

Speaker Wire: Making The Right Choice

This is the hot potato when it comes to audio topics! It seems everyone has an opinion and of course they are entitled to one. Our object here at Audio Trends has always been to take a balanced approach with everything and speaker cable is no different! So, here are some of our basic opinions and suggestions. Your goal should be to select a speaker cable that is commensurate with your system, allowing it to deliver to its maximum potential.

To start with, many don't believe that speaker cable even makes a difference. Well consider this scenario – what result would you get if you eliminated any and all speaker cables? Obviously nothing! No wire equals no sound. Simple. Then there are the speakers themselves. This is the final link in the home entertainment chain and is the device that converts the tiny electrical signal into sound that your ears hear. So, speaker cable is more than important – it is essential. However, the \$64 question is...how much do I need to spend and what different types are available?

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Firstly, we need to address this basic point. Quality speaker manufacturers don't include wire with their speakers. Why not? The answer is really very simple and logical. Primarily, the manufacturer doesn't know how long your needs will be and of course there are so many different options available to the consumer. Sure, there is an argument for 'freebie' cable worth maybe 10-15 cents per metre and this is usually the option chosen by the chain store operators, not by specialist audio people like us. Why? Because the speaker cable you choose can have a noticeable impact on the sound quality of your system. Whether you have expensive or cheaper speakers,



they won't sound their best with poor-quality speaker cables.

The next myth to dispel is that overly thick cable does not necessarily equate to better sound. It was probably in the 70's, a golden era for high fidelity, that attention started to focus on cables. Everything else – turntables, cartridges, tone-arms, amplifiers, speakers and even the LP record – was at a very high level. So it was 'discovered' that thicker cables sounded better than the very thin 'Bell' cable then the norm. So, a whole industry got going with a lot of mumbo-jumbo and in many cases delivered some pretty poor-quality and deceptive products

For example, the clear PVC coating made the cable look thicker than it actually was and low grade copper which looked most impressive when new usually tarnished or oxidised even after a short period of time. Some cables got so thick that it was impossible to connect it to either amplifiers or speakers! This was a joke and quite ridiculous.

Somewhere along this line, the theory was put forward that the audio signals passed mainly along the surface of the cable and some quite respected manufacturers still hold to that concept. Possibly true. At the same time however, the technical fraternity

were adamant that they couldn't measure any appreciable differences in cable resistance over a set distance. Many (not all) amongst their midst therefore concluded that it makes no difference to audio quality. They did of course agree that the longer the length required, then a thicker gauge cable would be advantageous – not because of sound quality but rather due to the increased amplifier load.

American Wire Gauge

At this point it would be good to digress slightly and briefly discuss cable size or standards. The size of a cable's conductive copper bundle is identified by its American Wire Gauge number. This is abbreviated to AWG and is usually just called "gauge". The lower the gauge, the thicker the wire and therefore lower resistance for the amplifier to overcome. Most speaker wire available on the market today ranges in thickness from 12 to 16 gauge. In Australia, we also refer to cable by strand count – anything from 125 strands per conductor down to 8 strands per conductor. (Audio Trends recommends staying away from anything thinner than 24-strand cable for home audio.)

***Tip:** When choosing speaker cable, consider the quality of **all** your components and speakers, the overall sound quality you're trying to achieve and the budget – if any – you're working with. Also, keep in mind the distance between your receiver (or amplifier) and your speakers – long cable runs can cause significant output drop and thus require thicker cable.*

In a typical room, the main speakers should only be around 3 to 5 metres apart from each other. Any further apart and you can lose 'imagery', which is not good. If the amplifier/receiver can be centrally located, then speaker cable length is modest thus making high quality cable more justifiable.

New Directions

Somewhere in all of this, speaker manufacturers responded by introducing bi-wiring capabilities and in fact most speakers even some cheap ones have this feature even though their internal crossover network

does not even justify the fancy terminal. But it looks impressive, just like the PVC coating mentioned earlier! However, what was being deduced by hi-fi enthusiasts, especially in the UK, was that when the crossover networks were constructed especially (divided) for low and high frequencies, there was an improvement in sound quality to the listener.



