

Anchorwave

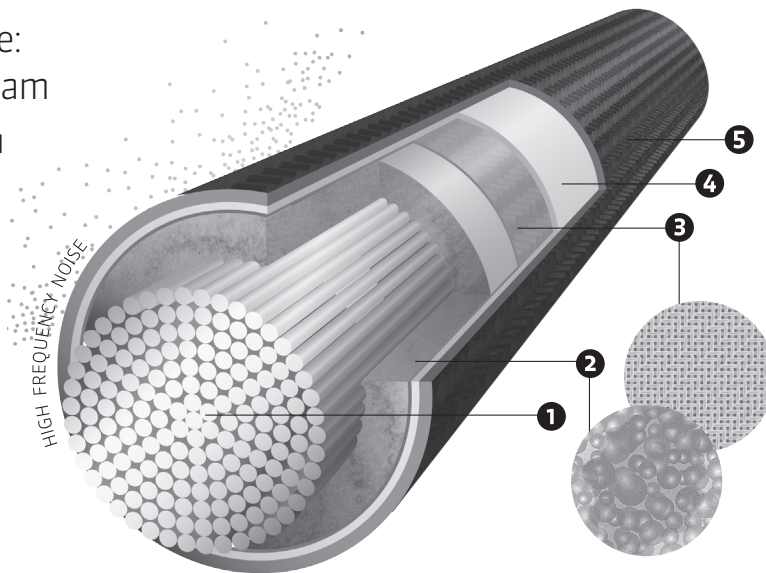
HIGH PERFORMANCE INTERCONNECTS AND LOUDSPEAKER CABLES

Our **Anchorwave** series of audio cables brings your signal largely unaltered from your source all the way to your speakers. Complete microvibration avoidance is impossible on the delicate levels of harmful microphonic influence the audiophile deals with here. The **Anchorwave** offers a high performance solution to deal with these microvibrations, both within the cable and in the immediately surrounding ambient field, in order to overcome their impact on the delicate audio signal. A true Litz wire geometry buried in a nanoparticle bed, together with a multi-layered conductive yarn shielding make this assembly a dead silent and highly accurate conduit for your prized audio signal. Only when you kill and bury the microvibrations, while not thereby altering the signal, can the music truly come to life.

The technology Inside the Anchorwave

LessLoss Anchorwave: Cross Sectional Diagram

These technologies are shared by both the Interconnect and the Loudspeaker Cable versions of the **Anchorwave**.



FEATURES

- very low resistance
- microvibration control
- special EMI/RFI shielding
- overall diameter: 11.65 mm
- min bend radius: 12.7 cm (5 in.)
- available as interconnect and speaker cable
- cryogenically treated connectors

- 1 196 mono crystal pure copper strands, each individually insulated to prevent diode effect through oxidation. 9 AWG (6.62 mm²) per polarity (11.5 AWG for ICs).
- 2 Vibration absorbing nanoparticles, precision packed. Range: 12–44 microns. Amorphous structure prevents rigid lattice formation.
- 3 Finely woven composite cloth. Shielding effectiveness 10 MHz–20 GHz, 70–85 dB attenuation.
- 4 Water and chemical resistant Polyolefin outer cover.
- 5 Tough, abrasion resistant Polyethylene Terephthalate outer shell, cross braided.

Highly suspicious Glaring evidence

Much emphasis is commonly placed on measurable values such as capacitance, inductance, characteristic impedance and dielectric constants. These parameters, known as the cable specs, are crucial at the long cable lengths often used for professional applications where, under guarantee of contract, signal integrity must be maintained for tens, and often hundreds, of meters.

For audiophile applications, our specific needs are different. Under these specific requirements, where cable lengths are shorter, and we are looking at the top tier of quality possible, we have narrowed down the parameters affecting a high end signal line to three basic parameters: resistivity, microvibration control, and shielding quality. For a very fine audiophile cable, the quality of the conducting material becomes the icing on the cake.

