ARACON®

LIGHTWEIGHT. STRONG. FLEXIBLE.

Our Story…

In the mid 1990's, Micro-Coax was struggling to penetrate the space market with our high performance flexible microwave coaxial cable assemblies. We were unable to differentiate ourselves enough for any of the major satellite manufacturers to invest the necessary funds to qualify a new cable assembly supplier. Around that same time, DuPont™ gave us a presentation on a new product they developed called ARACON. ARACON is a high strength conductive fiber made from KEVLAR®, the same material used for bullet resistant vests. Our engineers quickly recognized that by substituting the ARACON fiber in place of the silver plated copper braid traditionally used in our coaxial cables, we had the potential to reduce the weight by up to 30% and have a stronger connector attachment.

When the new cables incorporating ARACON were presented to the satellite manufacturers, they were quickly adopted by both Lockheed Martin for the ACES program and Hughes on the Thuraya program. Since that time, nearly every satellite manufacturer has used ARACON based cables as part of their weight reduction programs.

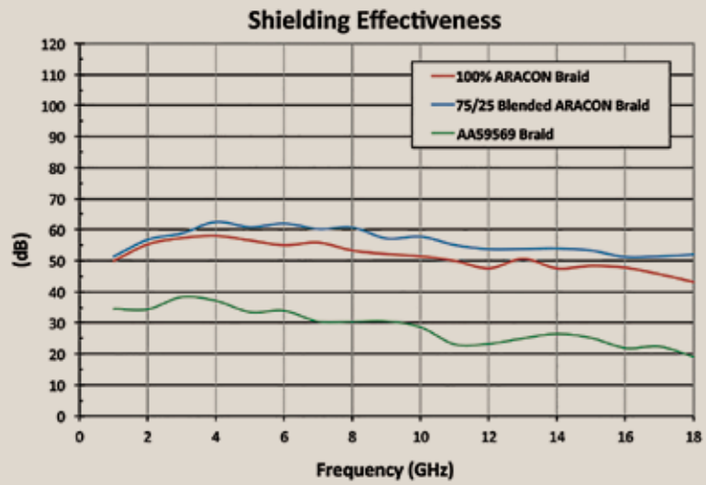
The only thing preventing ARACON based cables and EMI shields from saving weight on more earthly applications such as military and civilian aircraft was cost. That all changed in 2005 when DuPont™ made a decision to exit the business. Recognizing the potential value to our customers, Micro-Coax seized the opportunity to acquire the ARACON product line. With the acquisition complete, we immediately set out on a major modernization project to reduce cost. That effort complete, the new lower-cost ARACON is now available as both fiber on braider bobbins, single or multiple ends, and as finished braided EMI shield ranging in size from 1/16 to 2 inches.

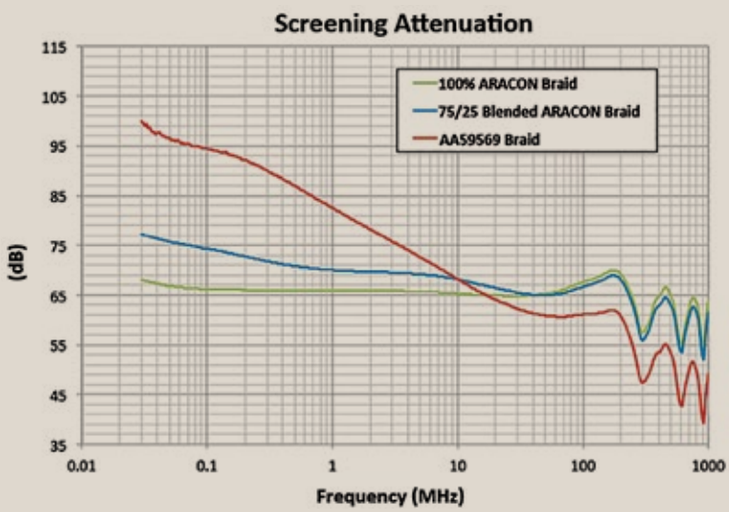
If you are looking for a "silver bullet" that will separate you from the competition, try ARACON, it opened up the space market for Micro-Coax and can make the same difference for you.

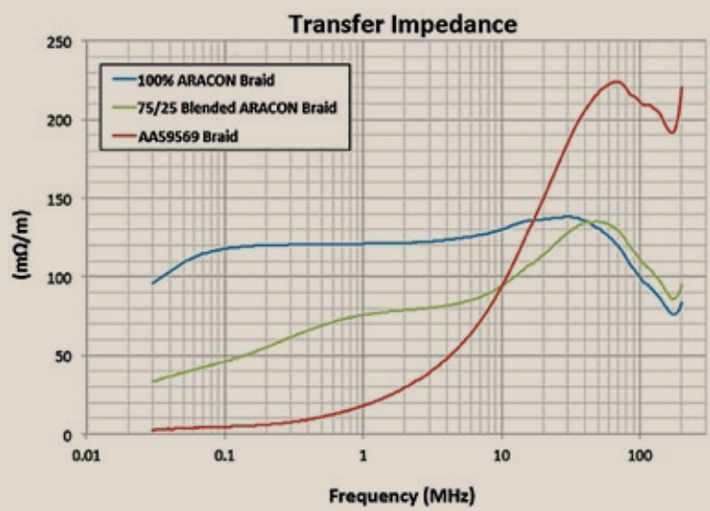
Ron Souders,
Technical Director at Micro-Coax

Proven Reliable Performance

Besides plating the ARACON and braiding in-house, Micro-Coax also has state-of-the-art test facilities to verify Transfer Impedance and RF Shielding performance to 18 GHz. Test reports are available demonstrating ARACON's performance for flammability, lightning strike, abrasion resistance, and thermal shock along with a variety of other critical tests.







