

DBE MAKERSPACE | BUILDING 418

LASER CUTTING GUIDE

WORKSHOP INFO & HOURS

DBE MAKERSPACE SPACE | BUILDING 418

Technicians: Amy Hickman, Joshua Webb, Daniel McMurray & Sarah Ong
Phone: 9266 4743 or 9266 4034
Email: dbemakerspace@curtin.edu.au

Monday	8am - 6pm
Tuesday	8am - 4pm
Wednesday	8am - 4pm
Thursday	8am - 6pm
Friday	8am - 5.15pm

DIGITAL MODELING SPACE | BUILDING 202

Technician: Nick Wright
Phone: 9266 4641
Email: digitalmodelling@curtin.edu.au

Monday - Friday 8am - 4pm

MATERIAL INFORMATION

Material used in the laser cutter is supplied by the workshop.
Material Variable Size Cost per sheet

Plywood - 3mm

1200 x 600	\$21.14	Cost per sheet
900 x 600	\$15.85	
300 x 600	\$5.30	

Plywood 6mm

1200 x 600	\$33.80	Cost per sheet
900 x 600	\$25.35	
300 x 600	\$8.45	

Strawboard 1.2mm thick

900 x 600	\$5.00
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Strawboard 2mm thick

900 x 600	\$7.00
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Acrylic - *Only available at Building 202 Digital Modeling Space
We can cut up to 6mm acrylic.

We do not stock any acrylic but please
come speak to us to find the best place to
purchase it depending on your requirements.

DBE MAKERSPACE | BUILDING 418

Laser Cutting Guide

1. Choose the correct laser cutter based on the material and its maximum cut size.

Your job should be smaller size then then Max Material Size.

EMBLASER 2

418 Makerspace

MAX MATERIAL SIZE = **500mm x 300mm x 50mm (thick)**

Strawboard & Plywood

TROTEC SPEEDY 400

202 Digital Modelling Workshop

MAX MATERIAL SIZE = **900 x 600 x 12.7mm (thick)**

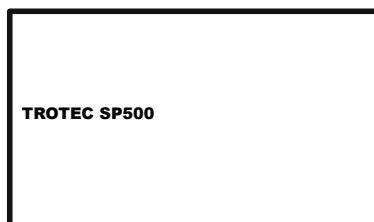
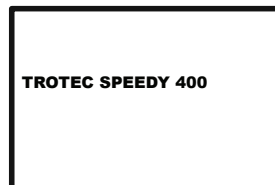
Strawboard, Plywood, Acrylic, leather , other upon request

TROTEC SP500

418 Makerspace

MAX MATERIAL SIZE = **1245 x 710 x 12.7mm (thick)**

Strawboard, Plywood



2. Ensure that your objects are at the appropriate scale.

The Laser Cutter cuts at 1:1 scale.

For example, if you need your models at 1:100, they should be scaled down by 0.01.

Having trouble with Scale? Try a scale converter:

https://www.ginifab.com/feeds/cm_to_inch/scale_converter.html

Scale Conversion Calculator

Scale Ratio	1	:	12
Real Length	120	mm	▼
Scale Length	10	mm	▼

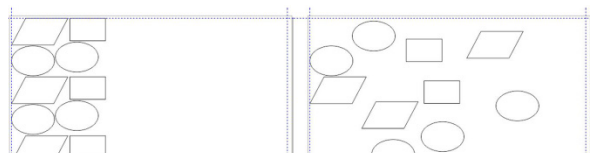
Scale Ratio 1:12

Real Length mm

Scale Length mm

3. Working in (RHINO) TOP VIEW - move your design to fit within the boundaries of the laser cutter material size you want to use.

Arrange/ Layout the parts of your design inside this boundary saves money and reduces material waste. Nest your design, placing each element close together (2mm minimum distance between parts) or if possible, sharing cut lines.



