



Halogen Free EMI Shielding

PROBLEM:

A military customer was performing a modernization retrofit to one of their support vehicles, which included the need for new EMI shielding. In the years since this particular asset was put into service, new requirements for electromagnetic hardening, survivability, and performance were put into place. Portions of their existing wiring harnesses were not protected to the levels now required for operation.

REQUIREMENTS:

This customer had several hard requirements that needed to be met in order to approve the shielding material:

- The shielding had to meet the requirements in MIL-STD-461 to bring their vehicle and the upgraded wiring into full compliance.
- The solution had to be installable as a wrap-around jacket or tape. This modernization effort did not include disassembly and re-work of the harnesses. Whatever they used, needed to be installed on the cables, in-place.
- Any material that was put into the vehicle had to be flame-retardant and halogen free. This was a strict requirement for any vehicles that are enclosed and carry military personnel.
- Open view of custom Hook-N-Shield (Trevira) showing flame-retardant outer layer and EMI mesh lining



SOLUTION:

Custom Hook-N-Shield (VNH)

With a long history of being used in military applications, the SHX2 (2-layer) EMI shielding wire mesh was chosen as the base for this solution. Zippertubing design engineers substituted the VNH outer protective layer with Trevira high-strength fabric; one of several halogen-free & flame retardant options. To make the solution completely compliant, the standard nylon hook and loop closure was also changed to a high-temperature Nomex version. Finally, an extension of the ground braid was added with a ring terminal so the entire shielded jacketing solution could be quickly installed and grounded during the customer's limited installation window.

CONCLUSION:

The customer was able to receive and install the custom Hook-N-Shield (Trevira) parts in their vehicle, as planned, during the scheduled retrofit period. Since that original installation, this customer has expanded usage of these parts to include new size configurations from 18 to 62 inches long and from 1.0" to 3.5" in diameter. It has now been over 15 years since the original installation and the customer is currently using 8 different configurations of custom mesh shielding in different locations in this family of military support vehicles.