APPLICATION BULLETIN

Trilliant™ HC Electrically Conductive Formulations
for Precision Performance Pipette Tips

A critical design consideration for pipette tips is the accurate measurement of finite amounts of liquid. In automated systems, pipette tips are often made of conductive polymer materials, enabling the tip to sense the liquid and accurately measure the correct amount of liquid being transferred. In some applications, conductivity is needed to avoid static discharge that could give a false or inaccurate reading. Conductive pipette tips must meet demanding performance criteria and therefore require a polymer solution with a unique, and often difficult to achieve, blend of properties.

Trilliant™ HC electrically conductive formulations can be specifically formulated for pipette tips to create a unique combination of electrical conductivity, mechanical properties and processability. These materials provide consistent conductivity at any location on the pipette tip, as well as from manufacturing run to manufacturing run. This enables accurate readings, reduces static discharge, and drives repeatable part performance. Trilliant formulations can be customized to achieve high flow and easy processing, which facilitate efficient molding and part-to-part consistency.

KEY PERFORMANCE PROPERTIES[1]

PHYSICAL	NOMINAL VALUE	UNIT	TEST METHOD
Density/Specific Gravity	1.00		ASTM D792
Melt Mass-Flow Rate (MFR) (230°C/2.16kg)	20	g/10 min	ASTM D1238
MECHANICAL			
Tensile Strength	15.0	MPa	ASTM D638
Flexural Modulus	1400	MPa	ASTM D790
Flexural Strength	35.0	MPa	ASTM D790
IMPACT			
Notched Izod Impact (Injection Molded)	150	J/m	ASTM D256
ELECTRICAL			
Surface Resistivity	< 100000	ohms/sq	ASTM D257

PROCESSING INFORMATION

INJECTION	NOMINAL VALUE	UNIT
Drying Temperature	80 to 90	°C
Drying Time	4.0 to 6.0	hr
Processing (Melt) Temperature	220 to 250	°C
Mold Temperature	30 to 80	°C

[1] Typical properties: these are not to be construed as specifications

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HOW TRILLIANT™ HC FORMULATIONS HELP TO SOLVE THE MOST DIFFICULT PERFORMANCE AND PROCESS CHALLENGES

Trilliant HC conductive thermoplastics can be customized to meet your unique challenges. That's where our material experts and design engineers can help. Working together, we can help you arrive at an optimal solution with speed and accuracy, while helping to lower product development and manufacturing costs.

An outstanding balance of conductivity, flow, dimensional stability and toughness results in high-quality parts and efficient processing. This ensures accurate liquid level readings and prevent static discharge.

Consistent conductivity ensures repeatable part performance and minimizes failures related to inconsistent electrical conductivity.

High flow and easy processing facilitate the filling of thin wall parts and multiple cavity tools, which enable faster cycle times and lower per-unit part costs.

Less tendency to flash results in improved appearance and less fluid retention in or on the tip, thus driving greater accuracy and less potential for cross-contamination.

High strength produces parts with greater stiffness and warp resistance, again minimizing scrap-related costs.

Superior durability reduces breakage and resultant scrap related costs.

Excellent hydrophobic properties allow complete liquid dispensing and help prevent contamination.

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