DBE MAKERSPACE | BUILDING 418

Laser Cutting Guide

4. Assign/move parts of your design into the appropriate layer:

Assign to layer (IN RHINO)

Select the desired design element | Right click the layer

In the dropdown menu choose 'change object layer' eg; CUT, V ENGRAVE or FILL

Layer colours must be set in RGB

EMBLASER 2

LAYER / COLOUR SETUP FOR

LAYER 1 = (NA) MATERIAL BOUNDARY | (NO PRINT)

☐ LAYER 2 = (BLACK) RASTOR ENGRAVE | Engraving photographic type images

☐ LAYER 3 = (GREEN) VECTOR ENGRAVE | Engraving / scoring lines

☐ LAYER 4 = (BLUE) FILL / solid Hatch | Fill / solid Hatch pattern engraving

☐ LAYER 5= (RED) CUT | Cut lines

TROTEC

LAYER / COLOUR SETUP FOR

LAYER 1 = (NA) MATERIAL BOUNDARY | (NO PRINT)

☐ LAYER 2 = (BLACK) RASTOR ENGRAVE | Engraving photographic type images

☐ LAYER 3 = (GREEN) VECTOR ENGRAVE | Engraving / scoring lines

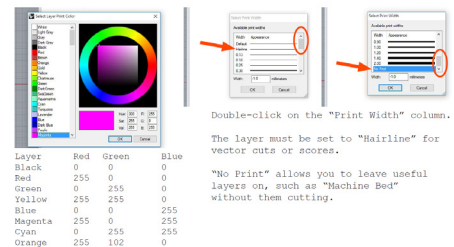
☐ LAYER 4 = (BLACK) FILL / solid Hatch | Fill / solid Hatch pattern engraving

☐ LAYER 5= (RED) CUT | Cut lines

Current	Layer	Color	Linetype	Print Color	Print Width
✓	EMBLASER 2		Continuous	◆	Default
	LAYER 1 - MATERIAL BOUND...		Continuous	◆	Default
	LAYER 2 - RASTOR ENGRAVE ...		Continuous	◆	Hairline
	LAYER 3 - VECTOR ENGRAVE ...		Continuous	◆	Hairline
	LAYER 4 - FILL		Continuous	◆	Hairline

Colour	Red Value	Green Value	Blue Value
BLACK	0	0	0
GREEN	0	255	0
BLUE	0	0	255
RED	255	0	0

Colour	Red Value	Green Value	Blue Value
BLACK	0	0	0
GREEN	0	255	0
RED	255	0	0



5.SET - Line Weights and Line Type

Print width = Line Weight = **Hairline**

Line type = **Continuous**

Current	Layer	Color	Linetype	Print Color	Print Width
✓	TROTEC SP500		Continuous	◆	Default
	LAYER 1 - MATERIAL BOUND...		Continuous	◆	Default
	LAYER 2 - RASTOR ENGRAVE		Continuous	◆	Hairline
	LAYER 3 - VECTOR ENGRAVE		Continuous	◆	Hairline
	LAYER 4 - FILL		Continuous	◆	Hairline
	LAYER 5 - CUT		Continuous	◆	Hairline

6. CHECK the following:

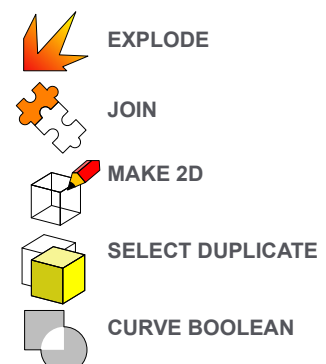
- Nest your objects placing linework close together.
- The minimum distance between shapes, elements should be 2mm.
- Check that the print width all layers is set to 'Hairline'.
- Make sure all cut, engrave, fill lines are set to RGB colour profile.
- Check you have no overlapping objects or duplicate lines.
- Make sure lines are joined to create continuous polylines.
- Explode text and line based pattern hatches
- Do not explode solid hatches

To fix duplicate lines (IN RHINO)

Make2D - will flatten your design

SelfDup - will delete duplicate lines

Curve Boolean – will delete duplicate lines & join shapes not a single polyline.



EXAMPLE PAGE LAYOUT

**LAYER / COLOUR SETUP FOR
ALWAYS IN RGB**

<input type="checkbox"/>	LAYER 1 = (NA)	MATERIAL BOUNDARY	(NO PRINT)
<input type="checkbox"/>	LAYER 2 = (BLACK)	RASTOR ENGRAVE	Engraving photographic type images
<input type="checkbox"/>	LAYER 3 = (GREEN)	VECTOR ENGRAVE	Engraving / scoring lines
<input type="checkbox"/>	LAYER 4 = (BLUE)	FILL / solid Hatch	FIL / solid Hatch pattern engraving
<input type="checkbox"/>	LAYER 5 = (RED)	CUT	Cut lines


