

Keeping It Cool

Restoration of my '57 fuel-injected Corvette has been ongoing for the last umpteen years as many fellow NCRS members can vouch for. I have wanted to install floorboard insulation to reduce heat, but didn't know which product has the most heat reduction. My goal is to reduce the heat on the feet, transmission tunnel and under the seat as much as possible. Noise reduction would be an additional benefit.

Norma and I drove our '64 on the NCRS Road Tour from Granbury, Texas, to the Saint Charles, Missouri, convention this summer and thought it would be a good opportunity to evaluate various floorboard insulation materials. When the '64 was redone in 1998, hotrod floorboard insulation was added underneath the carpet and over the transmission tunnel. While this jute material with foil topping is readily available at most swap meets and does reduce the floorboard temperatures, it is not the panacea for heat reduction.

Last year Dave Ewan and I covered the floorboard of his '57 with the Corvette Central ceramic heat barrier. It took two kits to cover the floorboard adequately from the footrests to underneath the seats and over the transmission tunnel. That seemed to work well enough on the fuel-injection road tour from Mike McCagh's home in Cumberland, Maryland, to the NCRS Convention in Marlboro, Massachusetts.

I had seen several television shows on Spike and Speed Channel where different types of insulating products were used, so I let my fingers do some Google research for automotive insulation. After completing the research, I elected to evaluate the following products: Corvette Central ceramic heat barrier kit, Kool Mat, HushMat and Energy Q radiant barrier. I already had the Corvette Central ceramic heat barrier kit on hand, so I ordered small amounts of Kool Mat and HushMat materials. Fellow Texas Chapter NCRS member David Anderson of Automotive Performance Limited furnished the Energy Q radiant barrier product, which he has used in his restoration work.

The method I decided upon for evaluating the heat reduction was to use a 12-inch by 12-inch square of the insulation material placed in the cabin on the passenger inboard side footrest next to the bare fiberglass floor. This is a high heat area as the passenger foot area is adjacent to the exhaust pipe.

Material Composition

Brand	Construction Description	Thickness
Corvette Central ceramic heat barrier kit	Ceramic cloth with foil top coat	.125 inch
Kool Mat	Dense silicone cured into fiberglass mat with silicone rubber top coat	.105 inch
Energy Q radiant barrier	Double layer of radiant barrier polyethylene air bubble-pack between foil layers	.3125
HushMat	Adhesive-backed viscoelastic material with foil-laminate backing top coat	.07

The insulation materials were rotated after four hours of driving time, and temperatures were measured using a RayTek MT4 MiniTemp handheld infrared thermometer. Each material was tested twice during the road trip to and from the convention.



Floorboard Insulation Field Test

Brand	Floor-board Interior Surface Temp	Material Surface Temp	Temp Drop Floor to Top Insulation	Temperature Reduction Percentage
Corvette Central ceramic heat barrier kit	172	130	-42	24%
Kool Mat	175	162	-13	7%
Kool Mat with foil on floor side	176	159	-17	10%
Energy Q radiant barrier	170	102	-68	40%
HushMat	174	100	-74	43%

After returning home, I decided to do a kitchen lab test on the four insulation materials. Norma, my understanding and gracious wife, loaned me her oven and an old cookie sheet after I assured her I wouldn't melt anything in the oven or break it.

First, the oven was heated to 200 degrees with the thinking that the cookie sheet would heat to the same temperature. Duh, wrong! I had to crank up the oven heat to 450 degrees in order for the sheet to reach 200 degrees. Thermal dynamics wasn't in my course curriculum. Each piece of insulation material was placed on the pre-heated cookie sheet for five minutes before measuring the surface temperature. Each measurement was made with the same Ray-Tek MT4 MiniTemp handheld infrared thermometer used on the road trip and was taken from four inches above and in the center of the insulation material surface.



Floorboard Insulation Kitchen Lab Test

Brand	Cookie Sheet Temp	Material Surface Temp	Temp Drop Floor to Top Insulation	Temperature Reduction Percentage
Corvette Central ceramic heat barrier kit	199	134	-65	33%
Kool Mat	196	170	-26	13%
Kool Mat with foil on floor side	194	168	-26	13%
Energy Q radiant barrier	194	90	-104	54%
HushMat	195	86	-109	56%

While I do not pretend to understand the differences between the field test and the kitchen lab results, I did ask Norma during the drive if her left foot was hotter than normal for each of the materials and didn't tell her which material was being tested at that time. Norma's comments followed the test results. HushMat was the coolest feeling to Norma and had the best temperature reduction in both the field and kitchen testing.

I will write a follow-up installation article when HushMat is installed in my '57.

hushmat.com

