

Technical Data Sheet

LMM-6000 & LMM-14 Frequently asked questions



LMM-6000 is a laser marking material for metals, available in a concentrate or Aerosol can. LMM-6000 is ethanol based product, which allows for a fast drying time. Due to the flammability of the LMM-6000 there are **HAZARDOUS** shipping cost applied.

LMM-14 is a non-flammable water base material for metals, available in a concentrate or an Aerosol can. The LMM-14 Paste is non-flammable, you will need to thin this product before use. See instructions below.

Q. How do I apply LMM-6000 & LMM-14?

These products can be applied using the following application methods: spray, brush or screen print. These products should be applied directly to the metal substrate, but care must be taken to ensure that an even coat is applied. The LMM-6000 & LMM-14 can be applied using spray and foam brush applications methods. Any variation in the coating such as brush marks may translate into variation in the final mark appearance. Spraying will give you the best results and the most evenly applied coating. **When spraying these products we recommend the product be applied in a well ventilated area or spray booth designed to pull air away from user.**

Q. How much LMM-6000, & LMM-14 do I apply?

You should apply only enough of these products to hide the metal surface. Applying more will result in having to use more laser power to create marks; it will not make the marks darker.

Q. How do I thin LMM-6000, & LMM-14?

LMM-6000 & LMM-14 can be thinned with denatured alcohol, ethanol, acetone or methyl ethyl ketone (MEK). Add the thinner to the LMM-6000 and stir or shake thoroughly. Isopropyl alcohol should be avoided.

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Q. How much thinner do I need?

In a brush on application the LMM-6000 & LMM-14 should be thinned 2 parts ethanol 1 part LMM-6000 & LMM-14 more ethanol if needed. We recommend a maximum thinning ratio of 1 part LMM-6000 & LMM-14 to 1 part ethanol for spraying. Ethanol can also be added to help aid in brushing, it will help brush marks flow out. MEK and acetone are stronger solvents; therefore less thinning will be needed when using these solvents.

Q. How do I clean LMM-6000 & LMM-14 off of the metal?

LMM-6000 & LMM-14 can be cleaned using plain water.

Q. What metals does LMM-6000 & LMM-14 work on?

LMM-6000 & LMM-14 has been tested on stainless steel, aluminum, brass, copper, nickel, silver, and titanium. LMM-6000 & LMM-14 will not work on metals that have a coating or protective clear lacquer.

Q. How long will the marks last? How tough are they?

Marks made using LMM-6000 & LMM-14 are permanent. Marks made with LMM-6000 & LMM-14 are generally considered to be as tough as the metal they are applied on. Physical testing has shown them to be resistant to many common strong acids, bases, organic solvents and extreme heat or cold. LMM-6000 & LMM-14 also have good salt spray resistance, scratch resistance and QUV resistance.

Q. How high or thick are the marks?

Marks made with LMM-6000 & LMM-14 have been examined by a scanning electron microscope and have been found to be approximately 10 μm or 0.0004 inches (0.4 mil) high.

Q. Can I reuse LMM-6000 & LMM-14?

LMM-6000 & LMM-14 should not be used if it has dried out. LMM-6000 & LMM-14 also should not be reused by washing it off of a part then respraying the washed off material. Reused LMM-6000 & LMM-14 will not produce a high quality mark. Performance characteristics will also be affected.



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Q. What kind of laser do I need?

LMM-6000 & LMM-14 can be used with CO₂, YAG, YVO₄, or Fiber laser marking systems. When using YAG, YVO₄ and Fiber laser systems a continuous wave system is recommended. Some pulse systems may work, this depends on the frequency rate capabilities within the system.

Q. How much power should I use?

The power settings that LMM-6000 & LMM-14 will work best at vary depending on the laser being used. For example, with a 35 watt CO₂ laser, marking on stainless steel requires the use of 100% power at a write speed of 4-8 inches per second. Marking on aluminum requires 100% power at a write speed of 1-4 inches per second with the same laser. A more powerful laser will be able to make the same mark using less power or writing faster. Also, aluminum, copper, brass and other soft, heat conductive metals require higher powers and slower writing speeds. These metals will conduct heat away from the marking area faster than steel, thus requiring more heat (power) to make a mark. Your power settings will vary depending on the laser used and the substrate being marked, so some experimentation may be necessary to achieve the best mark.

Q. Does LMM-6000 & LMM-14 work on glass?

No. The LMM-6000 & LMM-14 are not formulated to be used on glass surfaces. It is designed to work only on metal surfaces. CerMark also offers the LMC series products for laser marking on glass and ceramic substrates.

Q. Will LMM-6000 & LMM-14 work on coated metals?

No. If the metal has a protective coating on it, the coating must be removed before it can be marked. The protective coating will interfere with LMM-6000 & LMM-14 ability to bond to the surface of the metal.

Q. Will LMM-6000 & LMM-14 work on anodized metals?

LMM-6000 & LMM-14 has generally been found to not work on anodized metals, but in some cases satisfactory results have been reported. We recommend experimentation if possible to determine if LMM-6000 & LMM-14 will work in your particular application. The CerMark LMM-6904 is formulated for use on anodized surfaces.

Q. How many marks can I get from 500 grams of LMM-6000 & LMM-14?

When thinned and used as recommended, 500 grams LMM-6000 & LMM-14 should provide approximately 6000 square inches of coverage. The number of marks you can make will depend on the size of the mark and how much material you apply to the substrate.



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Q. Can I get blacker marks with a thicker coat of LMM-6000 & LMM-14?

No. Additional LMM-6000 & LMM-14 film thickness will only result in more power being needed to make a mark; it will not make the marks any darker.

Q. What other colors for metal are currently available?

Currently we offer a black LMM-6000 & LMM-14 on metal substrates. CerMark also offers LMM-6150 Pearl (off white) and LMM-6151 Copper which will mark on stainless steel, Black Oxide and Black Parkerized metals widely used for firearms and knives and a variety of tools. Contact us for more information.

Q. Can you screen-print the LMM-6000 or LMM-14?

NO! This is not recommended.



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Appendix to LMM-6000 Aerosol Can Instructions

How to prevent the LMM-6000 Aerosol Can from Clogging

LMM-6000 is our laser marking material for metals. **LMM-6000** is ethanol based which allows for a fast drying time. It can be used on a variety of bare metal substrates including stainless steel, brass, aluminum, titanium, tin, copper, nickel and the like. If the metal has a **lacquered** coating, the **LMM-6000** marking material **will not work**.

LMM-6000 is ready to use in aerosol can form. **IMPORTANT: Shake can well before using. Allow the agitator ball to rattle for at least 2 minutes. Failure to shake thoroughly can result in spitting and clogging of the nozzle.** For best results, use when can is between 70 and 90 degrees F. Complete instructions are available in the Technical Publication “LMM-6000 Aerosol Can Instructions”.

Preventing Clogging Problems

The **LMM-6000** Aerosol Can package has in the past been known to clog or spit during normal usage. These issues were related to the material settling in the bottom of the can. The settled material could be sucked into the nozzle and valve system within the aerosol can, causing a clog. ***The LMM-6000 Aerosol Can has been reformulated to correct this issue, and the settling has been largely eliminated.***

To help prevent this condition, we recommend a thorough cleaning of the nozzle after each use of the can. The nozzle should be removed from the can and cleaned with warm water.

After use, invert the can and spray approximately 3-5 seconds.