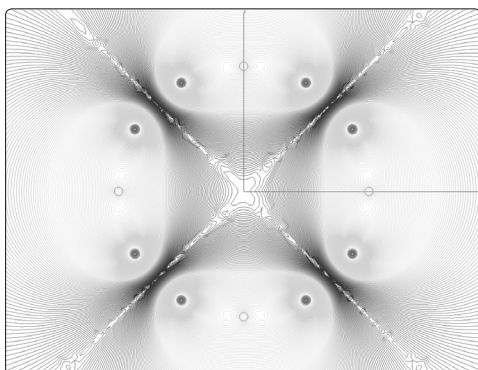
Resistivity and shielding quality are easy to correlate to sonic virtue, as they are readily measurable quantities and can be shown through simple listening tests to relate directly to quality. Capacitance and inductance have, at their low values due to the short cable lengths in question, no direct bearing on sonic virtue, other than the extent to which they are related to the formation of micro vibrations along with current. For one will find at the very top echelon of the audiophile cable assortment very fine performers featuring both low and high C and L values. The big question remains regarding micro vibration control.

Micro vibrations are caused by current. In general, it can be said that harm to the audio quality caused by micro vibration is a theory which is difficult to show physically except when we amplify it and make these vibrations louder. For instance, one takes a microphone cable and drops it against the floor. Let's say there is no microphone attached to the cable. And yet, the audio engineer can very simply and successfully record and play back the dropping of the cable onto the floor. So obviously there is an influence on the signal by the signal, albeit at extremely low levels, much lower than the physical knocking of the cable by external force. The very electromagnetic forces involved by the energy passing in the form of current will cause microvibration.

The weighty parameter Microvibration control

Consider the fact that it is possible to create two different cables using different materials and different geometries, which both measure the same in terms of capacitance, inductance, and resistance. Knowing this, it is difficult to say just why they provide differing sound quality. But they do, and it seems at first somewhat mysterious.

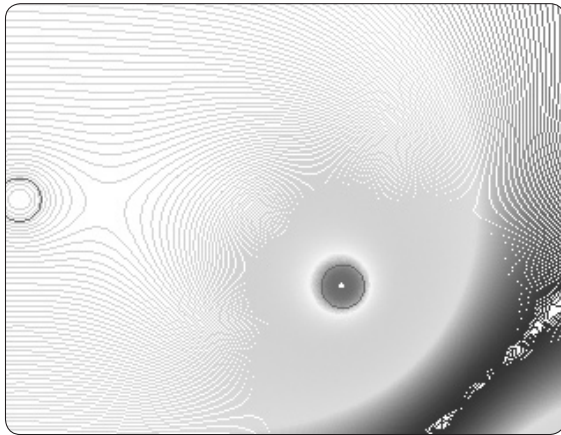
We know therefore that there must be other qualitative parameters for which we have yet to establish standardised measuring protocol. Years of our own research have led us through many geometrical cable solutions.



Not unlike forensic detective work, LessLoss has been actively on the heels of what has been mysteriously eluding our mathematical models and theoretical reasoning. With the help of cutting-edge technology, highly sophisticated cable modeling techniques allow a microscopic real-time glimpse at field interactions within differing cable models.

Examining these with simulation software as well as through numerous listening tests eventually led us to the phenomenon of current bunching vs. frequency. After many tests, we finally found agreement between what electromagnetic simulation software was showing us and our audible perception. We knew then that we were on the right track, and what was needed to refine the physical solution.

We found that eddy currents caused by the natural flow of electricity give rise to microvibrations of the materials in the cable. By altering the geometry and materials of the test cables, we were in fact slightly altering the nature of these microvibrations. The effect of the natural eddy current component on the cable could be changed. Simulations using software and experiments in practice based only on cable geometry variables revealed that these microvibrations could be lessened to some degree, but not nearly by the degree that manipulations based on material changes could.



We have found that micro-events smaller than those readily analyzed by electromagnetic simulation software lie at the base of a cable geometry's influence on sound quality. These miniscule microphonic effects have more profound influence on sound quality than typically assumed, although their low levels would seem to indicate otherwise.

We now concentrated our efforts on the control of these microvibrations directly via a nanoparticle bed, and found that these results dwarfed those based on geometrical manipulation of strands and wires. Our solution proved to be more elegant and direct, whereas manipulation of geometry proved limited in its effectiveness, as the results in terms of microvibration control were being achieved in but a roundabout way through EM field interaction. These always depended on the signal's content. This content was always delayed in its effect on microvibration control, due to the delayed formation of the eddy currents.

Once we had tackled the microvibration control physically and directly, instead of through the passive geometrical 'roundabout' methods involving time and signal dependent EM field interactions, we learned that resistance affects the lowest frequencies and the 'meatiness' of the sonic depiction. Two cables of differing conductive cross section will show this, all else being equal with our highly effective microvibration control solution now in place.

