

WH – Wave-X Heat Shrink Absorber

Wave-X is an effective and reliable solution for RF absorption. ARC incorporates specialized alloys with precisely controlled particle sizes and shapes to achieve high permeability materials that are designed to disrupt and absorb EMI interference.

The Wave-X HEAT (WH) product line incorporates the Wave-X fillers into a heat shrink tube. A Wave-X HEAT tube can be slipped over a cable and/or connector, and with the application of heat, such as a hot air gun, the tube shrinks in place to conform to the substrate. It is designed to integrate seamlessly with wire and cable junctions. Junctions and connector interfaces are sealed, thereby absorbing unwanted EMI interference from the drive end to the receive end of the cable.

Wave-X HEAT on shielded cables has shown to consistently and effectively reduce emissions from unshielded cables without reducing the signal integrity performance. The net result is a low cost solution for cables that have common mode signals on them. An additional advantage of the Wave-X HEAT tube can be seen by the reduction of emissions even when the absorber tube is discontinuous. Where traditional shielding requires a ‘water tight’ solution, Wave-X HEAT tubes offers the design option of short or localized placement to reduce emissions.

It is also anticipated that Wave-X HEAT tubes will improve the immunity of the cable by the same amount that the emissions are reduced.

Current forms of the Wave-X HEAT tubes are as follows:

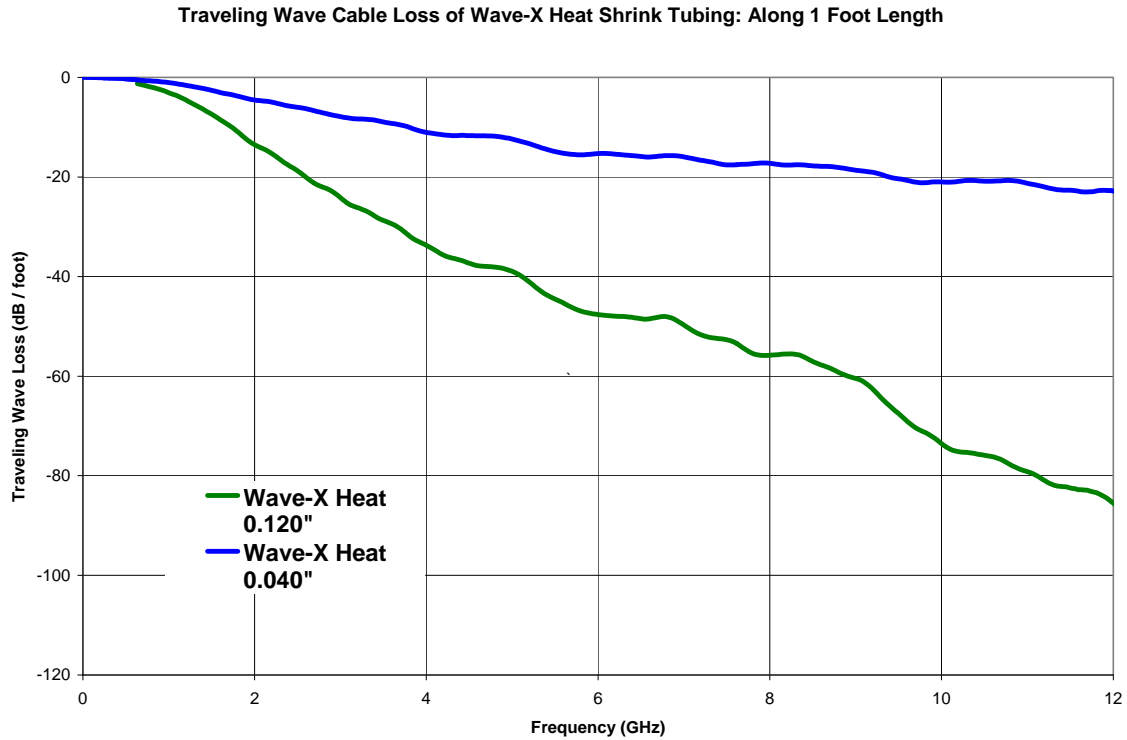
Expanded Internal Diameter	Recovered Internal Diameter
3/16" (4.7mm)	0.060" (1.5mm)
3/8" (9.5mm)	0.125" (3.2mm)
3/4" (19.1mm)	0.250" (6.4mm)
1" (25.4mm)	0.320" (8.1mm)

Current performance data is as follows:

Test	Test Method	Test Procedure &Condition	Typical 0.040"
Tensile	ASTM D 2671	2 in/min	1623 psi
Elongation	ASTM D 2671	2 in/min	5696%
Tensile After Heat Aging	ASTM D 2671	2 in/min	126 psi
Heat Shock	ASTM D 2671	4 Hours @ 225°C	Pass
Low Temp Flexibility	ASTM D 2671	4 Hours @ -55°C	Pass
Linear Shrink	ASTM D 2671	3 Minutes @ 200°C	-5%

While the above tables are examples of current products, they should not be considered as product limitations. For example, alteration of the substrate matrix to a higher temperature thermoplastic can result in similar shrinkage and absorption performance, but can increase temperature performance to 230°C.

Performance data for existing Wave-X HEAT tubes can be shown in the following chart:



This chart shows the increase in absorption with increased wall thickness of the shrink tube.

In a chamber, an Ethernet cable was fully coated with Wave-X HEAT tube. The net result was lower emissions in the 1 to 5 GHz range by 5 to 10 dB.

Contact ARC Technologies to discuss your application. We can provide you with an off-the-shelf absorber product to meet your needs. Or, if your product has unique attributes, we can help tailor the technology to meet your specific needs. Our in-house development and characterization laboratories allow for rapid product development and scaleup to meet the demanding schedule needs of today's electronics industry.