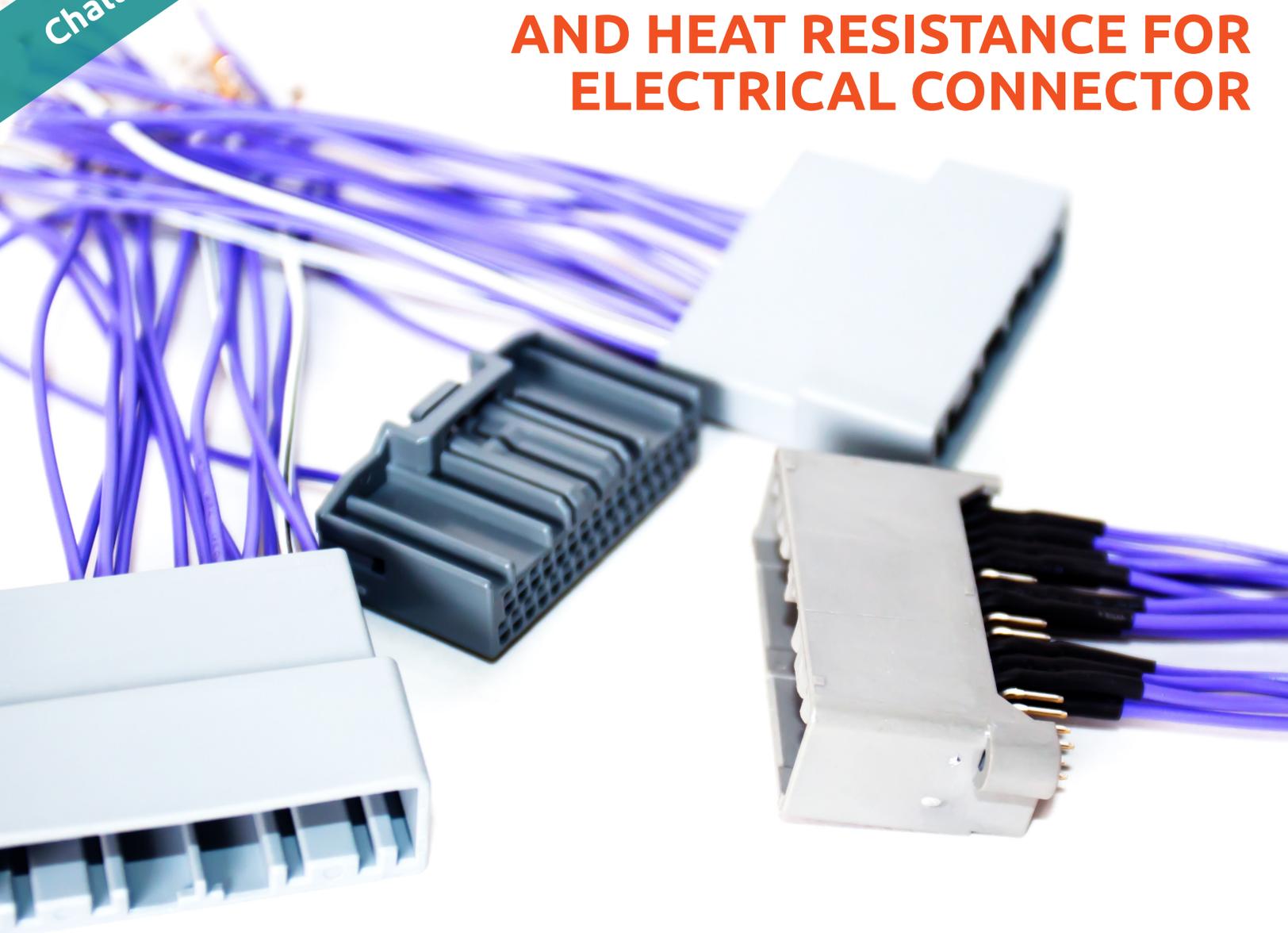
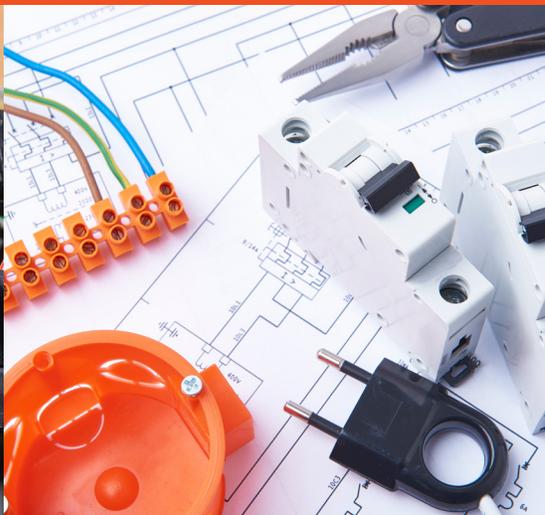
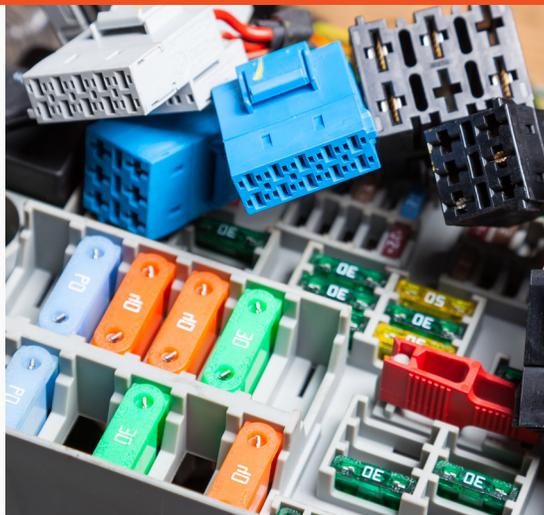