This of course is extremely interesting. The speakers sounded better, but why so? The light began to dawn that the amplifier also needs to be viewed as part of the link. The better the cable or more cable (bi-wiring) makes the amplifier work better or easier thus improving the signal being received by the speakers. In very simple technical terms, the damping factor of the amplifier is altered when measured with speaker cable attached. The better the cable or more of it allows the amplifier to work more efficiently. So a combination of factors, not just one contributes to better performance.

Choices for Main Speakers

Now you may be concluding from the above that we don't believe in the benefits of good cable. Not at all! But at the outset, we mentioned the need for a balanced approach. You may also conclude that copper is copper and that apart from the number of strands and the colour of the PVC coating, there is no difference. On the surface, this seems a logical conclusion. However, there is a lot more to 'good' speaker cable and an in depth discussion is beyond the scope of this article. Briefly, some factors include the quality of the

copper, the oxygen free content, annealing processes utilised and the quality of the PVC sheath – important because of the need to keep the cable from oxidising. Some manufacturers coat the copper with silver and others 'twist' the conductors to reduce interference. So, where does this leave the consumer?

From experience, we have found that as a guide one should spend around 10% of your total system (A/V Receiver; DVD Player and 5.1 speaker system) on cables. This is based on average sized rooms and would possibly need to be increased for larger areas or on lower valued combinations – say under \$2000. More should be spent (our opinion) on the front three speakers. Here are some things to consider:

- For audiophile-quality music systems – using very good cable helps bring out fine musical detail. Bi-wiring is a definite consideration. Brands to consider include Audioquest, Liberty and Tara Labs. Audio Trends stock product in the price range from \$10 to \$120 per metre and many in between.
- If you're wiring your listening room for Surround Sound and you have a system that is primarily for movies, then cable in the price range of \$6 to \$20 per metre should be adequate. If though your system is in the high-end arena and you intend to listen to serious music, then follow the suggestions for audiophile systems mentioned above.
- Now for the good news and bad news. First, the bad news. There seems to be a number of folk who think that when they have to run cable over long distances that they thus need to spend less per metre than those who need only short lengths! Wrong! In situations where you can't avoid long cable runs to your speakers – heavier gauge cable (more strands) reduces the overall resistance and load on your receiver or amplifier. So, longer runs need better and more

expensive cable not cheaper. You loose on both counts! There is not only a difference in sound quality, but lower grade cable over long lengths could also contribute to the long-term reliability of your system. Output stages, the electronic device to suffer are very costly to replace even on budget amplifiers! The good news? Keep your speaker cables as short as practical and you will save on all counts!

- Choose a quality speaker cable whenever you want to be certain that you're getting the very best audio performance from your system.



Rear Effects Speakers

Unless you are running identical speakers, then choosing a lower quality or different speaker cable may be a good and sensible option. The benchmark here will be choosing something complimentary to both your system and the required cable length. Quite good cables suitable for rear effect speakers range in price from \$3 to \$6 per metre. Unless your room is enormous or you just have to spend more, then this should be adequate.

Multi-room Speaker Cable

For most, their multi-room system serves a different purpose or is of a secondary nature to the main system and therefore may have other considerations when it comes to cable. So, if you're wiring a multi-room system, the strand count of the cable you choose for the speakers in your remote room(s) is still important because, as stated above, long cable runs put more of a strain

on your receiver or amplifier. For multi-room audio systems, use the following chart as a guide. It only reflects resistance concerns, not audio quality which is subjective and needs to be discussed with one of our consultants in conjunction with the overall system configuration.

Distance from speaker to amplifier	Strand Count
Less than 10 metres	24
10 metres to 25 metres	65
More than 25 metres	85

How much wire do you need?