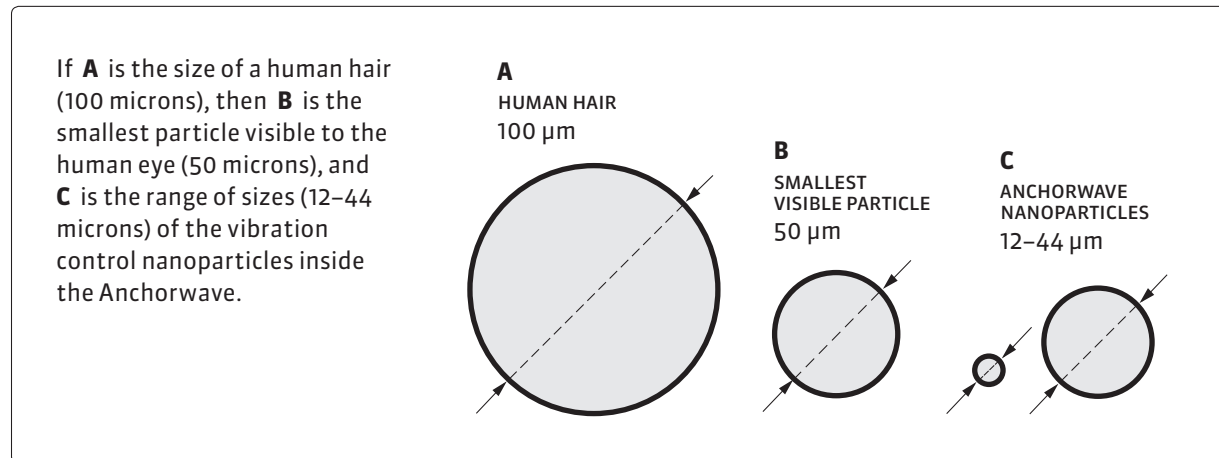
Very low resistance ensures the amplifier's control parameters are applied to the speaker, including its damping factor, without change. To understand this in physical terms we are accustomed to, imagine pushing and pulling a weight with your hand. You are the amp, the weight is the speaker driver. A higher resistance speaker cable would place a spring between you and the weight, and make control more difficult. The lower the resistance, the tighter and more direct your grip, making control easier and more accurate.

At the core Isolated Litz

At the core of each polarity of the **Anchorwave** are 196 mono crystal pure copper strands, each individually insulated from one another to prevent the diode effect through strand-jumping. Their cross sections sum up to 9 AWG per polarity in the **Anchorwave** speaker cable and 11.5 AWG per polarity in the interconnect versions. Only at the very ends of the **Anchorwave** are these strands all soldered together. If they were not individually insulated from one another, it would result in a more harsh sound because multi-core cables exhibit the diode effect through strand-jumping, especially after they get older and more oxidation of the bare wire surfaces inevitable takes place over time. The **Anchorwave** solution is guaranteed to remain stable in sound quality over time.

Between core and shield Nanoparticles

Around these core conductors are an incalculable number of vibration absorbing nanoparticles. Nano meaning very, very small: only 12–44 microns small. For comparison, a human hair is about 100 microns in diameter. The smallest visible particles are 50 microns. These tiny and countless particles maintain an overall amorphous structure amongst themselves. This prevents their settling into a rigid lattice formation which would make the cable rigid (it would become hard as a stick and lose its absorption characteristics). In this way, the signal carrying wires are deeply submerged in a bed of vibration control nanoparticles, yet the overall cable remains perfectly flexible.



Nanoparticles provide advanced microvibration dispersion. There are miniscule vibrations caused by the eddy current component of the alternating current signal. At this miniscule electro-acoustical level, microphonics inevitably distort the original signal passing through the cable. To appreciate this on a larger scale, imagine going to the beach. The sand granules, although much larger, behave in a similar way. By lowering one's head into a deep hole in the sand, extreme and instant attenuation of acoustical energy is perceived. It is enough to go down approximately one meter and almost no sounds from the loud pounding waves are heard. And this is with the hole open to the sky, showing the effectiveness of acoustical absorption through multitudinous small granules. On a nano scale, countless more granules can fit in a given volume, compounding the effect.

Shielding High tech conductive cloth

Immediately surrounding these nanoparticles is a finely woven high tech cloth, whose shielding effectiveness begins to rise only high above the audio frequency range. This is very important so as not to influence the sound quality and to prevent that 'closed in', 'muted', or 'claustrophobic' type sound, which, for audiophiles, has been the Achilles' heel of traditional shielding solutions based on thin films of aluminum, copper or silver. At 10 MHz–20 GHz the **Anchorwave's** shielding effectiveness is very pronounced. This leads to a much lower noise floor, and prevents that 'electronic sound'. This high tech shield has no influence on the natural tembre of audio, which are at much lower frequencies, and to whom this shield is transparent.

