



APPLICATION SUCCESS STORY

ROGERS HELPS PROVIDE A SAFE RIDE

Rogers' PORON® 79 Material Delivers Multiple Benefits

Electrically-powered transportation has paved the way for electric bikes to increase in popularity across consumer markets. When choosing the battery technology for an electric bike, a lithium-ion battery is ideal because it is lightweight and can store a relatively high amount of energy.

CUSTOMER PROBLEM

The lightweight battery of an electric bike has multiple benefits to the rider such as helping the bike's rider go farther without a charge and not adding additional weight to the bike as it travels. There are, however, potential issues battery designers must consider when it comes to rider safety. To ensure a safe ride, the batteries must make use of a material that offers sufficient vibration protection as well as a protective thermal barrier since the bike's battery will heat up while under operation. Additionally, this material solution must fit into the limited amount of space available in the battery while not adding weight to the bike. One popular battery manufacturer contacted Rogers seeking a material that could help them solve these safety design challenges.

THE ROGERS SOLUTION

The customer needed to solve two problems: shock absorption/cushioning and thermal resistance. The Rogers technical team recommended PORON® 79 material, which has a unique open cell structure that is both breathable and durable, allowing the material to absorb and distribute impact efficiently. PORON 79 polyurethane foam also displays great compression set resistance (the ability of a material to resist collapse from the stresses of compression and temperature over time), which delivers long-term cushioning. The battery manufacturer validated the vibration protection of the foam by subjecting the battery to a string of battery shaker tests. The testing proved that the Rogers material successfully improved the overall safety of the battery by dampening structure-born vibration. PORON 79 foam also has a UL-flammability rating (a standard test that verifies the material's flame resistance at certain temperatures) that helps create a thermal barrier between the battery's pouch cells.

RESULT

With its UL-flammability rating and insulating capabilities, PORON 79 material mitigated thermal risk in the bike battery while simultaneously absorbing shock and vibration to the battery pack. By using PORON 79 both as an interlayer between the cell packets within the lithium-ion battery and as a bumper pad on either end of the battery, the battery manufacturer was able to solve two major issues with a single material.

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