Cable confusion unravelled?

NEVER AFRAID TO TACKLE THE TRICKIEST – AND MOST CONTENTIOUS – OF HI-FI QUESTIONS, MARTIN COLLOMS HERE GETS TO GRIPS WITH A SELECTION OF LOUDSPEAKER AND INTERCONNECT CABLES FROM THE CHORD COMPANY, KIMBER KABLE, QED, TOWNSHEND AUDIO AND VERTERE

Audio signal cables, or indeed all cables including audio network and power cords, may have an influence on sound quality, but this remains a contentious subject. Whether that influence is significant, even audible, will depend on a host of factors, from the acuity and specific interest of the end user, to the quality of the set-up, whether there is a difference at all, and to a degree the sound quality both of the components of the audio system and the music sources involved.

Take the case of a 'lo fi' music centre, which generally comes with all required components including loudspeaker cables. Built to a price, all parts will have been most carefully costed to do the job required but no more. Often the audio components will be closely arranged on a convenient shelf, completing the installation.

Instead, for little money, such a 'music centre' could be placed on a low cost 'sound table' centrally in the intended stereo soundstage, and with the loudspeakers mounted on inexpensive 0.4 or 0.5 metre stands , e.g. from Argos or Amazon, spaced a metre to the left and to the right of the main system electronics. The resulting sound quality transformation is ear-opening for most observers, frequently doubling the level of musical satisfaction.

Then, assuming they're detachable, swapping out the supplied speaker cables would add a little extra sound quality at this point – you could try 2x5m of industry rated QED classic 42-strand cable at just £10 (plus terminations), whereas the supplied generic cables will not be 'audio grade' and will likely be little better than the 8 strand proverbial 'bell wire'. Thus, we are introduced to audio cables.

The subject expands almost exponentially from this point – for context, variety, and cost of available audio cable products. Before going into any detail, let's consider the fundamental requirements, noting that almost any pair of insulated wire conductors will safely pass or conduct audio signals.

While you can always hear the music signals passed through any working cable on its way to headphones or loudspeakers, the inner construction details of that cable, the materials used and its physical design may subtly affect sound quality.

Classically trained engineers have frequently rejected the proposition that cables sound different and some still do hold that view, though I am now reasonably confident that the audio industry has largely proven them wrong.

On safer ground, we could say that the music passing through different cables can sound subtly different, and in some cases better, and give greater pleasure than with others. Neither should characterising 'better' be a problem: the improvements could encompass firmer and more tuneful bass, richer detail in the midrange, purer, better defined highs, crisper stereo image focus. Then, more contentiously, there's the matter of more satisfying rhythms related to tighter instrumental timing from musicians, also connected with the perception of an upbeat pace from the performers.

With such gains there may also be subjective characterisations of sharper focus or localisation, better definition for the percussive edges to sounds, also deeper, wider, and better focused stereo imaging, more natural timbres – you see, there's much to talk about.

Gains, even if not game-changing

Rarely are cable differences game-changing, but quality gains are there to be had. We might just as well take the opportunities presented to us. However, realising that advantage can be problematic. Generic raw cable is made in the tens of miles is surprisingly inexpensive, and it does much of the job required well enough.

Going a stage better suggests a more specialised cable design for purpose, requiring theory, experiment, and frequently costly prototypes: then trial production runs of relatively small quantities are undertaken where many cable prototypes may well be discarded. Shorts runs of specialist cable are expensive to set up, this latter stage may be many times the cost of materials, and thus the final per metre result for retail may look rather expensive for the material content concerned. That is the price we must pay for better sound quality.

Industrial 'trade' cable producers will occasionally have an inexpensive 'generic' cable in their range

which just happens to perform well in listening tests and such a finding can be a welcome bonus in some Hi Fi applications. An example in networking is found from industrial grade maker Belden with its widely used and popular CAT 6 network cable.

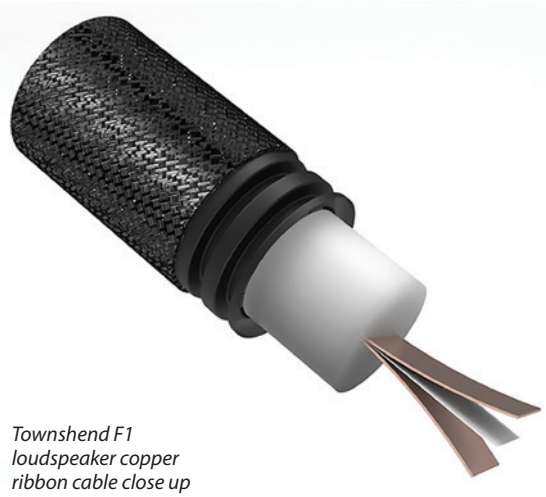
Its recognised performance advantage is said to be due in part to a higher precision build when compared with commonly used CAT 5 and 6 generics from the Far East which may be more erratic in twist tension, twist rate, sleeving fit, and with losses and per metre consistency of electrical properties evident at higher pulse rates. These factors may lead to poorer sound quality.

Cable design is a complex subject fraught with pitfalls. Of course there are some basics, per metre resistance, capacitance and inductance, but once the design has proceeded beyond this point there may be more subtle interactions of materials, geometry and construction which may produce unexpected results, some better, but frequently worse. The CAT example teaches us that precision, build quality, also matters. Many network cables were covered in the previous issue VOL 13 No2 while here we have a handful of interconnect and loudspeaker cable assessments, here working with audio signals.