CROSS SECTION OF CONDUCTIVE CLOTH MONOFILAMENT

Tightly woven at more than 130 threads per inch, the special composite cloth shielding **3** utilized in the **Anchorwave** is invisible to audio frequencies, allowing them to pass unchanged. At high frequencies well above 200 kHz, attenuation gradually ensues.

Sheet Resistance ~ 0.1 Ohm/sq.

NICKEL COBALT ALLOY

NICKEL SUPERSTRATUM

COPPER LAYER

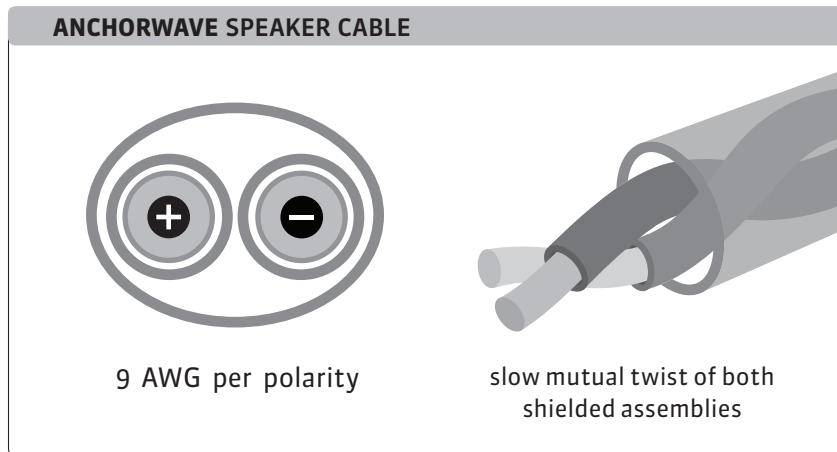
NICKEL SUBSTRATE

POLYESTER MONOFILAMENT

It is known that shielding from stray ambient electromagnetic noise is important for pure audio transfer. However, it is also known that this causes a rise in capacitance of the cable, and can lead to a somewhat closed, 'claustrophobic' type of sound quality. To solve this in the **Anchorwave**, special shielding is used, where only very high frequencies are affected. To anything remotely close to the prized audio frequencies, the shield is completely see-through. Returning once again to our beach analogy, this composite cloth shield behaves just like UV-protection sunglasses. The low frequencies which you need in order to see remain unaffected, and you can see right through the glasses. However, the high frequency ultraviolet range is blocked out completely, to protect your eyes from its harmful effects. So the audio frequencies remain unaffected by the shielding, but higher bandwidths which contain noise are blocked out aggressively. The result is a dead silence of operation which does not impinge upon the openness and natural dynamics of the original audio.

