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## **Fibre Laser Sheet Metal Cutting Performance Sheet**

*This is a General Fiber Laser Machine Buying Guide, Small Different for Different Laser Source Brands apply.  
Detailed Perforation Times, Gas Pressures, Nozzle Distance etc, Check Documents on [www.CNCU.co.za](http://www.CNCU.co.za)*


# Cutting Speed Sheet


FIBRE LASER WATTAGE		500W	1000W	1500W	2000W	3000W	4000W	6000W	8000W	10000W	12000W
MATERIAL	Thickness	Cutting Speed (Metre/Min)									
MILD STEEL	1 mm	7.0 - 8.0	9.0 - 10	8 - 10	8.0 - 10	8.0 - 10	8 - 10	8 - 10	8 - 10	9 - 11	9 - 11
	2 mm	3.5 - 4.5	4.5 - 5.5	4.8 - 5.5	5.0 - 6.5	5.0 - 6.5	5 - 6	5 - 6	5 - 7.5	5 - 7.5	5 - 7.5
	3 mm	2 - 3.0	3.0 - 3.5	3.3 - 3.7	3.8 - 4.8	4.0 - 5.0	4.0 - 4.5	3.5 - 4.5	3.5 - 5	3.5 - 5.5	3.5 - 5.5
	4 mm	1.3 - 1.5	2.0 - 2.4	2.4 - 2.8	2.8 - 3.5	3.5 - 4.2	3.2 - 3.8	3.2 - 3.8	3.0 - 4.5	3.5 - 5	3.5 - 5
	5 mm	0.9 - 1.1	1.6 - 1.8	2.0 - 2.5	2.5 - 3.0	2.6 - 3.5	3.0 - 3.6	3.0 - 3.6	3.0 - 4.2	3.3 - 4.0	3.3 - 4.8
	6 mm	0.6 - 0.8	1.4 - 1.6	1.5 - 2.0	1.8 - 2.6	2.5 - 3.2	2.5 - 3.0	4.2 - 5.0	2.6 - 3.7	3.0 - 4.0	3.0 - 4.2
	8 mm	0.3 - 0.7	0.9 - 1.1	1.0 - 1.4	1.2 - 1.8	1.8 - 2.6	2.3 - 2.7	3.5 - 4.2	2.3 - 3.5	2.5 - 3.5	2.5 - 3.5
	10 mm	0.2 - 0.3	0.7 - 0.8	0.8 - 1.1	1.1 - 1.3	1.4 - 2.0	2 - 2.4	2.2 - 2.8	2 - 2.5	2.0 - 2.7	2.2 - 2.7
	12 mm		0.5 - 0.65	0.6 - 0.8	0.9 - 1.2	1.2 - 1.6	1.2 - 1.6	1.8 - 2.3	1.2 - 2.1	1.2 - 2.1	1.2 - 2.1
	14 mm			0.5 - 0.7	0.7 - 0.8	0.9 - 1.2	0.9 - 1.2	1.2 - 1.8	1.2 - 1.9	1.7 - 1.9	1.7 - 1.9
	16 mm				0.6-0.7	0.8 - 1.0	0.8 - 1.0	0.8 - 1.3	0.8 - 1.5	1.1 - 1.7	1.2 - 1.7
	18 mm				0.4 - 0.6	0.6 - 0.8	0.6 - 0.9	0.6 - 0.9	0.8 - 1.5	0.8 - 1.6	1.0 - 1.8
	20 mm					0.5 - 0.8	0.5 - 0.8	0.5 - 0.8	0.6 - 1.3	0.6 - 1.4	0.6 - 1.5
	22 mm					0.5 - 0.7	0.4 - 0.8	0.4 - 0.8	0.5 - 0.8	0.6 - 1.4	0.5 - 1.5
25 mm						0.3 - 0.4	0.3 - 0.55	0.3 - 0.7	0.5 - 1.0	0.5 - 1.1	
STAINLESS STEEL (e.g., 3CR12)	1 mm	8.0 - 12	12 - 15	18 - 20	22 - 30	30 - 40	32 - 45	42 - 52	50 - 65	60 - 72	60 - 80
	2 mm	2.5 - 2.8	4.5 - 5.5	5.5 - 7.0	9.0 - 11	17 - 24	20 - 28	20 - 33	30 - 40	35 - 45	40 - 66
	3 mm	0.7 - 1.1	1.8 - 2.0	2.0 - 2.8	4.0 - 6.5	8.0 - 10	12 - 15	15 - 22	18 - 27	20 - 30	35 - 45
	4 mm	0.6 - 0.7	1.2 - 1.3	1.4 - 1.8	3.0 - 4.2	4.5 - 6.0	7.0 - 8.0	10 - 15	12 - 16	15 - 22	20 - 32
	5 mm		0.6 - 0.7	0.7 - 1.1	1.8-2.5	3.0 - 4.0	4 - 5.5	8.0 - 12	10 - 15	10 - 18	18 - 25
	6 mm		0.5 - 0.6	0.6 - 0.8	1.3-1.6	2.0 - 3.5	2.5 - 4.0	6.8 - 8.0	6.0 - 10.0	8 - 12	12 - 15
	8 mm			0.3 - 0.5	0.6-1.0	1.5 - 1.7	1.2 - 2.0	3.0 - 4.0	3.5 - 5.0	5.0 - 7.5	8 - 12
	10 mm				0.4-0.5	0.5 - 0.8	0.8 - 1.2	2.0 - 2.5	2.0 - 2.7	3.0 - 7.0	6.0 - 8.0
	12 mm					0.4 - 0.6	0.5 - 0.8	0.8 - 1.5	1.2 - 2.0	2.5 - 3.9	4.0 - 5.5
	14 mm						0.4 - 0.6	0.6 - 0.8	1.2 - 1.8	1.8 - 2.8	3.0 - 5.0
GALVANIZED STEEL	16 mm							0.5 - 0.8	1.0 - 1.6	1.7 - 2.3	2.2 - 2.8
	18 mm							0.4 - 0.6	0.8 - 1.2	1.2 - 1.8	1.2 - 2.0
	20 mm							0.3 - 0.5	0.4 - 0.7	0.9 - 1.5	1.0 - 1.6

