

Soldering to Stainless Steel

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One of the most frequently asked questions of Technical Services is, “How do I solder to stainless steel?” Before discussing the “how to” aspect we need to first discuss the relation between electronics and acid fluxes.

Kester does not recommend the use of acid fluxes for any electrical or electronic applications!

This precaution is known throughout the industry. The clerk at the local hardware store will tell you this, teachers in every level of electronic teaching will tell you this, and yet, many people harbor a feeling that it is OK to use acid fluxes in electronics if you know the right secrets. There are no secrets. During soldering, acid fluxes deposit zinc chloride in the solder and this salt can not be removed. Exposure of the chloride to carbon dioxide and moisture initiates a corrosion cycle. The chloride reacts with the lead in the solder, converting it to lead carbonate. After the lead carbonate is formed, the chloride is free to attack more lead. The corrosion continues until the solder joint dissolves.

What can assemblers do if they need to make an electrical connection to stainless steel? There are one of two ways to make the connection. First settle for a mechanical connection. Using a screw or rivet is perfectly adequate for most applications where stainless steel is involved. The second way involves plating the stainless plated with a more solderable material such as copper or nickel. The assembler can then solder to the newly plated stainless steel with standard electronic solder and fluxes.

Now that we have eliminated any thought of soldering to stainless steel in an electronic application we will look at how to solder to stainless steel for mechanical applications. Stainless steel requires the use of special fluxes in order to achieve good adhesion of the solder to the stainless steel. Typical acid core fluxes will not work on stainless. Kester has 817, which is specially formulated for applications of soldering to stainless. Kester 817 must be used with solid wire or it can be used in addition to acid core solder. Kester 817 flux is typically brushed on the stainless and then the solder is reflowed using standard reflow procedures with an iron or a torch.

This concludes the discussion of soldering to stainless steel. For further questions regarding soldering and Kester fluxes contact Kester at 1-800-2KESTER or visit us on the web at www.kester.com.