

Conductive Pipette Tips

Delivering Value

Pipette tip manufacturer achieves significant savings using PolyOne's custom formulation expertise

Situation

A manufacturer of high-quality laboratory research products was eager to expand into the conductive pipette tip market. Conductive pipette tips are primarily used in automated laboratory and production settings with robotic pipettors to measure and dispense exact amounts of liquid.

In this industry, precision is critical. When robotic pipettors draw liquid into pipette tips made from a conductive resin, the liquid completes a circuit and signals to the pipettor that the correct amount of liquid has been transferred. In some applications, conductivity is also needed to avoid static discharge that could give a false or inaccurate reading.

High-quality conductive pipette tips must meet a number of demanding performance criteria, including:

- Accurate measurement of minute quantities of liquid
- Hydrophobic properties to minimize fluid retention
- Concentric dimensions and warp resistance
- Excellent chemical resistance

The manufacturer asked PolyOne's product formulators for a specialized solution to meet these exacting needs in a timely and efficient manner so the company could capitalize on its market opportunity.

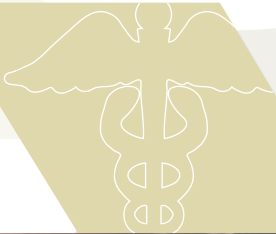
The PolyOne Difference

PolyOne's sales and technical professionals worked closely with the manufacturer to develop an effective solution. The first step was to fully understand the customer's needs including the demanding requirements of the end-use application, manufacturing considerations and cost.

PolyOne determined that the manufacturer required a compound with a unique combination of properties, including:

- **Processing ease** – high flow rate, ability to fill multi-cavity molds, thin-wall capabilities
- **Superior toughness** – strength and durability to ensure dimensional integrity of the part
- **Repeatable performance** – consistent conductivity for accurate measurement of liquids

While several off-the-shelf compounds were evaluated, a new formulation was developed to meet the manufacturer's specific needs as well as provide significant benefits in reduced cycle time, increased production and reduced scrap rate.



Delivering a Value-Added Solution

The solution, PolyOne's Stat-Tech™ Electrically Conductive Compound, offers an outstanding balance of conductivity, flow, dimensional stability and toughness to meet the demanding physical needs of the pipette tip application. Its consistent conductivity ensures accurate readings and helps avoid unwanted static discharge. The compound is also very durable and offers the high-flow characteristics needed in the molding process to fill the pipette tips' long, thin walls completely and without warpage. In addition, this PolyOne compound also minimizes flash on the pipette tips, resulting in improved appearance, greater accuracy and less scrap.

The compound provides numerous manufacturing benefits including the ability to double or even triple the number of cavities in the mold. As a result, the manufacturer was able to enhance machine productivity, reduce per unit cost and increase pipette tip output. Finally, consistent conductivity, at any location on the pipette tip as well as from manufacturing run to manufacturing run, means fewer rejects, reduced scrap rates and improved quality control.

The PolyOne solution delivered real value as measured by these performance improvements:

Reduced Cycle Time

The high flow properties of the PolyOne solution allowed the manufacturer to produce warp-free parts which require less packing and cooling time. As a result, the manufacturer achieved a cycle time reduction of over 40%.

Increased Production

The high flow characteristics of the PolyOne solution allowed the manufacturer to increase the number of cavities in the mold, resulting in a machine cost-per-part savings of over 30%.

Reduced Scrap Rate

The consistent conductivity in the pipette tips coupled with improved warp resistance, reduced flash, and improved durability provided by the PolyOne solution meant less breakage, fewer rejects and a 40% reduction in scrap rate.

Total Manufacturing Cost Savings

Although the per pound price of the PolyOne material was above the competitor's, the manufacturer's total cash costs were reduced by over \$45,000 on an annualized basis as a result of the proven, quantified, savings in cycle time, productivity and scrap. This cost savings dropped to the customer's bottom line and increased its operating income.

Manufacturing Performance Improvements

Reduced Cycle Time	More than 40%
Increased Production	More than 30%
Reduced Scrap Rate	More than 40%
Overall Cost Savings	More than \$45,000/year

Contact your PolyOne representative to learn how a customized solution can benefit you.

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