2mm Minimum distance between parts

VECTOR ENGRAVE LINE

-RASTOR ENGRAVE
From a photo .jpg, .png etc
The Laser cutter will engrave your photo

TROTEC

TROTEC SPEEDY 400 | DIGITAL MODELLING @ BUILDING 202
MAX MATERIAL = SIZE 900 x 600 x 12.7mm

Strawboard, Plywood, Acrylic, leather , other upon request

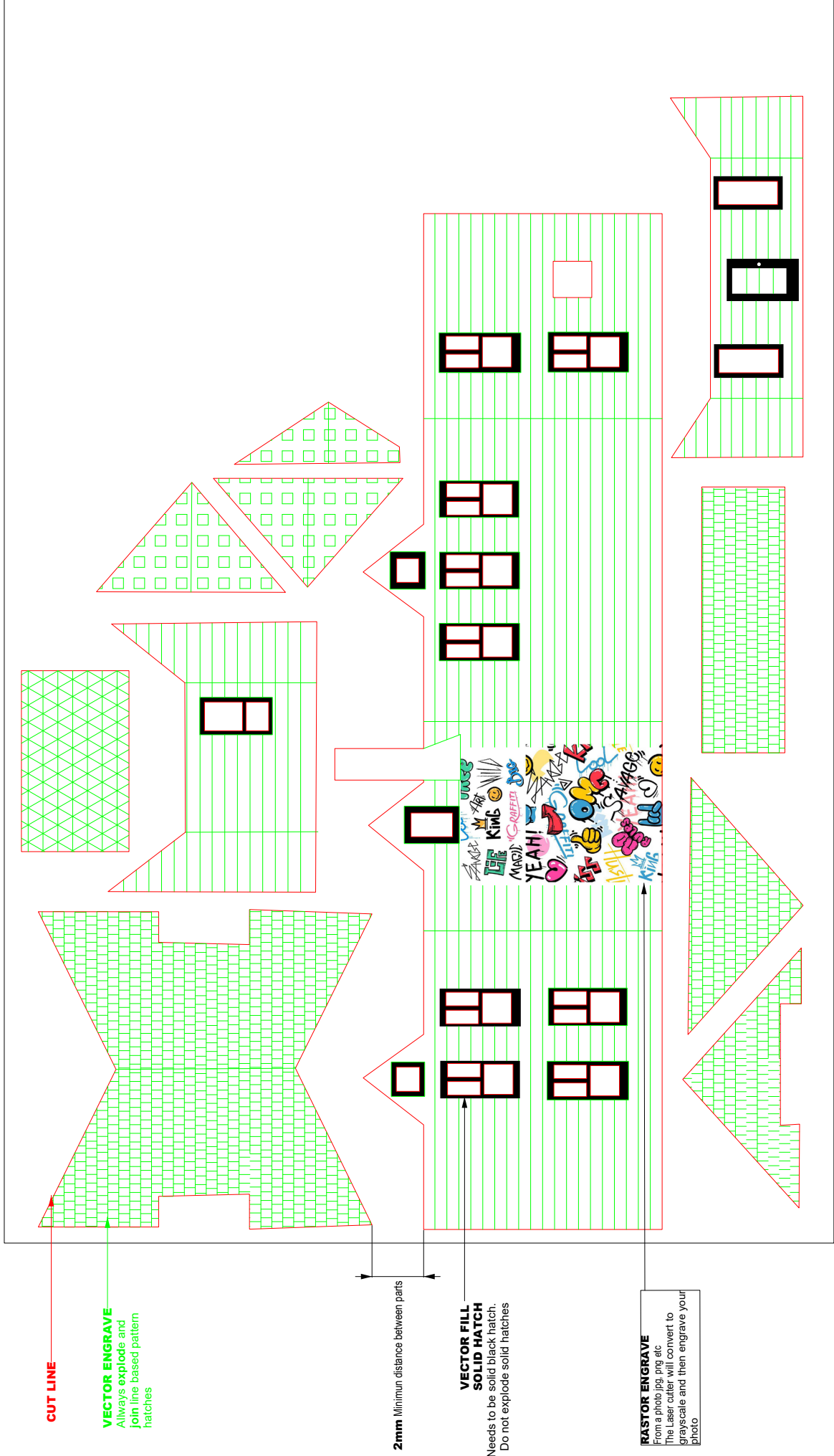
LAYER / COLOUR SETUP FOR

LAYER 1 = (NA) MATERIAL BOUNDARY (NO PRINT)