Mains cable designed for improved audio at first sight sounds improbable, after all it is just a few amps at a low 250V/50Hz supply frequency, a bit less power than a fire, and a bit more than a small food mixer. While the effect on sound quality is generally rather less on the mains side than for audio signal cables themselves there are remain some audible variations between mains cables. In addition terminating IEC sockets have differing contact forces with some minor resistance variation, cables and cable assemblies may have mild interference filtering properties while their relatively rigid construction can conduct some vibration e.g. from the wall socket to the electronics unless countermeasures are taken.

References used in this review series included Naim Super Lumina IC and VDH First Ultimate 1.5m RCA, Transparent XL II interconnect and loudspeaker cable. I still recall the Kimber Model 88 – 'The Black Pearl' – which I reviewed in August 1995 Hi-Fi News: then priced at £6k per stereo metre, it has yet to be surpassed.

If you are buying, try auditioning cables as you would any components – in your system on a sale or return basis – and whatever the claims or review opinions, if you do not find a significant improvement, just walk away.



Townshend F1 loudspeaker copper ribbon cable close up

Townshend F1 Isolda Fractal

Loudspeaker cable

HIFICRITIC
AUDIO EXCELLENCE

This is a very heavy cable, well damped mechanically, quite rigid but not so inelastic as to not lay evenly on the floor. The conductors comprise a single pair of oxygen free copper ribbon conductors, cryogenically treated, Townshend's own *Fractal*™, wave terminated, spaced by a very thin, solid strip PTFE dielectric and the assembly enclosed in extruded polyurethane. This is then encased by a loaded flexible cable conduit for ultimate protection, sleeved by a hard-wearing woven polyester braid, this available in white or black.

As we have found previously, dielectrics can take some running in: an initial, if small, upper treble sparkle may settle down after a few tens of hours.

The extremities are mass loaded by machined aluminium blocks which also include RF terminating networks to absorb high frequency radio and other interferences which unterminated can affect the power amplifier. This cable is 22mm in diameter, nearly an inch, and where the low characteristic impedance of 18 Ohms is held to moderate values at higher frequencies , e.g. above audibility, to match that of most loudspeakers in their upper range, said to be about 30 ohms.

This impedance is not the low frequency DC slam bang value of the cable which is very low at 0.01 ohms per metre loop, which also combined with a very low inductance of 1.3 uH. The capacitance is intentionally higher than most cables at 3.4 nF/m where typically you would find a thousand times less, maybe 300pf/m. This is a design feature to attain a low and non-reactive characteristic impedance over frequency similar to a loudspeaker, so that

audio impulse waveforms are better terminated with reduced ringing/reflections. Some designers teach the latter as harmful to sound quality. Secondarily it serves to help control radio frequency interference which can be fed back to the power amplifier.

This class of high capacitance cable could result in amplifier oscillation with older models, notably from Naim, which were designed with the customary vestigial output inductor omitted, but this potential pitfall has now been addressed by complementary networks fitted to this cables' terminations.

In the event it worked well with a Naim NAP 500DR and also the humungous CH Precision A1.5, returning top scores. Image depth was close to state of the art while focus was excellent as was stage width. It was bold sounding, imbued with fine detail and with well-defined transients combined with excellent bass slam. Rhythms were upbeat and involving and there was a strong sense of power and control here. Tonal balance was very close to neutral and it scored a massive 95%.

HIFICRITIC has no hesitation in awarding an Audio Excellence to the F1 Isolda Fractal heavy duty loudspeaker cable.

Copper speaker cable: 2x8m tested. 4mm terminations, £2k per stereo metre, 2x 6m is £11,000 plus vat.

Kimber Carbon 18XL

Loudspeaker cable

HIFICRITIC
HIGHLY RECOMMENDED

This substantially-built cable came with WBT 4mm terminations, and packaged in a fancy wooden transit crate. It is quite rigid and needs care and planning with the routing., but there is also a lighter weight 16 XL version suitable for less costly systems but also for shorter runs than the 6m pair of 18XL I used for this review, which was priced at about £7,000 depending on the specified terminations.

Pricewise the 18XL speaker cable is a step below the top-grade Kimber Select but still ranks in the premium class. So far, I have not heard a second rate Kimber cable and this one is no exception. It is self-effacing in a good way, imposing very little of itself on the music passing through it to the loudspeakers. while imaging is spacious, well focused and with good depth.

I found it to time well, with a pleasing upbeat quality and good listener involvement. Compared with the references it is fundamentally neutral, and low in colouration: we did allow a few tens of hours of use, but this might not have been quite enough to fully run it in. While satisfyingly musical, the pleasing dynamics were combined with good bass tune playing, it remains just a step back from the top class, here sounding not quite so transparent, and that particular sense of delicate air and far depth mystery on Garbarek *Rites* was somewhat muted, also with a little less definition both for transients and complex percussion sections.

The timbre is notably neutral, except for a slight emphasis on the upper harmonics of alto sax while it demonstrated low coloration over the bass and mid-range, this combined with good musical timing. With a low colouration sound and a generally relaxed natural musical character with good image depth there are no sins of commission.

Overall, Kimber Carbon 18XL scored a very creditable 75% on my scale, and fits comfortably in the Highly Recommended category.

Tech: Built with generous quantities of Kimber's own grade of oxygen free copper; their proprietary Vari-Strand format is used whereby bundle of strands of differing gauges are spun in a rope form, carbon polymer encapsulated, then Teflon jacketed before further combining. Several such conductor 'ropes' are interwoven in the braided Kimber manner. The carbon content is likely to have damping properties for mechanical vibration, but also will help control triboelectricity and electromagnetic interference, lowering noise floors and aiding transparency.

The Kimber transport crate