

Laser Marking Processes



Surface Annealing

- Draws carbon and/ or oxides from the base material to get contrasting mark
- Marking beam produces sharp contrasting line to surrounding area with little or no penetration.
- Excellent for applications such as medical implants, bearings, tooling, or other applications where a smooth, undamaged surface and contrast is important



Surface Etching

- Ability to change the surface finish of a metal thus altering its reflectivity and enhancing contrast
- Penetration depth is typically no more than 0.0001" deep
- One of the most common forms of laser marking



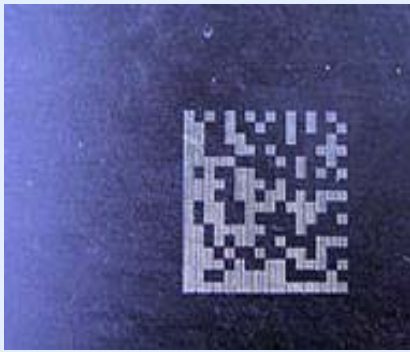
Ablating

- Removes a coating, paint, or other surface treatment from a base material to create contrast without damaging the base material
- Typically done with anodized aluminum, backlit buttons, and painted steel



Thermal Marking

- Controls heat using different laser parameters such as marking speed, pulse frequency, power, and focus
- Applied to certain alloys resulting in color variations (i.e. titanium)



Speciality Marking

- Commonly used in plastics
- Contrast can occur naturally in some plastics by heat or coupling with a wavelength causing a chemical change
- Additives can be used with most plastics to achieve different colors



Engrave Marking

- Vaporization of base material sufficient to produce depth required, typically 0.0001" to 0.005"
- Vaporization process identical to surface etching
- Increased depth of the mark requires repeated passes



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