- ☐ LAYER 2 = (BLACK) RASTOR ENGRAVE | Engraving photographic type images
- ☐ LAYER 3 = (GREEN) VECTOR ENGRAVE | Engraving / scoring lines
- ☐ LAYER 4 = (BLACK) FILL / solid Hatch | Fill / solid Hatch pattern engraving
- ☐ LAYER 5 = (RED) CUT | Cut lines

Colour	Red Value	Green Value	Blue Value
BLACK	0	0	0
GREEN	0	255	0
RED	255	0	0

Print width = Line Weight = Hairline
Line type = Continuous



RHINO | Laser Cutting Guide

PRINT AS PDF

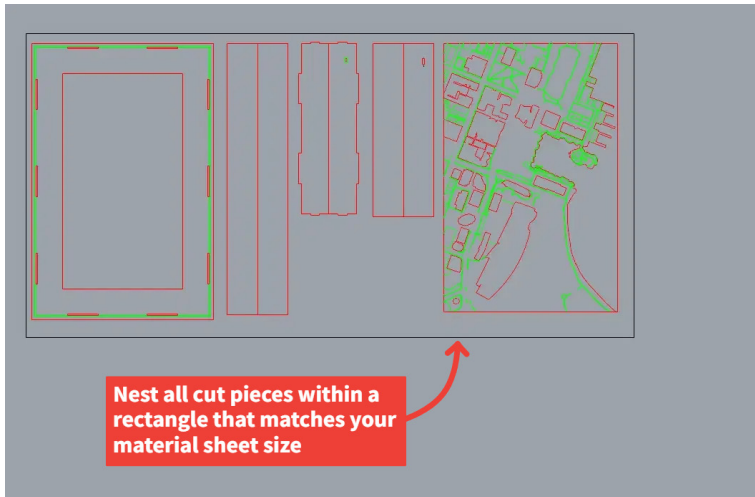
SUMMARY/QUICK GUIDE

Always check the following when printing as PDF:

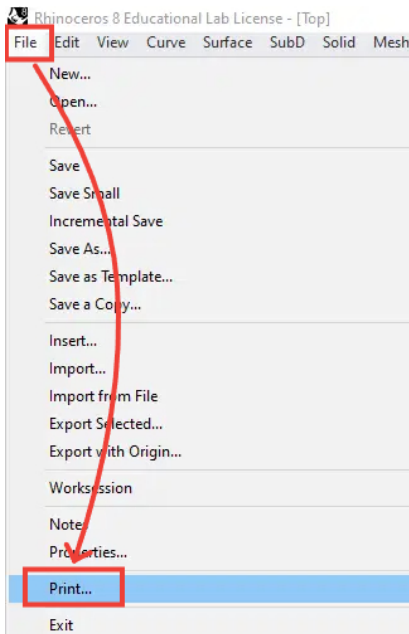
- **Rhino PDF** is selected
- Select **Custom** paper size and set paper size to match material size
- Select Output Type: **Vector Output**
- Select Output Color: **Display Color**
- Select **Window** and click **Set**
- Select area to print
- Make sure **scale** is **1:1**
- Set all **margins** to **0.00**
- Click **Print** to finish

RHINO| Laser Cutting Guide

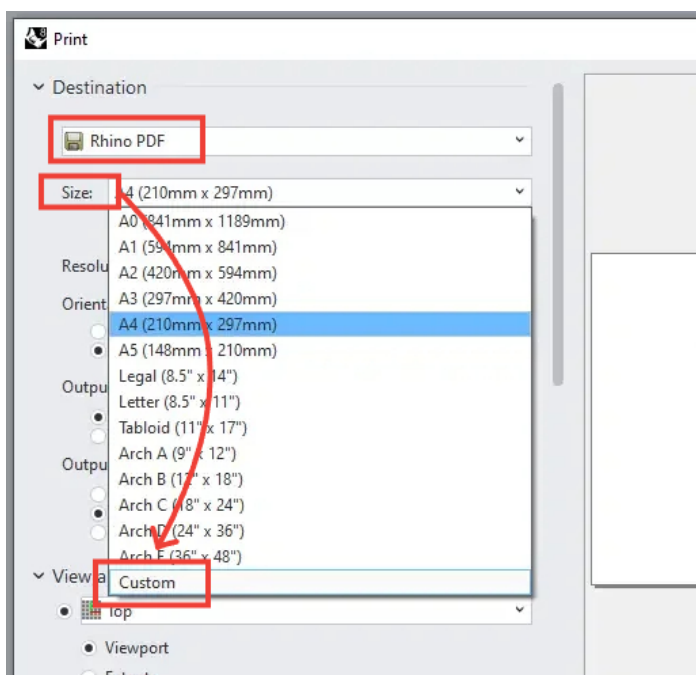
PRINT AS PDF (Windows) - STEP BY STEP GUIDE



