Cloudray Cutting Parameters For Reference

Welcome to the Cloudray Laser Parameters Guide. This guide aims to provide Universal laser parameters for cutting on various materials.

It is important to note that there are several factors that affect the results of your machine's cutting and engraving. These factors include:

1. Make sure the laser tube is properly leveled
2. Make sure the laser is well and centered on the mirror
3. Make sure the laser is 100% straight down at the third mirror
4. Making sure the focusing of the laser is adequate (you should be getting a small sharp dot between .1mm - .3mm in diameter) on your material after you pulse the machine at 15% power
5. Proper air assist (lower PSI between 8-13 is recommended for engraving while a 20+ PSI is recommended for more efficient cuts)
6. Direct and efficient use at 17-19°C (with chiller settings around 63-68°C), as this temperature can continuously and efficiently increase the beam.
7. Focal Length: 1.5" Because focal length lenses are of better quality, 2" focal length lenses will allow for engraving cuts, 3" and 4" focal length lenses are more suitable for cutting their focal thick focal length and focal length materials.

Correct software settings

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Average Cutting settings for Plexiglass Acrylic of Various Thicknesses											
Thickness		3mm	5mm	8mm	1cm	15mm	20mm	25mm	30mm	35mm	40mm
25W	Maximum	8mm/s	4mm/s	1mm/s	—	—	—	—	—	—	—
	Best	5mm/s	2mm/s	—	—	—	—	—	—	—	—
40W	Maximum	15mm/s	8mm/s	4mm/s	3mm/s	—	—	—	—	—	—
	Best	10mm/s	5mm/s	2mm/s	—	—	—	—	—	—	—
60W	Maximum	20mm/s	10mm/s	5mm/s	4mm/s	2mm/s	1mm/s	—	—	—	—
	Best	15mm/s	7mm/s	3mm/s	2mm/s	0.8mm/s	0.3mm/s	—	—	—	—
80W	Maximum	25mm/s	12mm/s	9mm/s	6mm/s	3mm/s	1.5mm/s	0.5mm/s	—	—	—
	Best	20mm/s	8mm/s	5mm/s	3mm/s	1.5mm/s	0.5mm/s	0.2mm/s	—	—	—
100W	Maximum	30mm/s	15mm/s	10mm/s	7mm/s	4mm/s	2mm/s	0.8mm/s	0.3mm/s	—	—
	Best	25mm/s	10mm/s	6mm/s	4mm/s	2mm/s	0.7mm/s	0.3mm/s	—	—	—
150W	Maximum	40mm/s	21mm/s	15mm/s	11mm/s	7mm/s	4mm/s	1.8mm/s	0.8mm/s	0.4mm/s	0.1mm/s
	Best	35mm/s	15mm/s	10mm/s	7mm/s	4mm/s	1.5mm/s	0.8mm/s	0.5mm/s	0.1mm/s	—
180W	Maximum	45mm/s	25mm/s	18mm/s	16mm/s	9mm/s	5mm/s	2.5mm/s	1.3mm/s	0.6mm/s	0.2mm/s
	Best	40mm/s	18mm/s	12mm/s	10mm/s	6mm/s	2mm/s	1.2mm/s	0.8mm/s	0.3mm/s	0.1mm/s

Average Cutting settings for Baltic Birch Wood of Various Thicknesses									
Wattage	Parameter Settings	1.5mm	3mm	6mm	12mm	19mm	25mm	30mm	35mm
50w	Speed	15 mm/s	10 mm/s	5 mm/s	3 mm/s	N/A	N/A	N/A	N/A
	Power	20%	26%	37%	47%				
55w	Speed	17 mm/s	12 mm/s	5 mm/s	3 mm/s	N/A	N/A	N/A	N/A
	Power	20%	25%	35%	46%				
60w	Speed	16 mm/s	12 mm/s	6 mm/s	4 mm/s	2 mm/s	N/A	N/A	N/A
	Power	20%	25%	32%	45%	50%			
80w	Speed	25 mm/s	12 mm/s	7 mm/s	5 mm/s	4 mm/s	3 mm/s	N/A	N/A
	Power	20%	25%	30%	35%	43%	47%		
100w	Speed	30 mm/s	15 mm/s	7 mm/s	6 mm/s	5 mm/s	4 mm/s	2 mm/s	N/A
	Power	20%	25%	28%	35%	40%	45%	55%	
130w	Speed	35 mm/s	16 mm/s	8 mm/s	7 mm/s	6 mm/s	5 mm/s	3 mm/s	2 mm/s
	Power	18%	25%	27%	32%	37%	42%	47%	55%
150w	Speed	40 mm/s	17 mm/s	9 mm/s	8 mm/s	7 mm/s	6 mm/s	4 mm/s	2 mm/s
	Power	18%	24%	26%	30%	35%	40%	45%	52%