The strength of KEVLAR® brand fiber with the conductivity of metal

What if there were fibers that were stronger than steel? More flexible then copper? With the electrical conductivity of silver?

Presenting ARACON brand metal-clad fibers. ARACON combines the conductivity of an outer metal coating with the strength, light weight, and flexibility of aramid fibers. ARACON fibers are based on the same technology that created DuPont™ KEVLAR®, well known for its use in bullet resistant vests. With the addition of nickel, copper, and silver coatings, ARACON fibers provide a versatile combination of physical and electrical properties for a variety of demanding applications.

ARACON, available only from Micro-Coax, builds on a 50 year legacy of microwave cable manufacturing including the plating of metal tubing for semi-rigid cable and space grade gold plating of components for connectors.

APPLICATIONS

ARACON has found wide acceptance in a variety of aerospace applications; products include braided EMI shielding, coaxial cable outer conductor, and specialty wires. Textile applications include wearable electronics and athletic gear. Silver has long been known for its anti-bacterial and odor suppressant properties.

ARACON YARN (WIRE)

Conductors of ARACON are made up of many very fine fibers twisted together into a yarn. ARACON metal clad fibers are aromatic polyamides, whose structure gives ARACON its unique combination of very high tensile strength, chemical resistance, and thermal stability. Individual fibers are only 0.0006 inch diameter, which yields yarns or “wires” with exceptional flexibility and textile-like processability.

Broad Temperature Range

With a temperature range of -65° to 200° C, aramid fibers have dramatically improved thermal stability compared to commodity fibers such as nylon and polyester. ARACON maintains it strength both at elevated temperatures and under cryogenic conditions. Moduli of aramids are in the same range as common conductor metals, which makes them ideal substrates for cladding with metal.

Yarn Size

Two standard ARACON yarn sizes, 200 and 400 denier, are available in both a nickel or silver finish. The smaller 200 denier size has an approximate diameter of 0.009 inch while the larger 400 denier is 0.014 inch. When braided, the yarn will flatten and cover an area approximately twice the equivalent diameter. For larger sizes, the ARACON yarn can be plied or supplied as multiple ends on a braider bobbin.

Compatibility

Yarns of ARACON fibers are fully compatible with standard braiding equipment. Yarns can be terminated by soldering or crimping.

Standard ARACON Yarns

Grade	Finish	DC Resistance (Ω/1000 ft)	Weight (lbs/1000 ft)
XN0200E	Nickel	2300	0.053
XS0200E	Silver	1950	0.053
XN0400E	Nickel	1000	0.107
XN0400F	2x Nickel	700	0.130
XS0400E	Silver	850	0.107

ARACON BRAIDED EMI SHIELD

ARACON fibers, when braided into a shield offer superior performance against electromagnetic interference. Advantages include:

More Uniform Coverage

The large number of very fine fibers, together with the tendency of yarn bundles to flatten and spread, makes it easy to obtain high coverage levels with reduced windowing. Ease of pushback is maintained even at high coverage.

Reduced Weight

Compared to a typical A-A-59569 copper braid, the same braid using ARACON fiber reduces weight by as much as 80%.

Flexibility

The soft textile-like nature of ARACON has very little resistance to bending and has virtually no memory.

Strength

With ARACON, there is no need for additional strength members when shielding very fine wires. ARACON fibers are 10x stronger than copper.

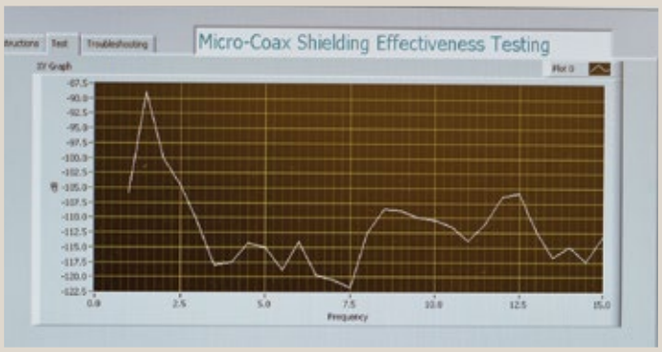
Corrosion Resistant

Test data is available showing electrical performance before and after exposure to the harshest environments including salt fog, sulfur dioxide, and fluid resistance.

Direct Replacement For Metal Braid

Typical EMI problem areas behind connectors and backshells can easily be shielded with an ARACON braided EMI shield. These braids are ideal for cables and harness applications where additional EMI protection is necessary to meet today's demanding specifications.

ARACON braided EMI shields are available for immediate delivery in sizes from 1/16 to 2 inch diameter in both nickel and silver plating.



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MICRO-COAX®

PROVEN RELIABLE

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