1) Draw a rectangle that matches the sheet size of your selected material and nest all pieces to be cut within the rectangle



2) Go to **File** and select **Print**, or type in **Print** into the Command Line

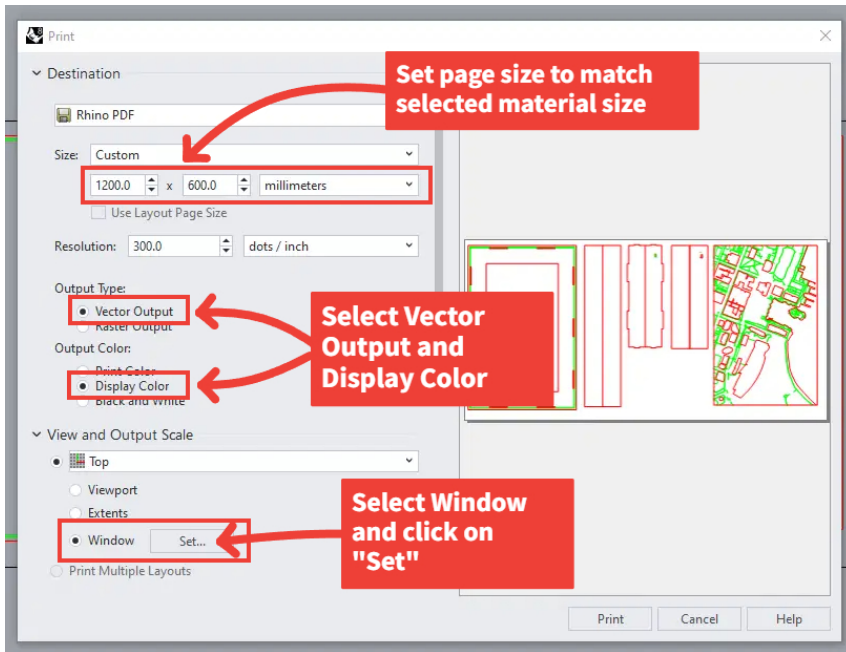


3) Under *Destination*, select:

- **Rhino PDF**

4) Under *Size*, scroll down to select:

- **Custom**



5) Set Width and Height to match selected material size

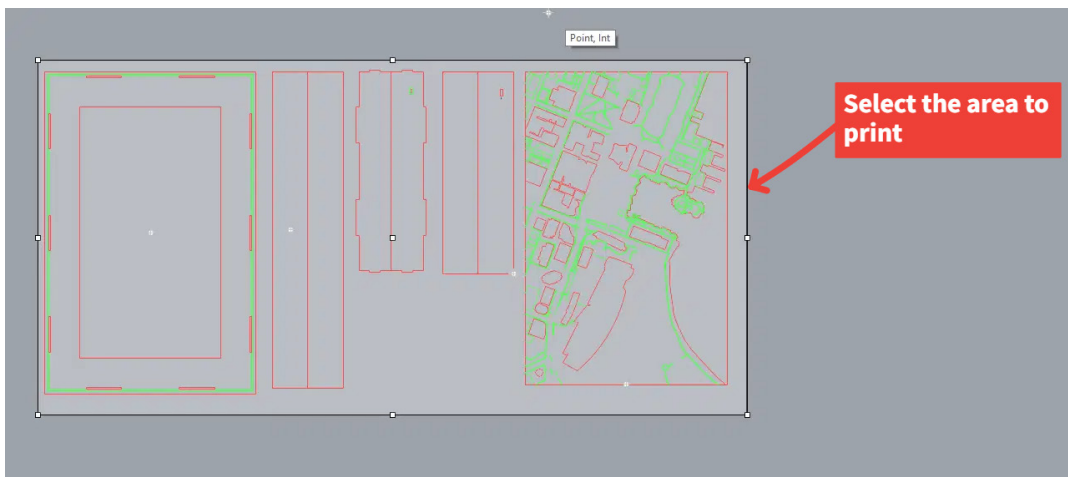
* **Make sure Units are set to Millimeters**

