LASER MARKING INSTRUCTIONS

Laser Marking Instructions for CO2 Lasers:

1. Select the proper TherMark Laser Marking Material for particular use (LMM14 for Metals or Other for Ceramics).
2. Be sure the area to be marked is clean and free of oil and foreign material.
3. Our Laser Marking Material may be used as supplied, or thinned (1/3) with demineralised water or best results use commercially available denatured alcohol. Some containers may be in liquid or powder form depending on manufacturing process for the material. Containers are not filled to capacity so that they can be prepared. Shake or mix marking material thoroughly. (Usage: Pure LMM14.500 will engrave 3500 square inches. Mixed with alcohol 30%, will engrave 5500 square inches.)
4. Apply Laser Marking Material to the surface of the part; uniformly sponge brush, paintbrush, spray, or dab material onto surface. Varying the thickness of the coating will change the color and strength of the mark – more is not always better.
5. Allow Laser Marking Material to dry – a fan, heat gun, hot plate, warming lamp, or oven may be used. Material will not mark well if wet.
6. Set the part into laser marking machine. Focus laser beam according to your machine, adjust laser power and machine speed according to Table A.
7. Laser mark the part, and then remove from laser machine.
8. Wiping or rinsing off excess marking material with water can clean the part. A pail of wash water may be useful to contain and aid in recovery or disposal of the excess material.

LMM14.6 Spray Can: (1) For best usage\application, make sure the can is at room temperature. During transit in cold months the contents tends to settle and clog. Its best if the can is set on its SIDE and allowed to warm to room temperature and shake well before usage. (2) Warranty replacement on this product is for forty five days (45) from receipt. In the event of warranty replacement, the spray tip and label will need to be returned to manufacturer for evaluation\replacement.

ALLOY	Marking Material Part No.	% Power	% Speed	Expected Results
Stainless Steel (SST)	**TherMark MLM14.**** **Usage: 500grams= 3500/2”** **Usage: 500g +30% alcohol= 5500/2”**	**100%**	**3-5% w/12w Laser** **25% w/25w Laser** **30% w/30w Laser** **50% w/50w Laser**	**Black Marks (Ma.)**
Pewter	**TherMark MLMM14**	**100%**	**30%**	**Black Marks (Ma.)**
Uncoated Brass	**TherMark MLMM14.****	**100%**	**1 to 15%**	**Black Marks (Ma.)**
Bare Aluminum	**TherMark MLMM14.****	**100%**	**5 to 8% w/ 25w** **10 to 13% w/30w** **15 to 18% w/50w**	**Black Marks (Ma.)**
Black Oxide Coating on Metal	**TherMark MLMM01.****	**100%**	**25% @ 25w**	**Silver Marks (Ma.)**
Clear or Dark Glass	**TherMark MLMM12.****	**60%**	**20%**	**Opaque Black/Grey Ma.**

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APPLICATION NOTES

- Ø Using 2" inch focal length in focus with a PPI = 500, DPI = 500. Various alloys and material application thickness will vary results attained.
- Ø All marking done with 30 Watt Laser.
- Ø Best results if material is sprayed onto work piece.
- Ø Usage: Pure MLMM14.500 will engrave 3500 square inches. Mixed with alcohol 30%, will engrave 5500 square inches.
- Ø ** Is the amount in Grams purchased Example: MLMM141.50 for 50grams, etc. contents in bottle.
- Ø - LMM12 Products is mainly for glass and ceramic. It works well on glass, ceramic glazing, and fired porcelain tile.
  - LMM12 Products with CO2 laser energy does not work well on Stainless Steel (SST). It does ***not*** work on brass and aluminum. TherMark does however work very well on metals with nd:YAG lasers, but still does ***not*** bond to brass and aluminum.
  - LMM14 Products (MLMM14**) is for metal marking. It works well on all SST, Chrome, Cad plating, zinc plaiting. MLMM14 works on most alloys of brass and most alloys of aluminum. TherMark works very well on pewter.
  - LMM14 Products does not work on glass, ceramic glaze, or porcelain tiles. Some alloys of brass will tarnish heavily from MLMM14. The tarnished brass can be polished up with a brass cleaner like TarnX for brass some alloys of aluminum will not mark with MLMM14.

Laser Marking Instructions for YAG\Fiber Lasers:

Follow the instruction above for selecting proper laser material and cleaning. You should run your YAG laser in continuous wave (CW) mode or the highest pulse frequency possible. There are different laser settings for each type of metal, see chart below:

Material	Laser Type	Power	Speed	Hatch Spacing	DPI	Pulse Rate
Stainless Steel	Fiber/YAG	10 watts	**2 IPS**	0.001		CW/25-50 KHz
Titanium	Fiber/YAG	6 watts	**6 IPS**	0.0015		CW/25-50 KHz
Chrome Plate	Fiber/YAG	10 watts	**2 IPS**	0.001		CW/25-50 KHz
Cast Aluminum	Fiber/YAG	10 watts	**2 IPS**	0.001		CW/25-50 KHz

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TOOL STEEL	FIBER/YAG	10 WATTS	**5 IPS**	0.001		CW/25-50 KHZ
MU METAL	FIBER/YAG	10 WATTS	**5 IPS**	0.001		CW/25-50 KHZ
CAD PLATED STEEL	FIBER/YAG	10 WATTS	**5 IPS**	0.0015		CW/25-50 KHZ/25-50 KHZ
ALODINE PLATED ALUMINUM	FIBER/YAG	10 WATTS	**2 IPS**	0.001		CW/25-50 KHZ
INVAR	FIBER/YAG	10 WATTS	**5 IPS**	0.001		CW/25-50 KHZ
BRASS	FIBER/YAG	10 WATTS	**2 IPS**	0.001		CW/25-50 KHZ
TUNGSTEN	MARK FIBER/YAG	7 WATTS	**2 IPS**	0.001		CW/25-50 KHZ
ALL GLASS AND COLORS	FIBER/YAG	4.5 WATTS	**8 IPS**	0.002		CW/25-50 KHZ