Challenge Accepted.

CUSTOM SOLUTION PROVIDES SIGNAL DAMPING AND HEAT RESISTANCE FOR ELECTRICAL CONNECTOR



 **AVIENT™** » CASE STUDY: BERGAMID™ NYLON FORMULATIONS



TECHNICAL EXPERTISE HELPS ELECTRONIC CONNECTOR COMPANY ENTER NEW MARKET

THE CHALLENGE

A manufacturer of high-speed, electronic connectors for the telecommunications industry had a customer that needed a connector for a new, low-cost computer it was developing. It was important that the new connector provide signal dampening within an established range as specified by the customer without exceeding the established cost targets.

Traditionally, many connectors of this type are produced using liquid crystal polymers (LCPs) formulated with carbon fiber. These connectors often provide signal dampening that unnecessarily exceeds the needs of the application. In addition, they are costly to manufacture, which makes them economically unfeasible for use in low-cost computers.

The connector company's product development engineers established three key criteria for the polymer needed to meet the cost and performance needs of the new connector:

- **Meet targeted technical requirements** – The new connector must provide signal dampening within the range specified. It must also have the required heat resistance, be strong enough to maintain a tight electrical connection and be flexible enough to allow a snap fit.
- **Avoid over-engineering** – The new connector must be designed to meet the targeted requirements accurately, without over engineering, thus avoiding the costs of higher-than-needed performance levels.
- **Meet targeted cost-performance requirements** – The selected resin must offer significant savings over the current LCP/carbon fiber formulation through material and/or manufacturing savings, thus enabling penetration of the low-cost computer market with a competitive connector.

THE SOLUTION

Because they knew Avient could help, the connector company's design engineers invited Avient into the development process. Avient's team of sales and technical professionals began by carefully listening to the customer's stated needs and current situation. Working closely with the manufacturer's engineers, Avient determined that the material required a special combination of properties:

- A heat-resistant base resin that would provide the level of signal dampening prescribed
- Mechanical properties that would ensure an effective electrical connection and at the same time allow for snap-fit installation

- A cost-effective solution that would enable the manufacturer to compete in this new market

Striving for optimal results, the manufacturer evaluated more than 30 different materials. After this exhaustive evaluation, Avient's solution was selected for two key reasons:

- The Avient material met the targeted cost and performance targets
- Avient's approach, support and responsiveness were exactly the type of partnership the manufacturer needed.

THE IMPACT

Avient's solution was a unique, nylon-based material that met all of the application's performance requirements. After evaluating and approving the material's physical properties, the manufacturer also requested that it be formulated to be flame-retardant. Avient's development team went back to work and quickly developed a flame-retardant grade that meets UL requirements for a V0 rating.

Avient's service and support extended beyond the design phase. Avient's technical representatives worked with the tool maker to provide insight on venting, gate placement and other tool design concerns to minimize the potential for any tool-related problems. A technical representative was also on hand to assist in production startup at the manufacturer's molding facility.

Later, when the manufacturer decided to expand production of the connector to Asia, Avient transferred the product formulation to its facility in Suzhou, China, and worked with the manufacturer's production facility there to ensure a smooth transition. Testing by the manufacturer of the material produced in Asia showed that it performed identically to that made in the United States.

Avient's willingness to invest the time and resources needed to ensure success enabled the manufacturer to develop a cost-effective, well-performing product for its customer. In addition, Avient's global presence supported the manufacturer's needs across the globe, saving time and money while ensuring quality, consistency and reliability.

To learn more about Bergamid™ Nylon Formulations, contact Avient at +1.844.4AVIENT (1.844.428.4368) or visit us at avient.com.