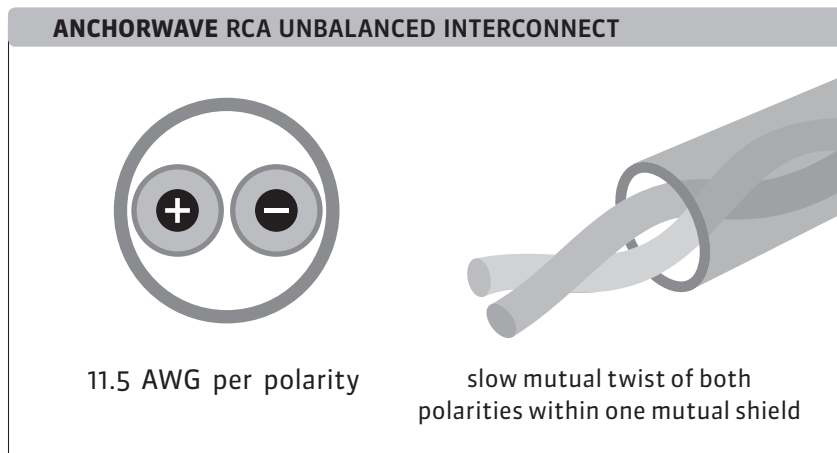
Size Diameter and appearance

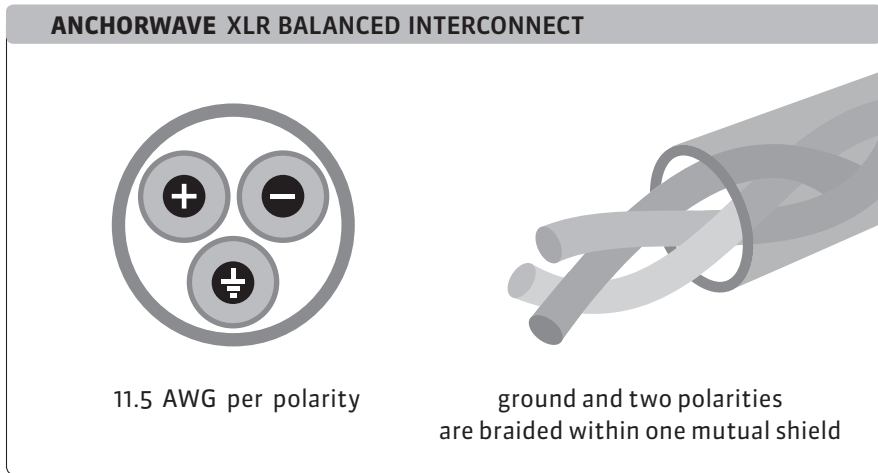
The **Anchorwave** speaker cable's outer diameter is 2.35 cm (0.93 in.) and has a bend radius of 12.7 cm (5 in.). The two polarities are twisted rarely at approximately 2.5 twists per foot. The end of the speaker cable is separated into the two polarities for a length of 15 cm (6 in.). The two polarities are individually shielded all the way up to the terminals. A 1.8 meter length, one channel, of **Anchorwave** speaker cable weighs 1.4 Kg (3 lbs).



RCA and XLR Interconnects

Both the RCA and XLR **Anchorwaves** have an outer diameter of 11.65 mm. The structure is analogous to that of the Anchorwave speaker cable, with the difference being that both send and return conductors are located within the same high tech cloth shielding. A 1.2 meter run, one mono channel, of the interconnect weighs 0.6 Kg (1.3 lbs.).






Protection From the elements and abrasion



Surrounding the special shielding cloth is a protective Polyolefin outer cover which is resistant to moisture and chemicals. For increased robustness and longevity, there is a tough, abrasion resistant Polyethylene Terephthalate outer shell which is braided for flexibility.

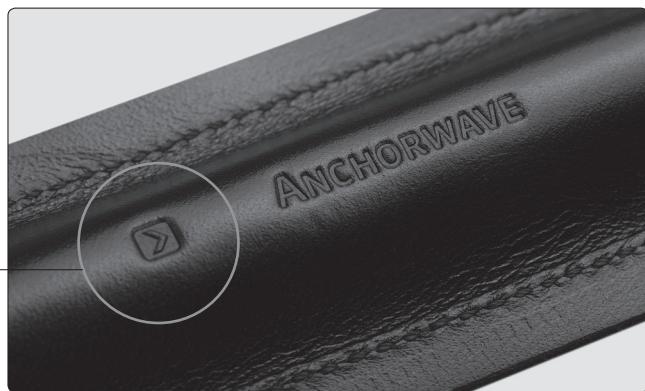
Crucial emphasis On directionality

Cable directionality is no longer a debated issue to the experienced audiophile. We cannot emphasize more emphatically how important, we would even say vital, it is to heed the proper cable directionality with all **Anchorwave** series cables. Cable directionality is denoted clearly by the arrow symbol on each of the leather tags. The pointed end of the arrow must point toward the signal destination end of the signal path. The open end of the arrow must point to the signal source end of the signal path. If the cable is not connected correctly, it should be remedied immediately.

All **Anchorwave** cables contain arrows denoting proper cable directionality. Care should be taken to install them properly:

Source  Destination

 ARROW SYMBOL 



With the **Anchorwave** speaker cables, there are even two potential pitfalls of improper installation. One must take care in establishing the correct way to connect the **Anchorwave** cables from the very outset. Otherwise, sound quality degradation will occur. The red ends of the **Anchorwave** speaker cable must necessarily connect to the red 'phase positive' terminals on your amp as well as loudspeaker. Just as importantly, the arrows on the leather tags must necessarily point with the pointed part of the arrow toward the loudspeaker, with the open part of the arrow pointing toward the amplifier. Only when connected in this way can one appreciate the full potential; the purity of tone, the natural dynamics, the great, controlled, robust bass, and sonic impact of the **Anchorwave** on the quality of the sound resulting in its use.