FIBRE LASER WATTAGE		500w	<b>1000W</b>	<b>1500W</b>	<b>2000W</b>	<b>3000W</b>	<b>4000W</b>	6000W	8000W	10000W	12000W
ALUMINIUM	1 mm	4.0 - 5.0	6.0 - 8.0	10 - 15	17 - 18	25 - 35	30 - 37	35 - 45	40 - 50	40 - 50	40 - 60
	2 mm	0.7 - 1.0	2.8 - 3.2	5.0 - 7.0	7 - 10	10 - 15	10 - 15	12 - 25	18 - 35	18 - 35	22 - 35
	3 mm		0.7 - 1.5	2.0 - 2.5	4.0 - 6.0	6.5 - 8.0	7.0 - 13	15 - 25	20 - 33	25 - 35	30 - 40
	4 mm		0.3 - 0.7	1.3 - 1.5	2.5 - 3.0	3.5 - 5.0	4.0 - 5.5	9.5 - 12	13 - 18	15 - 25	20 - 30
	5 mm			0.7 - 1.0	1.3 - 1.6	2.5 - 3.5	3.0 - 4.5	5.0 - 8.0	9.0 - 12	13 - 20	15 - 25
	6 mm				0.7 - 1.0	1.5 - 2.5	2.8 - 3.2	3.8 - 5.0	4.5 - 8.0	9.0 - 12	10 - 15
	8 mm				0.5 - 0.8	0.7 - 1.0	0.9 - 1.6	2.0 - 2.5	4.0 - 5.5	4.5 - 6.5	7.0 - 12
	10 mm					0.4 - 0.7	0.7 - 1.0	1.0 - 1.5	2.2 - 3.0	2.8 - 4.0	4.5 - 8.0
	12 mm					0.3 - 0.45	0.4 - 0.6	0.8 - 1.0	1.5 - 1.8	1.9 - 2.5	4.0 - 5.0
	16 mm						0.3 - 0.4	0.5 - 0.8	1.0 - 1.6	1.5 - 2.0	1.5 - 2.5
	20 mm							0.5 - 0.7	0.7 - 1.0	0.8 - 1.2	0.9 - 1.5
	25 mm							0.3 - 0.5	0.4 - 0.7	0.6 - 0.8	0.6 - 0.9
30 mm								0.3 - 0.6	0.3 - 0.7	0.3 - 0.8	
BRASS - COPPER	1 mm	2.3 - 2.5	8 - 10	10 - 13	10 - 16	20 - 30	25 - 35	35 - 45	40 - 55	50 - 60	55 - 65
	2 mm	0.5 - 0.9	2.8 - 3.6	3.0 - 4.5	4.5 - 5.5	10 - 14	8.0 - 12	20 - 30	28 - 40	33 - 40	38 - 50
	3 mm		0.5 - 1.0	1.5 - 2.2	2.5 - 3.5	4.0 - 6.0	5.0 - 8.0	9.0 - 12	20 - 30	15 - 23	20 - 30
	4 mm		0.3 - 0.4	1.0 - 1.6	1.5 - 2.0	3.0-4.0	3.2 - 5.5	6.0 - 8.0	10 - 15	10 - 16	15 - 20
	5 mm			0.5 - 0.7	0.6 - 1.0	1.5 - 2.0	2.0 - 3.0	4.5 - 6.0	6.0 - 9.0	9.0 - 13	10 - 15
	6 mm				0.4 - 0.7	1.0 - 1.8	1.4 - 2.0	3.0 - 4.5	4.5 - 6.5	7.0 - 9.0	6.0 - 8.0
	8 mm					0.5 - 0.7	0.7 - 1.2	1.8 - 2.2	2.4 - 4.0	4.5 - 6.5	5.0 - 7.0
	10 mm						0.2 - 0.5	0.8 - 1.2	1.5 - 2.2	2.4 - 4.0	4.5 - 6.5
	12 mm							0.3 - 0.5	0.8 - 1.2	1.5 - 2.2	2.4 - 4.0
	14 mm							0.3 - 0.4	0.4 - 0.6	0.6 - 1.2	0.8 - 1.5

