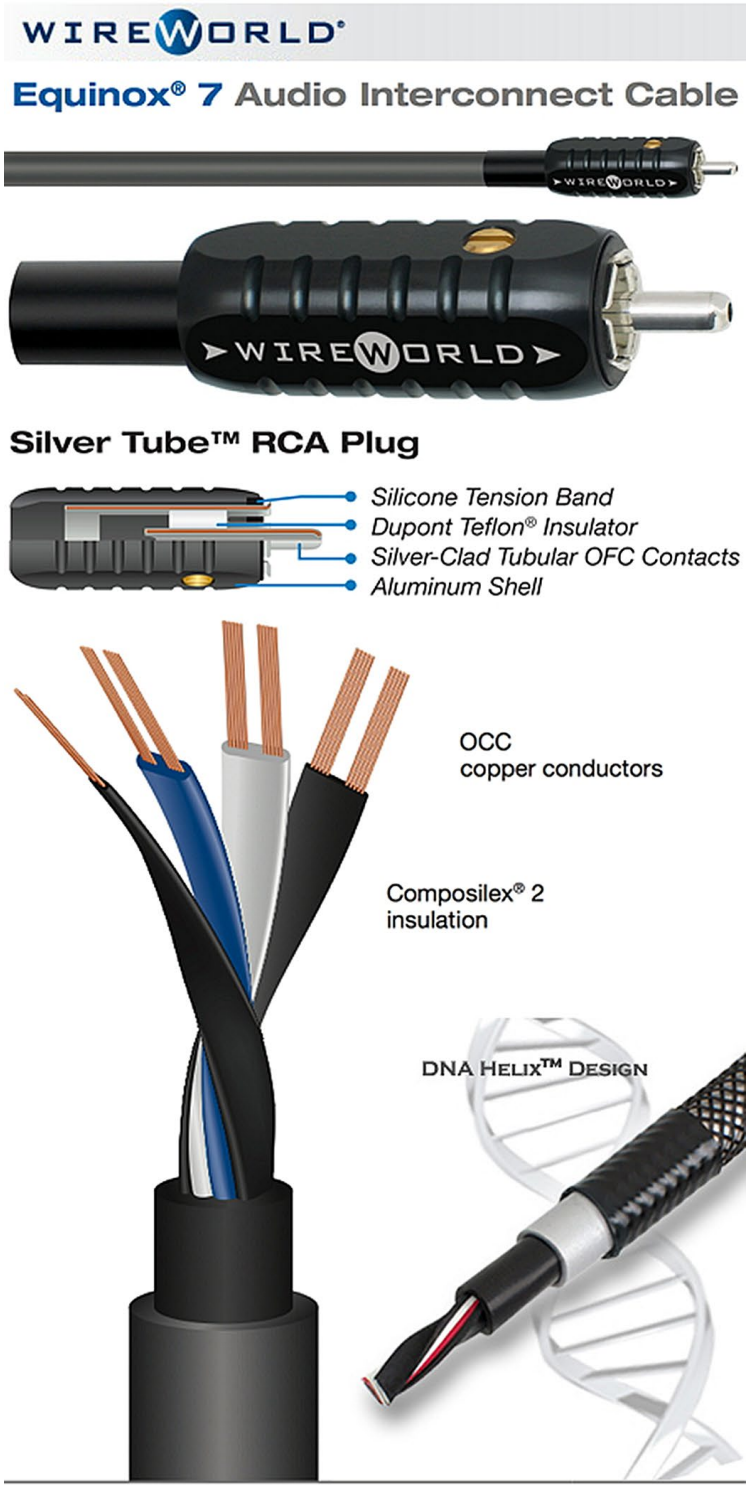
AudioAsylum July 23, 2013, by Duster

Equinox 7 Audio Interconnect Review and Interview with David Salz



Wireworld Equinox 7 interconnect (Ohno Continuous Cast copper, Composilex 2 composite material dielectric, DNA Helix twisted flat ribbon cable geometry) terminated with Wireworld Silver Tube RCA connectors (silver plated OFC hollow center pin with Teflon insulator, silver plated OFC ground contact with silicone elastomer tension band, aluminum shell).

As compared to the previous Equinox 6 interconnect cable which took quite some time to burn-in, the new Wireworld Equinox 7 interconnect cable sounded very coherent even without any time to settle into the system. Before passing any real judgment, I decided to do as I usually do, and allow sufficient burn-in time in order to observe any changes, which should be considered a necessary effort before any lasting impression can be intelligently formed. As such, I assigned myself to allow at least 150 hours of burn-in time, followed by dedicated observations before the evaluation could form a qualified opinion.

