Parameters					
Slicing Software: IEMAI 3D Slicer V1.2					
First Layer Height:	0.25mm	Layer Height:	0.2mm	Line Width:	0.4mm
Top/Bottom Shell:	3, 3	Internal Solid:	Monotonic	Detect Thin:	Select
Layers		Infill Pattern		Walls	
Z Hop When:	0.4mm	Retraction:	2mm	Detact:	Select
Retracting		Length		Overhang Walls	
Retraction:	40mm/s	Fan Speed for:	30%	Fan Speed for:	100%
Speed		Pert Cooling Fan		Overhangs	
Brigde Speed:	50mm/s	Layer Speed:	35mm/s	Travel Speed:	70mm/s
Skirt Loops:	1Loop	Brim Width:	20mm	Brim Type:	Outter/Inner Brim
Wall Generator:	Classic	Wall Loops:	2	Infill Density:	100%
Sparse/Solid:	45°				
Infill Direction	Straggered				

2. Sample

Test Sample Shape	
Printing Part Name: 1b Stretching Spline	
For each required testing direction, at least 5 test samples should be tested.	
If higher average accuracy is required, the number of measurements can exceed 5.	
XY axis printing quantity at once: 1unit	Z-axis printing quantity at once: 4units



3. Test Method and Steps

Testing Speed
The testing speed is usually 50mm/minute (used to measure strength and elongation).

Step 1
Place the specimen in the fixture, ensuring that the longitudinal axis of the specimen aligns with the axis of the testing machine. Tighten the fixture evenly and firmly to avoid sliding of the specimen and movement of the fixture during the testing process. The clamping pressure should not cause the sample to break or squeeze.
Step 2
Stretching along its longitudinal axis at a constant speed until the sample fractures or until the stress (load) or strain (elongation) reaches a predetermined value.

4. Test Result

Tensile Test Data（XY Direction）：			
Sample Number	Test Method	Elongation at Break（%）	Tensile Strength（MPa）
01	ISO 527，GB/T 1040	22.952	72.660
02		18.979	75.700
03		12.613	67.360
04		33.478	76.180
05		15.530	73.250
06		23.876	77.350
07		7.690	71.910
08		17.579	78.260
09		13.812	77.220
Maximum Value		33.478	78.260
Minimum Value		7.690	67.360
Overall Average Value		**18.501**	**74.430**
(No maximum or minimum) Average Value		**17.905**	**74.890**

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Tensile Test Data（Z Direction）：			
Sample Number	Test Method	Elongation at Break（%）	Tensile Strength（MPa）
01	ISO 527，GB/T 1040	5.004	45.940
02		4.535	39.010
03		4.535	42.220
04		5.685	54.130
05		4.617	45.630
06		4.685	45.640
07		4.885	44.360
Maximum Value		5.685	54.130
Minimum Value		4.535	39.010
Overall Average Value		**4.849**	**45.290**
(No maximum or minimum) Average Value		**4.745**	**44.770**