6) Make sure that the following are selected:

Output Type: **Vector Output**

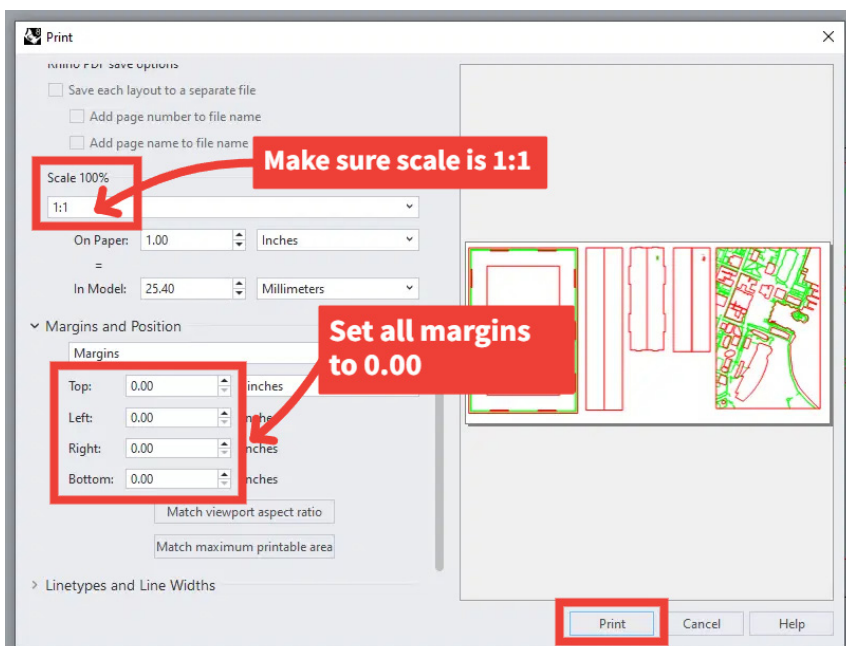
Output Color: **Display Color**

7) Under **View and Output Scale**, select **Window** and click on **Set** which will bring you back into the model page



8) In the model page, select the area to print, which should be the rectangle that has been previously set up to match the selected material sheet size

Press **Enter** to go back to the Print window



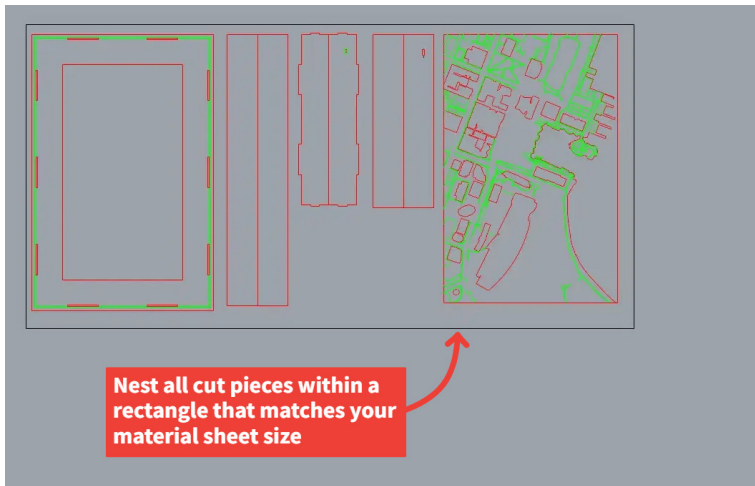
9) Back in the Print window, make sure that scale is set to **1:1**

