



Keeping Your Cool (or Heat)

Thermal management has always been an important feature, but it's traditionally been tied to passenger comfort. Internal combustion engines throw off significant amounts of heat, so heating the passenger space is just a matter of redirecting part of it, which has a minor effect on mileage. Air conditioning drains horsepower, which does have an effect on mileage. Insulating the cabin space is also important for maintaining a uniformly comfortable temperature for passengers.

Electric cars completely change that equation. Every kilowatt hour the battery uses to heat or cool the passenger space is one that can't be used to move the vehicle, which translates to a reduced range per charge. Now insulating the cabin space goes from being important to being absolutely critical. Here are some of the major aspects of thermal management along with some ways 3M can help you address it.

Car Doors

Car doors open to let people in and out, but they spend most of their time closed and thus play a significant role in thermal management. Even the best heating or cooling system will struggle to maintain an even temperature if the door cavity isn't well insulated. [3M™ Thinsulate™ Acoustic Insulation](#) is a lightweight non-woven mat of polyester and polypropylene fibers that provides excellent thermal and acoustic insulation. It is flexible, conformable and compressible so that it can fill cavities of varying thicknesses.

Headliner

Similar to a closed door, the cavity of a headliner plays an important role in insulating the passenger cabin. Here, too, the flexible and conformable properties of 3M™ Thinsulate™ Acoustic Insulation make it an excellent thermal management tool. 3M also makes several solutions to attach wire harnesses to the headliner and the headliner to the frame, and some of these are tapes which also have thermal management properties.

Seating and Other Considerations

Cooling in a seat is generally a fan that assists with airflow – once the location is chosen the wiring path follows. Heated seats require more complex thermal management. The heat needs to be directed toward the passenger rather than deeper into the seat, while at the same time the seat material itself needs to be protected against heat damage. While a large part of heat resistance is determined by the composition of the seat components, 3M makes a number of tapes that can help manage heat at specific locations by reflecting and distributing heat to disperse it. These specialized tapes can also be beneficial in the doors, headliner or instrument panel in situations where heat exposure might create a performance issue.

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