Average cutting settings for High Density Board(wood) of various thicknesses						
Thickness		3mm	5mm	10mm	15mm	18mm
25W	Maximum	5mm/s	2mm/s	—	—	—
	Best	3.5mm/s	—	—	—	—
40W	Maximum	9mm/s	5mm/s	—	—	—
	Best	7mm/s	3.5mm/s	—	—	—
60W	Maximum	15mm/s	10mm/s	3mm/s	—	—
	Best	12mm/s	8mm/s	—	—	—
80W	Maximum	20mm/s	13mm/s	5mm/s	—	—
	Best	15mm/s	10mm/s	3.5mm/s	—	—
100W	Maximum	23mm/s	15mm/s	7mm/s	2.5mm/s	—
	Best	18mm/s	13mm/s	5mm/s	—	—
150W	Maximum	30mm/s	21mm/s	12mm/s	7mm/s	4mm/s
	Best	25mm/s	18mm/s	9mm/s	5.5mm/s	—
180W	Maximum	33mm/s	25mm/s	14mm/s	9mm/s	5mm/s
	Best	28mm/s	21mm/s	11mm/s	7mm/s	4mm/s

Average Cutting Settings for Leather of Various Thicknesses					
Wattage	Parameter Settings	1.5mm	3mm	6mm	12mm
50w	Speed	20 mm/s	12 mm/s	3 mm/s	N/A
	Power	23%	30%	32%	
55w	Speed	20 mm/s	12 mm/s	3 mm/s	N/A
	Power	23%	30%	32%	
60w	Speed	20 mm/s	13 mm/s	4 mm/s	N/A
	Power	20%	28%	35%	
80w	Speed	25 mm/s	18 mm/s	6 mm/s	4 mm/s
	Power	18%	28%	32%	40%
100w	Speed	35 mm/s	23 mm/s	8 mm/s	5 mm/s
	Power	18%	25%	30%	38%
130w	Speed	40 mm/s	25 mm/s	9 mm/s	6 mm/s
	Power	17%	24%	28%	37%
150w	Speed	45 mm/s	26 mm/s	10 mm/s	7 mm/s
	Power	17%	23%	27%	35%

Average cutting settings for Wood (except for rare carbon wood)of various thicknesses					
Thickness		3mm	5mm	10mm	15mm
25W	Maximum	4mm/s			
	Best				
40W	Maximum	10mm/s	5mm/s		
	Best	8mm/s			
60W	Maximum	15mm/s	10mm/s	4mm/s	
	Best	12mm/s	8mm/s		
80W	Maximum	20mm/s	15mm/s	8mm/s	
	Best	18mm/s	10mm/s	6mm/s	
100W	Maximum	25mm/s	20mm/s	12mm/s	8mm/s
	Best	23mm/s	18mm/s	10mm/s	5mm/s
150W	Maximum	35mm/s	30mm/s	20mm/s	15mm/s
	Best	33mm/s	28mm/s	17mm/s	13mm/s
180W	Maximum	40mm/s	35mm/s	25mm/s	18mm/s
	Best	37mm/s	32mm/s	20mm/s	15mm/s

Average cutting settings for Knife template of various thicknesses				
Thickness		15mm	18mm	20mm
25W	Maximum	—	—	—
	Best	—	—	—
40W	Maximum	—	—	—
	Best	—	—	—
60W	Maximum	—	—	—
	Best	—	—	—
80W	Maximum	—	—	—
	Best	—	—	—
100W	Maximum	—	—	—
	Best	—	—	—
150W	Maximum	6mm/s	4mm/s	2.5mm/s
	Best	4.5mm/s	2.5mm/s	1.8mm/s
180W	Maximum	8mm/s	5mm/s	3.5mm/s
	Best	6mm/s	3.5mm/s	2.5mm/s

Average cutting settings for PVC of various thicknesses				
Thickness		2mm	3mm	4mm
25W	Maximum	15mm/s	12mm/s	—
	Best	13mm/s	10mm/s	—
40W	Maximum	35mm/s	30mm/s	25mm/s
	Best	32mm/s	27mm/s	20mm/s
60W	Maximum	50mm/s	40mm/s	35mm/s
	Best	45mm/s	38mm/s	30mm/s
80W	Maximum	60mm/s	50mm/s	45mm/s
	Best	58mm/s	48mm/s	40mm/s
100W	Maximum	70mm/s	60mm/s	55mm/s
	Best	68mm/s	58mm/s	50mm/s
150W	Maximum	90mm/s	80mm/s	75mm/s
	Best	88mm/s	78mm/s	73mm/s
180W	Maximum	100mm/s	90mm/s	85mm/s
	Best	98mm/s	88mm/s	80mm/s

