

A Matter of Materials: Adhesives/Coatings

Jennifer Hooker

New material offerings are critical to medical device manufacturers as they provide new opportunities in the development of cutting edge technologies. This three-part round-up features three new materials that are impacting medical device manufacturing in the areas of adhesives/coatings, molding, and extrusion. This part focuses on adhesives/coatings.



Improved medical grade silicone formulations have been instrumental in the development of new medical electronic devices. These compounds feature easy application, convenient cure schedules, sterilization resistant properties, biocompatibility, and are environmentally friendly. They offer unmatched flexibility, temperature resistance, and cost effectiveness. Medical electronic devices are now available in smaller sizes, lighter weight, and have enhanced performance properties. Silicone systems have played a vital role in meeting the increasing challenging requirements of the medical device industry and expand future possibilities.

One such material offering is the two component, room temperature curing [Master Bond](#) [1] MasterSil 151Med—a medical grade, potting and encapsulation silicone. Since flexibility is of vital importance in the design of medical devices subjected to vibration, impact, shock, and thermal cycling, this material is formulated to withstand such exposures. With a low viscosity of 1,500 cps, it is ideal for use in applications with complicated contours in very complex configurations. It is an excellent electrical insulator with a volume resistivity of 1×10^{15} ohm cm and can handle service over the wide temperature range of -65 to 400°F.

MasterSil 151Med cures optically clear with a refractive index of 1.43, making it well suited for use as a protective coating in optical and fiber optic applications. Cures can be accomplished at room temperature, or faster at elevated temperatures.

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Published on Medical Design Technology (<http://www.mdtmag.com>)

Shrinkage upon cure is less than 0.1%. When cured, MasterSil 151Med has a Shore A hardness of 45 and an elongation at break of 160%. Even though it has such high elasticity, its tensile strength is still a favorable 880 psi at 73°F. Mix ratio is 10 to 1 by weight. MasterSil 151Med fully meets USP Class VI requirements for medical applications.

Jennifer Hooker is a technical editor with Master Bond Inc. She has been reporting on new technology for over 7 years, both in the consumer and industrial markets.

[Click here to view the molding focus](#) [2]; [click here to view the extrusion focus](#) [3].

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