Savillex Life Sciences
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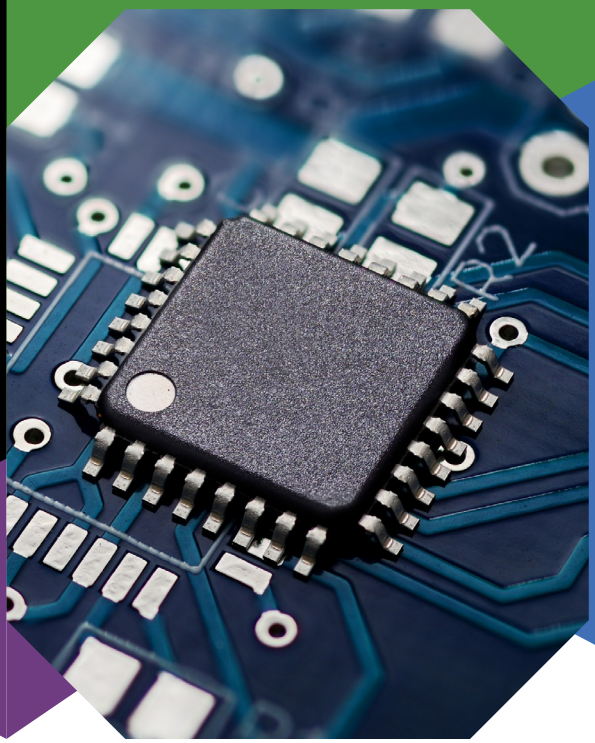
Lowering the Cost of Fluoropolymers in Semiconductor Manufacturing

SUCCESS STORY



ABOUT THE CUSTOMER

Fluoropolymers are widely used in the semiconductor manufacturing process due to their chemical inertness, wide temperature working range, and low trace metals content. Our customer, a semiconductor manufacturer, was having the grid-shaped part on the top of the next page machined from a block of PTFE (polytetrafluoroethylene). The part measured 13.76” x 9.00” x 0.50” (349 mm x 228 mm x 12.7 mm).

CHALLENGE

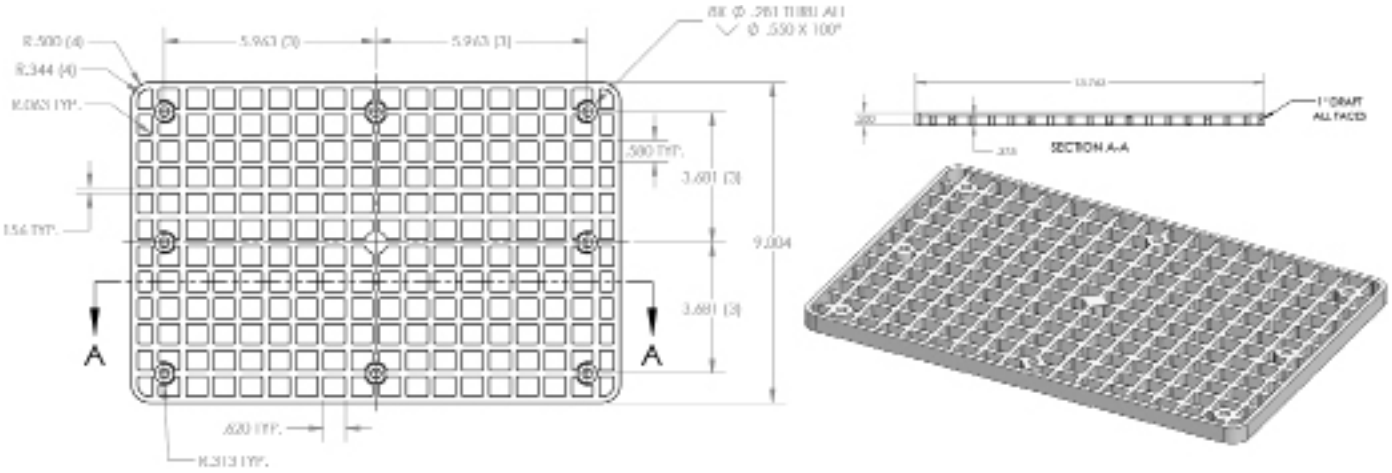
A semiconductor manufacturer was getting a grid-shaped part machined from PTFE, which was getting very expensive and was potentially a source of trace metals contamination.

