



MASTER LASER SETTINGS LIBRARY

Professional Edition

Complete Guide - All Laser Types

CO2 • Diode • Fiber Lasers

Compiled by LaserForge AI | Code Crafted Nexus, LLC

CO2 LASERS (40W-60W)

Examples: Glowforge, xTool P2, OMTech

Material	Task	Power	Speed	Air Assist
Plywood (3mm)	Cut	60-70%	15-20 mm/s	High
Acrylic (3mm)	Cut	50-60%	10-15 mm/s	Low/Off
Walnut (6mm)	Engrave	25-30%	350-400 mm/s	On
Leather (3oz)	Engrave	15-20%	300-350 mm/s	On
Glass	Engrave	30-40%	250-300 mm/s	Off
Anodized Aluminum	Mark	20-25%	250 mm/s	Off

DIODE LASERS (10W-20W)

Examples: xTool D1 Pro, Ortur, Creality

Material	Task	Power	Speed	Air Assist
Plywood (3mm)	Cut	100%	3-5 mm/s	High
Acrylic (Black)	Cut	100%	2-4 mm/s	High
Pine Wood	Engrave	40-50%	3000-5000 mm/min	On
Slate	Engrave	80-90%	2000-3000 mm/min	Off
Stainless Steel*	Mark	100%	500-1000 mm/min	Off
Cardboard	Cut	60%	15-20 mm/s	On

***Note:** Diode lasers require marking spray (like Brilliance or Cermark) for bare stainless steel unless they are 20W+ and moving very slowly.

FIBER LASERS (20W-30W)

Examples: Cloudray, Raycus (Metal Focused)

Material	Task	Power	Speed	Air Assist
Stainless Steel	Deep Engrave	90%	500 mm/s	N/A
Aluminum	Mark	30-40%	1500 mm/s	N/A
Brass (Thin)	Cut	100%	100 mm/s	N/A
Titanium	Color Mark	20-50%	1000-2000 mm/s	N/A
ABS Plastic	Mark	15-20%	2000 mm/s	N/A

OPERATIONAL NOTES

1. Speed Units:

- Diode lasers typically use **mm/min**
- CO2/Fiber often use **mm/s**
- Always check your software (LightBurn/LaserGRBL) units

2. **Focal Depth:** Ensure your Z-axis is calibrated. A 1mm height error can reduce effective power by 30%.

3. **Marking Metal:** Diode lasers require marking spray (like Brilliance or Cermark) for bare stainless steel unless they are 20W+ and moving very slowly.

4. Laser Types:

- CO2: Best for wood, acrylic, glass, leather
- Diode: Good for wood, some plastics, requires spray for metal
- Fiber: Specialized for metal marking and engraving

SAFETY WARNING

- Never leave your laser unattended while operating
- Always wear appropriate laser safety glasses for your laser type:
 - CO2: OD 5+ @ 10,600nm
 - Diode: OD 5+ @ 445nm
 - Fiber: OD 5+ @ 1064nm
- Ensure proper ventilation when cutting/engraving
- NEVER laser PVC, vinyl, or unknown plastics (toxic fumes)
- Keep a fire extinguisher nearby
- Fiber lasers can cause permanent eye damage instantly - use protective enclosures



LaserForge AI

For dynamic AI-optimized calculations, download the LaserForge AI mobile application

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DISCLAIMER: These are baseline reference values, not machine-specific calibrations. Always perform a 10x10 power/speed matrix test on scrap material before working on your final piece.