Common Settings for engraving and cutting materials…

Rabbit Laser USA
Middletown, OH

www.RabbitLaserUSA.com

What settings should we use for engraving or cutting on stuff? This is a difficult questions to answer because of not knowing the 1) Expected acceptable quality for your product, 2) Speed needed to get the project done, 3) Lens focal length, 4) Laser beam wattage, 5) Laser spot size, and 6) Material properties. The laser settings suggested here in this document should be used for reference purposes only and are provided as a courtesy. The different laser machines have differing output wattages and lens configurations, which produce varying results. Materials will also vary in density, hardness, humidity, light absorption.

Material	Wattage Machine	Mode	Percent Wattage	Speed MM/s	Scan Gap mm	DPI	Thickness	Passes	Notes
Glass	80 60 40	Engrave	12 12 12	350	.055	462	any	1	Use the lowest power setting with thin scan gap settings. Keep the glass cold with cold air, wet paper, or other coatings.
Wood	80 60 40	Engrave	14 18 20	350	.085	300	any	1	May use masking tape to prevent sap from making a haze around the engraved areas.
Bass Wood	80 60 40	Cut	50 65 80	15	NA	NA	1/8 inch	1	Use lowest power with highest speeds to completely cut through the material. Higher speeds may be obtained by also increasing power.
Balsa Wood	80 60 40	Cut	50 65 80	45	NA	NA	1/8 inch	1	Use lowest power with highest speeds to completely cut through the material. Higher speeds may be obtained by also increasing power.
Birch Plate	80 60 40	Cut	52 68 85	12	NA	NA	1/8 inch	1	Use lowest power with highest speeds to completely cut through the material. Higher speeds may be obtained by also increasing power.
Birch Plywood	80 60 40	Cut	70 85 85	10 7 5	NA	NA	3/16 inch	1	Use lowest power with highest speeds to completely cut through the material. Higher speeds may be obtained by also increasing power.
Plywood-RC Aircraft	80 60 40	Cut	50 65 80	45 35 12	NA	NA	3/16 inch	1	Quality of this cut depends on the density of the wood, glue content, and humidity.
Acrylic	80 60 40	Cut	55 70 85	12	NA	NA	¼ inch	1+	Don't move too slow or the acrylic will cause surrounding areas to sag or catch on fire.
Acrylic	80 60 40	Engrave	55 70 85	300	.065	391	Any	1	Acrylics that are hard/brittle will leave better engrave marks.

Material	Wattage Machine	Mode	Percent Wattage	Speed MM/s	Scan Gap mm	DPI	Thickness	Passes	Notes
Acrylic - Mirrored	80 60 40	Cut	40 60 75	15 12 10	NA	NA	1/8 inch	2	Use first pass to get almost to the mirror backing. Use the second pass to finish the cut and polish the previously cut edge. Excessive heat will boil the mirror backing. Use high amount of air assist.
Granite	80 60 40	Engrave	85 85 85	150 120 101	.085	299	Any	1	Use high powers to engrave at slowest speeds. May rub high contrast paints into the cracks, then wipe off … to make the image POP into view.
Romark - multi-color	80 60 40	Engrave	12 15 18	325 325 350	.100	254	Any	1	Use scan gap thick enough to prevent plastic from rolling into globs. Use only enough air to get into the desired color plastic.
Plexi-Glass	80 60 40	Cut	50 70 85	12 10 7	NA	NA	Varies (1/8 inch)	1	Cut fast and hard. Make sure to get fumes out of work area fast. Do not breathe the fumes.
Styrofoam - Closed cell (Drinking cup)	80 60 40	Cut	12 15 15	45 45 45	NA	NA	Varies	1	Use long focal length lens. Use lots of air for cooling the Styrofoam. Cut in thin layers, glue layers together.
Styrofoam - Open Cell (Squishy foam for custom equipment cases)	80 60 40	Cut	12 15 18	25 25 25	NA	NA	Varies	1	Use long focal length lens. Use lots of air assist to keep cool.
Brick	80 60 40	Cut	70 80 85	35 25 10	NA	NA	Any	1	Use minimal air. Engrave with target slightly out of focus. Needs to be “engravable brick” to turn the sand into glass.
Mirror (Back)	80 60 40	Engrave	45 50 60	325 325 325	.085	299	Any	1	Laser power effects the paint and heat transfers to copper /silver film layers. The laser continues to scar the glass.
Leather	80 60 40	Engrave	45 50 60	325 325 325	.085	299	Any	1	Set Scan-Gap for resolution that you need for your design projects.
Leather	80 60 40	Cut	70 85 85	12 10 7	NA	NA	1/16 inch	1	Use lowest power with highest speeds to completely cut through the material. Higher speeds may be obtained by also increasing power.
Anodized Aluminum	80 60 40	Engrave	25 30 35	325 325 325	.065	391	Any	1	Set Scan-Gap for resolution that you need for your design projects. Aluminum can take a high resolution. Power settings vary for color.
Powder Coated Metal	80 60 40	Engrave	25 30 35	325 325 325	.085	299	Any	1	Set Scan-Gap for resolution that you need for your design projects. Don’t try to engrave all the way thru. Exposed metal may tarnish or rust.
Cermark	80 60 40	Engrave	50 55 60	300 300 300	.070	362	Any	1+	Too high of power will damage the Cermark. Too low power will not heat Cermark to stick to the material. The glass/metal/ceramic must be warm.

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More added as available….

Thank you,

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