10) All Margins should be set to **0.00**

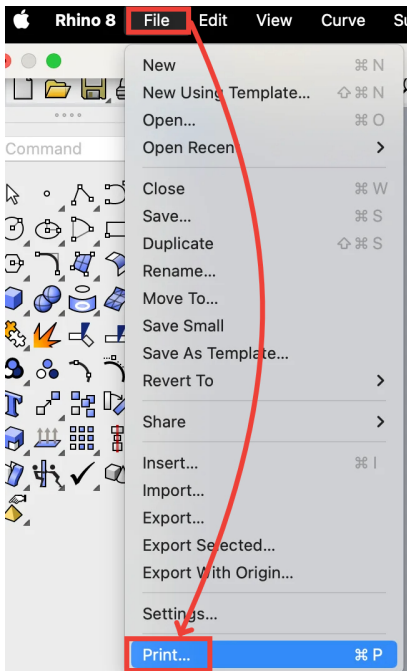
11) Select **Print** to finish and save file as PDF

RHINO| Laser Cutting Guide

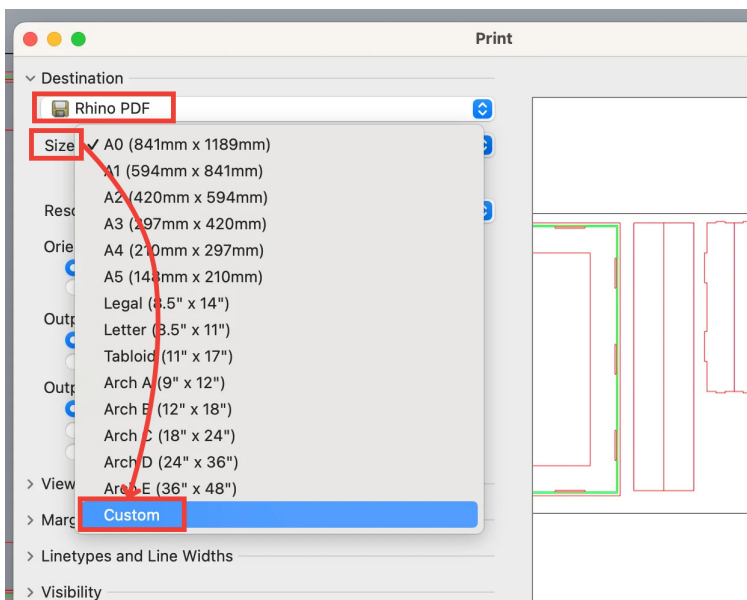
PRINT AS PDF (Mac) - STEP BY STEP GUIDE



1) Draw a rectangle that matches the sheet size of your selected material and nest all pieces to be cut within the rectangle

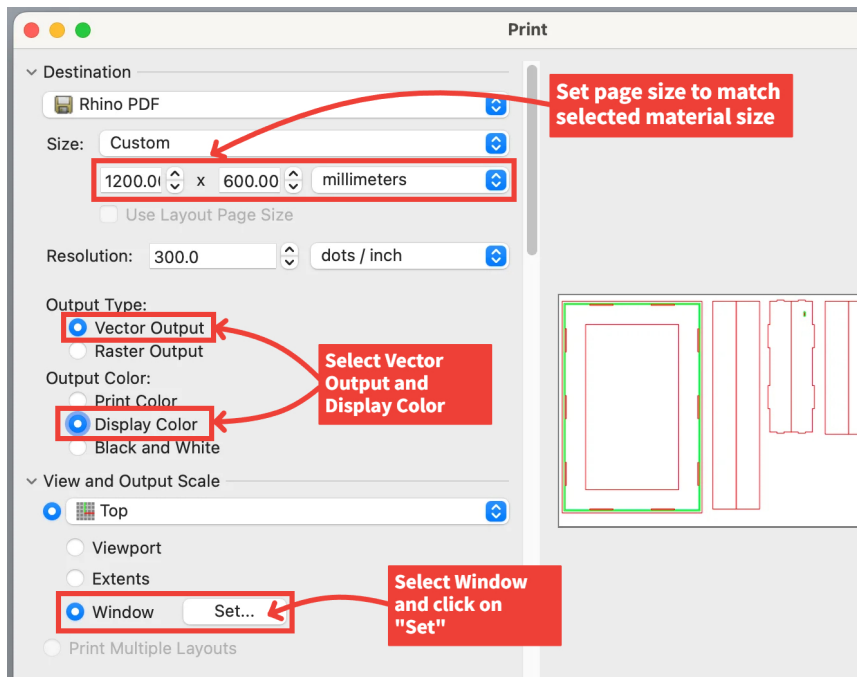


2) Go to **File** and select **Print**, or type in **Print** into the Command Line