Average cutting settings for Rubber sheet of various thicknesses			
Thickness		4mm(1mm)	6mm(2mm)
25W	Maximum	5mm/s	2mm/s
	Best	4mm/s	1mm/s
40W	Maximum	15mm/s	10mm/s
	Best	13mm/s	8mm/s
60W	Maximum	25mm/s	15mm/s
	Best	20mm/s	10mm/s
80W	Maximum	30mm/s	18mm/s
	Best	27mm/s	15mm/s
100W	Maximum	35mm/s	20mm/s
	Best	33mm/s	18mm/s
150W	Maximum	45mm/s	30mm/s
	Best	43mm/s	28mm/s
180W	Maximum	50mm/s	35mm/s
	Best	48mm/s	33mm/s

Average cutting settings for paper of various thicknesses		
Thickness		Single
25W	Maximum	50mm/s
	Best	40mm/s
40W	Maximum	80mm/s
	Best	40mm/s
60W	Maximum	120mm/s
	Best	40mm/s
80W	Maximum	150mm/s
	Best	40mm/s
100W	Maximum	250mm/s
	Best	40mm/s
150W	Maximum	450mm/s
	Best	40mm/s
180W	Maximum	550mm/s
	Best	40mm/s

Average cutting settings for ABS of various thicknesses		
Thickness		2mm
25W	Maximum	10mm/s
	Best	7mm/s
40W	Maximum	15mm/s
	Best	13mm/s
60W	Maximum	25mm/s
	Best	20mm/s
80W	Maximum	35mm/s
	Best	30mm/s
100W	Maximum	40mm/s
	Best	35mm/s
150W	Maximum	55mm/s
	Best	50mm/s
180W	Maximum	65mm/s
	Best	60mm/s

Average cutting settings for cotton material of various thicknesses		
Thickness		Single
25W	Maximum	25mm/s
	Best	20mm/s
40W	Maximum	40mm/s
	Best	38mm/s
60W	Maximum	60mm/s
	Best	58mm/s
80W	Maximum	100mm/s
	Best	98mm/s
100W	Maximum	200mm/s
	Best	195mm/s
150W	Maximum	400mm/s
	Best	395mm/s
180W	Maximum	500m/s
	Best	495mm/s

Average Engraving Settings of Various Materials							
Wattage	Parameter Settings	Clear Acrylic	Wood	Glass	Leather	Faux Leather	Tile/Stones
50w-55w	Speed	275 mm/s	150 mm/s	175 mm/s	350 mm/s	375 mm/s	125 mm/s
	Power	22%	21%	19%	19%	18%	20%
60w	Speed	300 mm/s	180 mm/s	200 mm/s	375 mm/s	400 mm/s	145 mm/s
	Power	20%	20%	19%	17%	16%	19%
80w	Speed	325 mm/s	200 mm/s	225 mm/s	400 mm/s	425 mm/s	145 mm/s
	Power	18%	19%	18%	16%	15%	18%
100w	Speed	350 mm/s	200 mm/s	250 mm/s	425 mm/s	450 mm/s	165 mm/s
	Power	15%	18%	18%	16%	15%	18%
130w	Speed	375 mm/s	225 mm/s	275 mm/s	450 mm/s	475 mm/s	185 mm/s
	Power	15%	18%	16%	16%	15%	18%
150w	Speed	375 mm/s	225 mm/s	275 mm/s	450 mm/s	475 mm/s	185 mm/s
	Power	15%	18%	16%	16%	15%	18%

These are the average settings to start off with and are focused on having low power settings. You would want to run sample tests first. Depending on your desired finish and look you will have to adjust the settings accordingly.

Remember there is a power/speed ratio correlation. The more you increase the speed the less power is focused on the area.

For example, if you want an engraving to look darker you don't always have to increase power, you can slow down the speed. The same goes for cutting, if you didn't get a good cut, you can reduce the speed. If you want to increase speed you will also have to slightly increase power. This power/speed ratio correlation is the fundamental basis of engraving and cutting.

We don't recommend surpassing 70% max power for any project. If your machine is well

tuned and the software settings are correct you can get the desired cuts or engraving quality with no more than 50-60% max power. Running your machine above 70% max power or above 20 amps constantly, will shorten the lifespan of your laser tube.

It is important to note that using the machine constantly between 70%-99% max power will drastically reduce the lifespan of the laser tube.
Never leave your machine unattended during operation.