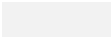


Aluminium and Brass/Copper reflect Laser. Long-time cutting of such material is not recommended because may result damaged of machine. All-Metal (IPG) model fiber source suggested.

# Based on clear, oil free cutting surface. Coating, Painted, Dirty, Rusted, Filmed surface still can cut, cutting thickness is the same, but finish less idea.

 Maximum thickness with reasonable finish, not a recommend thickness when make purchase decision. Please use the thickness one level above for such purpose.

 Maximum cut through thickness (Severance).

# Shield Gas

		Compressed Dried Air	≥ 10 Bar	Suitable for Aluminium ≤ 2mm, Can Use for Other Metal (≤ 2mm) but Cutting Edge Won't be Smooth
N <sub>2</sub>		Nitrogen ≥ 99.99% Purity	≥ 10 Bar ~ 80L / Hour	Suitable for Metal with Shining Surface, Result Smooth Cutting Edge and Shininess Thicker Metal Steel, Higher Oxygen Pressure, Otherwise No Shininess Because of Oxidize by Air
O <sub>2</sub>		Oxygen ≥ 99.95% Purity	≤ 10 Bar ≤ 60L / Hour	Suitable for Mild Steel but Cutting Edge will be Oxidized Thicker Mild Steel, Lower Oxygen Pressure, Otherwise Result Wider Area of Oxidized Edge

# Minimum Requirements

Electricity:	380V Three Phase
Power:	4kW Laser: Consumption 30KVA, Rated Current 48A
	3kW Laser: Consumption 25KVA, Rated Current 42A
	2kW Laser: Consumption 22KVA, Rated Current 35A
	1.5kW Laser: Consumption 18KVA, Rated Current 28A
	1kW Laser: Consumption 15KVA, Rated Current 25A
Temperature:	Air-Conditioned, within 18°C to 24°C
Humidity:	≤ 75%

Updated at: 2021.09.01, Laboratory Guideline Figures, real-life results may slightly off.