3) Under **Destination**, select:
- **Rhino PDF**

4) Under **Size**, scroll down to select:
- **Custom**



5) Set Width and Height to match selected material size

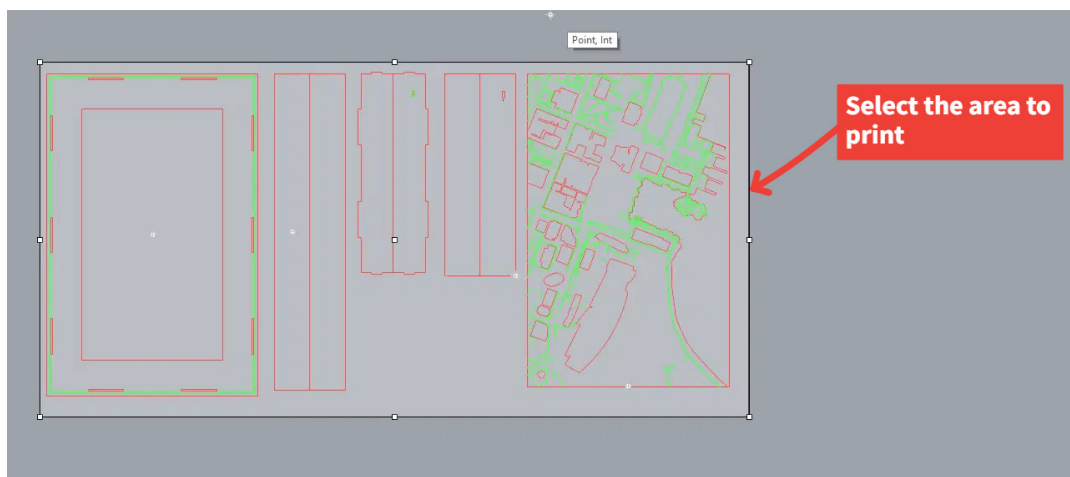
* **Make sure Units are set to Millimeters**

6) Make sure that the following are selected:

Output Type: **Vector Output**

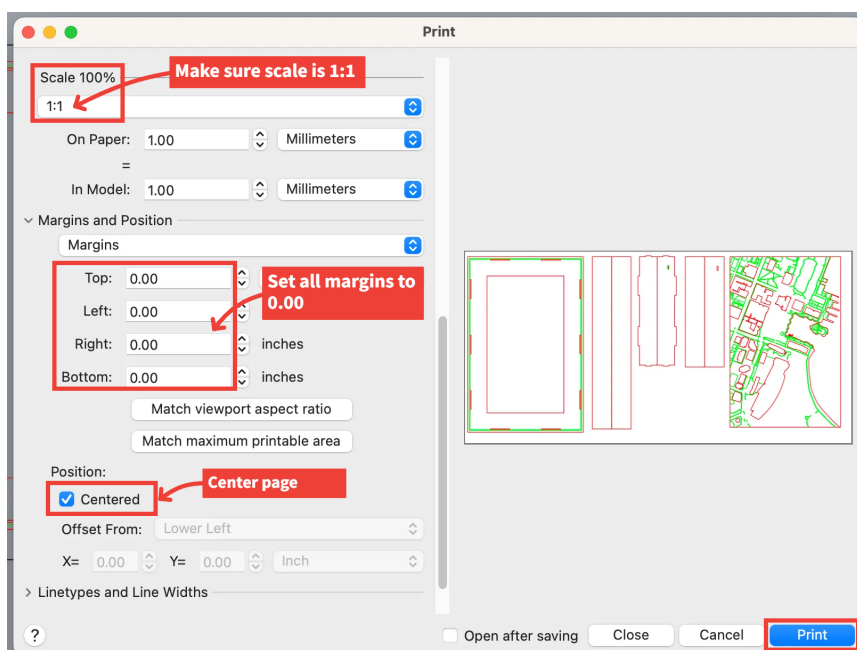
Output Color: **Display Color**

7) Under **View and Output Scale**, select **Window** and click on **Set** which will bring you back into the model page



8) In the model page, select the area to print, which should be the rectangle that has been previously set up to match the selected material sheet size

Press **Enter** to go back to the Print window



9) Back in the Print window, make sure that scale is set to **1:1**

10) All Margins should be set to **0.00**

11) Click on **Centered** if needed to center the page

12) Select **Print** to finish and save file as PDF