SOLUTION

Savillex developed a cleaner solution from molded PFA with a significant parts cost saving.

RESULT

The customer quickly recouped their initial tooling investment and saved money in the long run while eliminating a potential source of contamination.



THE CHALLENGE

The PTFE block used to machine parts typically has an unknown level of metal contamination, which can cause significant problems in semiconductor manufacturing processes. PTFE must also be machined or compression molded – both of which are expensive, time consuming, and inherently “dirty” operations.

THE SOLUTION

PFA (perfluoroalkoxy alkane), unlike PTFE, is melt processable. It is heated until molten and then formed into a final shape by injection molding or blow molding. Because ultra high purity grades of PFA resin are used, molded PFA components are cleaner with respect to trace metals than PTFE.

Producing PFA components through injection and blow molding does come with upfront tooling costs. However, depending on the number of parts needed annually – and the part’s complexity – a cleaner, molded PFA part will, in most cases, be cheaper than a machined PTFE part.

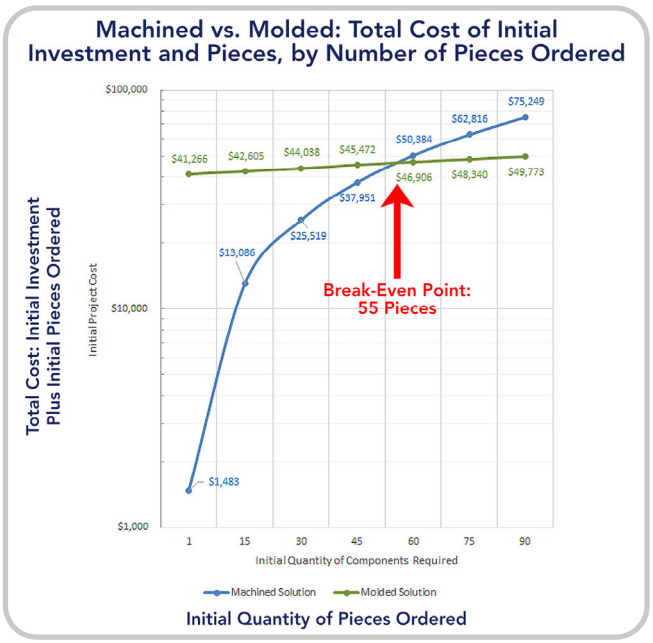
Machining the part from PTFE avoided the initial custom tooling investment required for molded PFA, but producing the part still proved expensive. The unit cost per part totaled $1,483. However, our customer was able to purchase 90-part batches for $49,733, which lowered it to $836 per part.

THE RESULT

Switching to a molded PFA part from Savillex required an upfront investment of $41,266 for the tooling – which our customer then owned – and for the first part. Overall, the tooling, plus 90 parts

totaled $75,249, which meant that 89 additional parts cost only $382 each to produce.

This chart demonstrates how the break-even point for a molded PFA part is 55 pieces, after which the PFA solution becomes less expensive. In this case, our customer recouped their initial tooling investment very quickly with the custom molded PFA solution. In addition, the customer also received a part molded from the highest purity grade virgin PFA resin, with zero fillers or additives.



YOUR PARTNER IN CUSTOM MOLDED PFA

With almost 50 years' experience in molding fluoropolymers, Savillex can advise customers on the absolute best grade of PFA resin for their specific use case, or the customer can specify which resin they want.

We also routinely test the PFA resins we use for extractable metals using high resolution ICP-MS (inductively coupled plasma mass spectrometry). In comparison, with PTFE, it is not normally possible to know the cleanliness of the starting material, or what contaminants may have been imparted by the machining process.

Do you have a specific PFA part or project in mind? Click below to contact us today and request a quote to see how much Savillex could save you.

CONTACT US FOR A QUOTE