

FAB ACADEMY 2015

Final Project : Modular Vacuum Former

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MACHINING PARAMETERS

MILL PARAMETERS:

Machine: ShopBot PRS Alpha 96 3-axis milling machine

Material / Form: Medium Density Fiberboard (MDF) / Sheet

Material Dimensions (Nominal TxWxL): 0.75 in x 49 in x 97 in (19.1 mm x 1247 mm x 2464 mm)

Parameter (V Carve 7.0)	MDF Sheet
Tool Dia. (in/mm)	0.25 / 6.35
Pass Depth (in/mm)	0.25 / 6.35
Step Over (in/mm)	0.125 / 3.175
Spindle Speed (rpm)	12000
Feed Rate (in/s, mm/s)	3 / 76.2
Plunge Rate (in/s, mm/s)	1 / 25.4

3D PRINTER PARAMETERS:

Machine: MakerBot Replicator 2X

Material / Form: Acrylonitrile Butadiene Styrene (ABS) / Filament

Material Dimensions (Nominal Dia.): 0.69 in (1.75 mm)

Parameter (MakerBot Desktop)	ABS Filament
Layer Height (in/mm)	0.008 / 0.2
Infill (%)	10
Number of Shells	3
Extruder Temp (F/C)	446 / 230
Build Plate Temp (F/C)	230 / 110
Speed While Extruding (in/s, mm/s)	3.54 / 90
Speed While Travelling (in/s, mm/s)	5.91 / 150

LASER CUTTER PARAMETERS:

Machine: Epilog Mini 24 40W

Material (1): Acrylic (cast) / Sheet

Material Dimensions (Nominal TxWxL) (1): 0.25 in x 12 in x 24 in (6.35 mm x 305 mm x 610 mm)

Material (2): Polystyrene / Sheet

Material Dimensions (Nominal TxWxL) (2): 0.030 in x 12 in x 24 in (0.76 mm x 305 mm x 610 mm)

Laser Cutting Parameters		
Parameter (Epilog)	Acrylic Sheet	Polystyrene Sheet
Laser Power (%)	100	100
Cutting Speed (%)	6	80
Laser Frequency (Hz)	5000	2500

MILL PARAMETERS:

Machine: Roland Modela 3-axis milling machine

Material / Form: FR2 PCB / Sheet

Material Dimensions (Nominal TxWxL): 0.062 in x 2 in x 3 in (1.57 mm x 50.8 mm x 76.2 mm)

Parameter (Fab Module)	Mill Traces	Mill Board Perimeter
Tool Dia. (in/mm)	0.0156 / 0.397	0.0312 / 0.794
Type	3D Plane	3D Rough
Overlap	0.5	0.5
Intensity	0.5	N/A
Top Intensity	N/A	0.5
Bottom Intensity	N/A	0.5
Offset	10	1
Error	1.1	1.1
Z (in/mm)	-0.006 / -0.15	N/A
Top Z (in/mm)	N/A	-0.024 / -0.6
Bottom Z (in/mm)	N/A	-0.067 / -1.7
Cut Depth (in/mm)	N/A	0.024 / 0.6