Preliminary impressions included a finding that the general gestalt of the Equinox 7 interconnect cable seems to be more refined than the prior Equinox 6 interconnect cable. The Equinox 7 presents a greater sense of low-level information clarity, in that a notable amount of inner detail is more readily apparent, perhaps due to a lowered noise floor. Excess bass energy seems to be reduced as compared to the Equinox 6. As result, the bass fundamental tone is more articulate and tuneful within the soundstage.

As I found myself trying to collate original insights and impressions of the Equinox 7 that replaced the Equinox 6 in my system, I could not critically compare the two models, other than the Equinox presents a more neutral tonal balance, and improved low-level information seemingly due to a lowered noise floor. The only way I could write an evaluation report of the Equinox 7 was to to simply append my Equinox 6 evaluation report with updates, not unlike that of reporting notable performance changes of a mark II model, of which to my ear is what I consider the presentation of the Equinox 7 to essentially be. Both share the same "on the ever so slightly warm side of neutral" sonic signature, without the more analytically cool side of neutral sonic signature that Teflon cables tend to present. That said, in order to assess this Wireworld Equinox 7 interconnect report which is more of a follow-up rather than a stand alone review, one should refer to the previous Wireworld Equinox 6 interconnect report as a primary reference (http://db.audioasylum.com/mhtml/m.html?forum=cables&n=156959).

The Wireworld Equinox 7 RCA interconnect presents a ruler flat tonality, including a somewhat less forward

midrange than the prior Equinox 6, and any issues that may have been found with the previous Equinox 6 in terms of performance at the frequency extremes have been eliminated. Treble energy is notably more abundant, without a trace of brightness, while the bottom end is in perfect balance, with a less perhaps overly pronounced bottom end than what the Equinox 6 presents. This is not to say the Equinox 7 sounds bass shy, it's just to say that those who seek a bigger bottom end like the Equinox 6 presents will have to settle for a more balanced sounding tonal spectrum as a greater valued reward. The most succinct analogy I can find for a comparison of the Equinox 6 interconnect with the Equinox 7 interconnect is the difference between a Bryston 3B-ST power amplifier and a Bryston 3B-SST power amplifier: The 3B-ST presents a very robust bottom end, with a more forward midrange, and a less energetic treble, while the 3B-SST presents a more refined tonal balance which seems to be the higher fidelity, more neutral performer of the two.

As I see it, my satisfaction with the previous Equinox 6 RCA interconnect was bettered by the Equinox 7 RCA interconnect in a similar manner as what a Mark II product version tends to offer. I find the new Wireworld Equinox 7 RCA interconnect to be the most satisfactory cable that I've tried for a digital CATV 2-channel HT audio application, and clearly the best sounding option around the quixotic $200 per 1 meter pair price point. I have not found anything that I do not like about the new Wireworld Equinox 7 RCA interconnect cable. No real sins of commission nor omission. In my experience, that's half the battle won when it comes to evaluating audiophile cables. The other half might involve particular listening preferences and/or system tuning goals, but those matters should be considered secondary to the primary issue of high fidelity, in my opinion.

Note: An unexpected decision to expand my Cable Asylum report to include content beyond what I normally do resulted in a casual Q&A with Wireworld's president and designer, David Salz. It was an enjoyable opportunity for this Cable Guy as an end user to ask questions about various aspects of high performance cabling with an accomplished cable designer who has clearly progressed throughout the years within his craft:

Duster: Regarding shielding of Wireworld's interconnects, I assume the notion of shielding applies to a type of metalized polymer or carbon loaded polymer core material that surrounds the twisted conductors, since a conventional grounded metal shield is not involved in the design. Also, I wish to confirm whether or not the conductor insulation of the Wireworld Equinox 7 interconnect is Composilex 2, while the conductor insulation of the Series 7 speaker cables is polyethylene.

David Salz: You are correct in that the material surrounding the conductors in our interconnects is a conductive polymer, which is one of the three custom blended (composite) polymers in those cables. This unique combination of blended materials, which we call Composilex 2, provides lower triboelectric noise than any conventional material or combination of materials that we know of. The conductors in our Series 7 speaker cables are also insulated with Composilex 2.

The DNA Helix™ design used in WireWorld interconnects consists of a stacked array of four flat conductors, which are twisted together and tightly compressed within a composite shield. In addition to channelling the electromagnetic field energy more efficiently than other designs, this configuration also provides superior immunity to EMI/RFI noise.

Duster: According to images of the Equinox 7 interconnect conductors, it appears that each solid core wire strand is discretely insulated within the dielectric. Does this design factor allow the conductor to behave more like that of a litz or quasi-litz cable rather than a stranded conductor cable? Also according to images of the Equinox 7 interconnect conductors, it appears there is a gap between two groups of five wire strands. Is this design factor intended to affect the electromagnetic fields of the cable in a beneficial manner? Do you have any insights you would like to share about the notion of cable tuning via the carefully beneficial manipulation of cable geometry?

