Permanent marking of plastic medical devices and disposables with ultraviolet lasers

Challenge

Manufacturers of medical disposables, devices and plastic packaging have a critical need to permanently mark these products, e.g., for tracking, anti-counterfeit or functional purposes such as graduation marks. Labels can be damaged or removed, inks can contaminate, and infrared lasers will cause charring and other unwanted thermal effects.

Solution

Ultraviolet lasers are ideal for most of these marking tasks since the high energy photons from these lasers directly break the molecular bonds in plastic polymers. This can be used to cause a photochemical transformation that changes the color of the plastic, without removing material or causing any damage to the surface.

The most common photochemical transformation is to bleach a colored material and leave a bright mark. But some materials are designed to produce other types of color change. For example, ultraviolet lasers can create dark, high-contrast marks on nylon and polyurethane that are white due to titanium dioxide doping. Examples include UDI marks on disposable catheters as well as QR codes on bottle caps for pharmaceutical products. Ultraviolet lasers can also mark transparent plastics, e.g., inhalation masks, as well as coated colored plastics without damage to overlaying transparent anti-allergen coatings, as used in hearing aids.

Coherent is one of the leading suppliers of pulsed ultraviolet lasers for marking and other industrial applications. Decades of experience in ultraviolet applications deliver laser markers with the highest reliability and longest lifetime, e.g. the PowerLine E 8 QT.

Benefit

Ultraviolet laser marking meets the broad need in medical devices to permanently mark plastics. Coherent laser markers provide you with proven ultraviolet marking solutions from an experienced vendor who can also simplify any mandated certification processes.

Figure 1. The PowerLine E 8 QT is ideal for marking medical plastic devices.

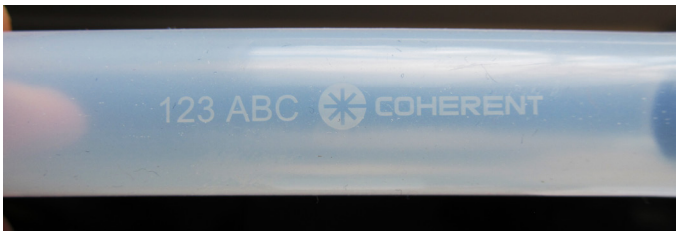

Figure 2. Ultraviolet lasers can mark colorless materials such as silicone rubber without affecting the outer surface.

Application Field

Marking medical plastics, catheters, inhalation masks, syringes, pharmaceutical bottles, and related products.

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