

LASERS & THERMARK

TherMark laser marking materials work with almost any laser to expand and improve the capabilities of the laser alone. Regardless of whether you already own a laser(s) or are looking to buy one, it is important to understand how TherMark products can help you with laser marking. For this discussion, we will focus on the practical marking applications of two classes of lasers: CO2 lasers and solid state lasers (solid state lasers can include fibre, Nd:YAG, and Vanadate).

CO2 lasers on their own

CO2 lasers are the most inexpensive way to get involved in laser marking. They are commonly used to mark, etch and/or cut organic materials such as wood, plastic and glass. CO2 lasers typically range in price based on power and quality from as low as Rs. 3.5 lac up to about Rs. 20 lac. Two major drawbacks of CO2 lasers are that they have very little metal marking capabilities and they cause micro-fractures when used to etch glass.

CO2 lasers are commonly supplied as XY table systems which are driven in a similar way to a standard printer. These systems are most appropriate for small custom jobs or medium-size batch jobs. Now, increasingly, laser manufacturers are offering beam steered CO2 systems designed to be integrated into production lines. These systems allow for higher volume processing.

CO2 lasers with TherMark laser marking materials

The primary benefit of using TherMark laser marking materials with CO2 lasers is the ability to mark metals. We offer a number of products which enable CO2 laser users to create permanent, high-contrast, high-resolution black marks on almost any metal, including anodized aluminium and chrome or nickel plating.

This combination gives the user the best of both worlds: the low entry cost of a CO2 laser and the advanced capability of laser marking metals. Additionally, even a more expensive solid state laser cannot produce black marks on anodized aluminium and chrome or nickel plating – this is only possible with TherMark laser marking material.

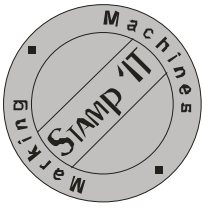
Finally, TherMark laser marking materials for glass and ceramic allow CO2 laser users to make black or single colour marks on these substrates, as well. While micro-fracturing of glass may still occur, TherMark laser marking materials absorb most of the laser's thermal energy and protect the glass.

Solid state lasers on their own

While solid state lasers are beginning to drop in price, they are still a far more expensive alternative to CO2 lasers, commonly ranging from Rs. 15 lac – Rs. 40 lac . The two major advantages solid state lasers offer over CO2 are they are able to mark on metal and they offer a smaller spot size (enabling them to mark faster and in finer detail than a CO2). Solid state lasers are used primarily for marking on metals (carbon migration or annealing) and plastics. Since the wavelength of the beam in a solid state lasers passes through glass, direct marking of glass is not practical.

It is important to understand that direct marking on metal with a solid state laser is actually changing (and often weakening) the metal being marked making it unsuitable for critical structural applications. These marks can be susceptible to corrosion in harsh environments (salt spray, chemical etc.) and fade over time with extended UV exposure. The contrast and subsequent visibility of the mark can be highly depended on the viewing angle.

Solid state lasers primarily come as beam steered systems, appropriate for small jobs all the way up to high volume integrated manufacturing.



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Solid state lasers with TherMark laser marking materials

The primary benefits of using TherMark laser marking materials with solid state lasers are the ability to make black or colour marks on glass & ceramic and to improve the quality of direct marks on metal with minimal damage to these substrates.

The ability to mark on glass and ceramic is only available when using TherMark laser marking materials. This opens up many potential applications: automotive glass, porcelain sanitary ware, pharmaceutical & scientific glass, decorative glass & tile, dinnerware or cookware, etc.

While solid state lasers can create direct marks on many metals, these marks have a poor viewing angle, are often brownish-black rather than true black, fade with extended UV exposure, and allow corrosion. By using TherMark laser marking materials to create a bonded mark rather than a direct mark, your mark will be more permanent, have a better viewing angle, and have a higher level of contrast and resolution. This is particularly advantageous when machine readability is an issue, as TherMark products can enhance the machine readability of data matrices and bar codes.