David Salz: Yes, you're correct in that the DNA Helix design does isolate the strands from destructive interaction as do litz designs. Your description of the benefits of the gaps between the groups of strands is also correct, as they allow the electromagnetic field to penetrate the conductors more uniformly, thereby enabling the current to flow more efficiently.

Great question on geometry, but the efficiency issue and the tuning issue are distinctly different. Superior efficiency is created by aligning the electromagnetic field so that it can control the electrons in the conductors more completely. Once the electromagnetic field is aligned with the conductors, the spacing between the conductors becomes extremely critical and the cable tuning is accomplished by adjusting that spacing. This effect is similar to focusing a lens and distinctly different colorations are produced by varying the spacing in either direction from the neutral point.

Duster: I've come to find it vital to understand the importance of the dielectric material implemented as insulation for any given wire or cable. Since the signal tends to travel within the realm of the insulator, just how transparent sounding a cable

may be perceived to be, tends to depend on the behavior of the energy absorbing insulation material surrounding the conductor. In a matter of degree, this issue can create audible artifacts/anomalies due to the effects of dielectric absorption, in that the electromagnetic field is first stored within the insulation material, then slowly discharged, which depending on the dielectric constant of the specific insulator and other design factors, can in worse case cause the signal to sound relatively smeared, comparatively incoherent, even muddy sometimes, with restricted dynamics, poor ambient information retrieval, indistinct timbrel delineation, amongst other observations, including non-analytical aspects of PRAT (boogie factor). A cable is a circuit which can nominally behave like a capacitor with a stored charge, and as such, a cable can present the sonic signature (or a seemingly lack thereof) of its capacitance. The dielectric absorption of PVC, especially when directly extruded over a conductor for use as an electrical insulator, can tend to sound colored due to the high dielectric constant (stored energy potential) of PVC when implemented as an insulator. Cotton, Teflon, polyethylene, polypropylene, bees wax, enamel, all tend to sound less affected than materials with a high dielectric constant such as PVC.

The new high-performance polymer dielectrics for the electronics industry must be a remarkable thing for a Cable Guy to explore for use with various audiophile cable designs. Would you care to comment on this matter, including how it may pertain to the development of the new Wireworld Composilex 2 dielectric? Any further insights about the proprietary Composilex 2 material vs. Teflon would be helpful.

David Salz: Years ago I believed that dielectric absorption (DA) and propagation velocity (VP) were the only critical factors in insulation performance. That is why I utilized micro-porous Teflon insulation in my cables for about two decades. In my development of Series 6, I discovered that modulated triboelectric noise had an even greater impact on sound quality than DA and VP, especially in cables with high grade insulation materials. Composilex 2 is my second generation solution to minimizing triboelectric noise while maintaining excellent DA and VP performance.

Duster: That finding would indicate a cutting edge cable design breakthrough. Did your findings show that micro-porous Teflon insulation reveals the issue of modulated triboelectric noise due to its otherwise high grade insulation properties, as opposed to the issue being less obvious when implementing otherwise less revealing lower grade insulation materials? If so, this finding would be a substantial caveat when it comes to an otherwise accepted view of micro-porous Teflon as being the premier state of the art insulation material. Would you care to characterize the essential sonic signature of modulated triboelectric noise?

David Salz: I think that any of the other cable losses can mask the sonic effects of modulated triboelectric noise to some degree, but it is still one of the most audible cable effects. The best description I can think of right now is a foggy roughness and dynamic compression that obscures quiet information and blurs transients across the whole spectrum, while imposing a timbral character that varies according to the specific material.

Duster: It's at this point where your particular DNA Helix cable design geometry becomes even more intriguing. Keeping in mind the dielectric influences of the insulation surrounding the four twisted conductors, the design also includes an extruded semi-conductive layer that surrounds the four conductors under the cable jacket; a method which keeps the tightly twisted cable geometry in precision alignment along the entire length of the cable, while firmly holding the conductors in intimate relationship with each other which should do quite well to help mitigate cable resonance issues. Furthermore, the fact that the outer boundaries of the electromagnetic field is essentially "encased in" and thus "travels within" the dielectric might be viewed as a detrimental thing, but in the case of the semi-conductive aspect of the surrounding dielectric, the otherwise would-have-been stored energy is essentially dissipated to a degree by the semi-conductive effect. Am I at least partially correct regarding these matters?

David Salz: Your powers of deduction are very impressive, as you totally nailed the function of our composite shield.

