

One of MiniFAB's most unsung capabilities is our parylene coating capability. This service provides a simple and cost effective way to protect a product or component from outside environments.

Parylene is applied at room temperature using customized vacuum deposition equipment that allows control of coating thickness and coating rate. The coating process allows for uniform, pinhole free coverage of a product, and therefore provides maximum barrier protection. The design of this process ensures a truly conformal coating, preserving the true angles and geometrics of any object. The optically clear parylene coating can be applied to a wide range of materials including polymers, silicon, metals, elastomers, paper and glass. Typical coating thicknesses are in the order of 1 to several micrometers.

Adding a parylene coat to a component or product will provide many advantages over the otherwise exposed part. In general the coating is applied to protect a part such as a circuit board from harsh environments. However, the coating also offers other benefits such as surface friction reduction, increasing scratch resistivity and providing a strong dielectric layer. Additionally, the inert nature of parylene makes it biocompatible, meeting USP Class VI requirements. This allows it to be used to protect medical components such as disposable diagnostics. It can also act as a lock down, decreasing the risk of particulate contamination.

At MiniFAB, a parylene coat is generally applied to improve surface characteristics of polymer substrates in the production of disposable diagnostic devices. However, in recent times MiniFAB has also offered the coating services to third parties. One of our success stories that highlights the value of parylene, involved the coating of rubber membranes in large industrial fuel pumps. The thin layer of parylene on the membrane provides an excellent barrier to the volatile fuel and helps to eliminate the need for frequent and expensive services, and extends the life of the pump.

Of course, there are many more potential applications where a thin conformal coating may add significant value. The easy adaptability of the parylene coating process means that it can be used to help protect almost any object in a cost and time efficient way.

## For More Information

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