

# Laser Marking Technologies

## Instilling Precision and Hygiene in Medical Tool Marking



Sam Palmeter

**W**hen it comes to hygiene, the medical industry undertakes several procedures in order to combat diseases caused by infection. On similar lines, medical equipment too requires being free from pathogens to prevent contamination among patients. However, the conventional labeling on medical tools acts as a breeding ground for germs. In an attempt to eliminate the chances of infection caused by the usage of medical tools in surgeries, black annealing is inevitably used for marking medical tools since the early 2000s, including dental equipment and medical prosthetics. However, the future of medical marking not only encompasses metals but also concerns other materials. Enveloping this broad spectrum in a single stop shop, Laser Marking Technologies (LMT) aims to create a difference. Apart from following the conventional method of annealing on metals, LMT facilitates permanent marking on plastic surfaces as well.

From laser marking, laser engraving and black laser annealing on medical products, LMT covers it all, while also keeping up with the passivation process. With in-depth, real-world experience in the realm of laser marking medical components, LMT's technicians and engineers bring in the latest technology in DPM

(Direct Part Marking) for both metal and plastic materials at competitive pricing. While black annealing has emerged as the standard marking on medical grade stainless steel, titanium as well as ferrous metals, LMT marks the medical tools permanently by heating instruments close to the melting point using laser beams without engraving the metals. As a result, the beam creates an oxidized layer on the surface of the instrument and the heat generated by the laser beam causes the compounds on the passive layer to migrate to the instrument surface. LMT empowers clients with laser annealing GS1 and HIBCC UDI for medical laser applications to prevent pathogens from harboring in the equipment and causing future infections during implants or surgeries



Apart from conducting annealing processes on dental hand tools, dental implants, orthopedic elevators, dental elevators, surgical curettes, surgical instruments and similar other equipment made of metals, LMT aims to introduce annealing on soft silicon and plastic surfaces made of polyetheretherketone (PEEK). The depth and darkness of the laser markings on the PEEK instruments are highly dependent on the kind of laser used on the surface. "Companies usually label plastic or silicon instruments

using stamps or printers. LMT is currently working to eliminate the risk of future infections during implants by leveraging black annealing, as well as foaming and engraving," states Sam Palmeter, President of Engineering and new product development, LMT. The company engraves the PEEK equipment leveraging MOPA lasers, thereby helping companies to prevent the paint from dripping, degrading or flaking off the plastic or silicon items.

In addition to being waterproof, markings on PEEK instruments tend to be high heat and chemical resistant. Heat generated from the MOPA can reach even to the inaccessible instrument parts. The markings do not fade away with time or get discolored; on the contrary, the markings are long-lasting and do not require any post-treatment. The non-contact process allows the tools to avoid pressure, resulting in consistent precision in results.

Palmeter recalls an instance when a dental kit manufacturing organization ordered laser machines for labeling dental tools. Each of the dental kits comprised a set of dental tools, one of each kind and required Student IDs and serial numbers marked into each tool. Deploying a data transfer system (DTS), LMT effectively extracted the data from the organizational database into LMT's system and marked the tools according to the IDs. "The entire process was streamlined, extenuating the chances of errors during the tasks," adds Palmeter.

LMT has aggressive plans to continue its research on PEEK material marking. "This will enable us to broaden our prospects to provide laser markings on medical tools such as silicon as well as plastic," concludes Palmeter. 