Duster: Now that important issues of dielectric involvement, precision cable lay, and cable vibration control have been discussed, the behavior of electromagnetic fields (and potential RFI rejection) might be be better understood. The Equinox 7 interconnect cable features four flat conductors; two for signal, and two for return. The four conductors are twisted in a tight bundle, but since there are four conductors within the bundle, the twist pitch ratio is not required to be as severe as a traditional twisted pair in order to provide noise cancellation, and in the case of your DNA Helix design, this factor perhaps allows the electromagnetic fields to behave with less inductance, not unlike that of a star quad geometry. However, I notice the geometry of the signal and return conductors are not cross-connected (opposing termination) like that of conventional star quad geometry. Are the goals and affectation of the four conductor DNA Helix design a different animal than that of a cross-connected star quad

cable? Another question asked by Audio Asylum Inmates is whether or not there are detrimental effects caused by the multi-conductor design in terms of interconnect cable capacitance? For example: How might a long length Equinox 7 interconnect cable perform when mated with a passive preamplifier?

David Salz: There is another way to look at the shielding effect of our Quad DNA Helix. It combines the electrical symmetry of star quad designs with the axial uniformity and outer shielding advantages of coaxial designs. Since low inductance is necessary for high linearity, the capacitance can only be low if the cable is made very small and with relatively high resistance. Therefore, with high source impedances, the interconnect will either need to be short or very small to avoid substantial signal degradation.

Duster: Another point of great interest is the SOTA implementation of OCC single crystal copper rather than the ubiquitous use of OFC. The lack of grain boundaries in the crystal structure of drawn copper wire has allowed the performance of conductors to sound less "wirey" if that descriptor could be considered to be a listening cue in terms of identifying a certain sonic signature. The typically relaxed, smooth, effortless sounding nature of OCC wire has brought cable technology to a new level of performance during recent years, which brings to mind if there could be any other areas where metallurgical manufacturing processes can progress in order to provide even better sonics, or is OCC as a conductor, whether it be copper or silver, the ultimate "straight wire with gain" notion involved in the proverbial audiophile Holy Grail?

David Salz: Now that I've done a better job of eliminating electromagnetic and electrostatic losses, we seem to be getting greater improvements from OCC conductors than ever before. In addition to the standard OCC process, our conductors undergo additional treatment to improve their performance, but they are still not sonically invisible, as demonstrated by the fact that OCC silver allows us to hear more information than OCC copper.

Duster: As an avid audiophile connector aficionado, I pay close attention to the quality of RCA connectors (and every other type, including AC connectors), since the the effect of a particular connector often determines the performance level of a terminated cable just as much as the raw cable itself. That said, from both a materials and physical design perspective, the Wireworld Silver Tube RCA connector is one of the most impressive RCA connectors, in my experience. I tend to prefer RCA connectors with silver plated copper contacts such as the Xhadow Precision RCA, however the Silver Tube differs in that it features a silver plated hollow center pin instead of a solid pin, and rather than a milled silver plated copper body with spring leaf contacts, the Silver Tube features a low mass silver plated copper ground contact with a silicone elastomer tension band that enables very firm conductive contact pressure. I find that when the Silver Tube RCA connector is plugged into an RCA jack, the elastomer tension band positioned around the ground contact initially produces an unusually tight tension on the tip of the RCA jack ground shroud until the plug finally slips onto the surface, where it then provides a very firm but not a ridiculous amount of grip that would make the plug difficult to remove. The "feel" of this particular action is a joy to experience, and makes the notion of a locking barrel RCA connector seem obsolete. The hollow copper center pin with direct silver plating is of obvious benefit in terms of skin effect, and at least in theory is superior to the direct gold plated copper hollow center pin of the Eichmann Bullet Plug. Would you mind sharing the story of how Wireworld's RCA connectors have evolved over the years, including particular insights about the role of connectors in various Wireworld cable design efforts?

David Salz: When I started Wireworld in 1992, I planned on designing a superior RCA plug design to use on my reference cables. From my cable design work and a few simple tests, I knew that a tubular center pin would be helpful. I also knew that reducing contact resistance would improve fidelity. I decided to find better solutions to the three factors that affected contact resistance: conductor material, surface area and pressure. The conductor material was simple, as the contact resistance of silver is dramatically lower than any other metal. I had also found that the common solution to increasing contact pressure, collet type locking plugs, were awkward to use and had poor wiping action. That is what prompted me to develop the elastomeric ground contact spring. I also went through great difficulty to produce that design in both OFC and high purity silver.

Years later, I redesigned the plug with thinner-walled pins and ground contacts made of silver-clad OFC. That is the design we use today.

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