

## **The Four Best Techniques for Solder Mask Removal**

What steps should you take when test points, ground pads or a component footprint has been accidentally covered with solder mask? Grinding, scraping, milling, micro blasting and chemical stripping are all viable and safe alternatives. Each method has its own advantages and disadvantages, and several factors must be considered in determining the best technique.

### **Grinding and Scraping**

The most basic removal method, grinding and scraping involves the use of a scraper, knife or pick and a bit of elbow grease from a skilled technician who can control the technique. While special setup is unnecessary, the potential for fatigue can impact large projects and the use of mechanical erasers may be necessary to expedite the process. Generally employed when removing a thin layer of solder mask, this is a controlled technique which may be used together with other methods.

### **Machining and Milling**

While use of a milling machine for solder mask removal may seem extreme, this method is both effective and precise. Because sharp cutters are used in this technique, the milling system must be fitted for a microscope to aid with visual precision. Typically carbide end mills are used, which are so sharp they may actually penetrate into the board surface. Depth can be effectively controlled by turning the cutter in the opposite direction, but operator skill and experience is essential.

### **Microblasting**

An excellent option for large area solder mask removal, small bench top microblasting systems are used to propel an abrasive material through a pencil shaped handpiece, which blasts away the coating. This process, however, generates substantial static friction and when working in an ESD-sensitive environment, the system must be designed to eliminate the threat of damage caused by static charge. The areas to be treated may require significant preparation and masking. At the end of the process, the circuit board must be thoroughly cleaned by an experienced operator for the best results.

### **Chemical Stripping**

Most effective with copper planes or soldered surfaces, this technique can be difficult to control and requires isolation of the area to be stripped using protective materials. Once the chemical stripper is applied with a swab or brush it will break down the coating in a reaction similar to that of a paint stripper. While this method will quickly remove solder mask it can also lead to base material damage with overexposure.

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