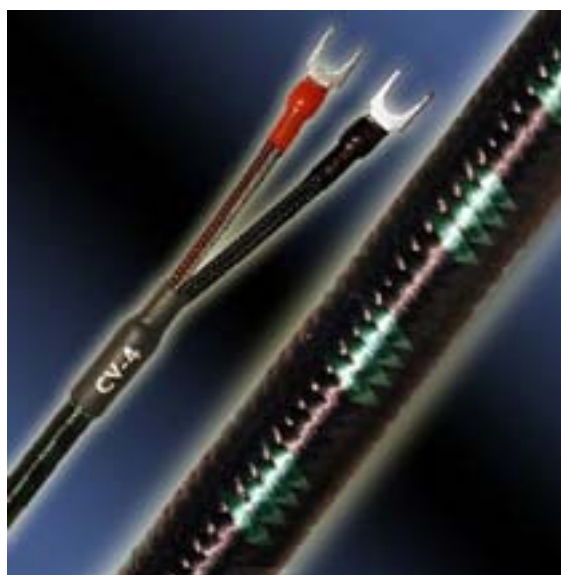
Simple, not too much and not too little. More than is required costs you money, may degrade the signal if extremely excessive and can cause a 'storage' problem. Looping cable behind a speaker or cabinet is not a good idea as possibilities of EMI problems are increased. Too little can likewise be dangerous. Not only could it be difficult to complete a connection, but it could cause a speaker to fall and make rear panel adjustments tricky to say the least. Add a little more to allow for these situations.

Speaker Cable Connections

In order to carry the amplified signal from your receiver's (or amplifier's) output terminals to your speaker's input terminals, speaker wire consists of two conductors, typically encased within plastic insulation. One is for the positive signal, and one for the negative. Your speaker cable will probably not be marked (+) and (-) but there is usually some way to visually tell them apart. The key thing here is to make sure you run each and every cable the same way – amplifier positive to speaker positive and amplifier negative to speaker negative.

It's not that you will cause any damage to your system if you get it reversed, but when speakers are connected incorrectly (amplifier positive to speaker negative etc) or what is termed "out-of-phase", then one speaker is moving in an inward direction whilst the other is moving in an outward

direction. Unpleasant? A beginner may not readily recognise the effect, but when compared the "in-phase" way is far more musical and coherent.



Good quality speaker cable often has directional arrows. Again a subject of intense debate as to any sonic benefits. Many believe that cable sounds better when the signal is run in the direction of the arrows which indicate in which direction the copper was 'drawn'. Others who are not quite as enthusiastic still believe that the arrows are a reminder of which way to reconnect them if the system is ever moved. It is certainly not going to cause any harm if you follow the directional arrows, but in the end we'll let you be the final judge.

Speaker cable connectors can be advantageous, especially at the receiver or amplifier end. The most common is referred to as a 'banana' plug. Although they (banana/4mm plugs) are all the same basic shape, some are made to closer tolerances for a tighter fit. They always cost more. If you intend to be disconnecting and reconnecting your system on a regular basis, then you may want to install some even on the cable ends that connect to the speakers.

Speaker cable plugs can also help safeguard against short circuits – again saving you inconvenience, time and considerable money. When loose strands from a bare cables positive and negative leads accidentally touch, your receiver or amplifier will

shut down and probably suffer serious amplifier damage. Tell tale signs usually include a 'flash' followed by a small amount of smoke and an unpleasant smell!

However, it is our belief that bare wire connections are usually satisfactory at the speaker ends – especially on speakers that utilise a 3-way binding post. If you do decide to hook up your speaker cable without plugs, then use a cable stripper or sharp pliers to strip about 10mm of insulation off the ends of each conductor, exposing the bare wire. Be careful not to cut these strands. If you do, cut off the end and repeat the process. Twist each conductor's bare wire strands tightly so no stray strands are protruding. It is not recommended to solder speaker cable other than a 'dab' at the very extremity and on bare wires only!

Concealed Cable

Concealing your speaker cable inside your walls, under floors and in the ceiling is the way to go, especially for rear effect speakers and also if you can't stand the thought of seeing it anywhere in your listening area. This approach is the norm for multi-room sound, outdoor speakers and can be for all other applications.

Can you do it yourself? Possibly yes. It really depends on your skill level and your home. It's much easier to install cable during initial construction or renovation than it is in a finished home. If you have any doubts about your ability to do it, we recommend consulting with one of our consultants. We have experienced installers on staff who can handle almost any situation.

Some building regulations require a special kind of speaker cable for in-wall installation. We can supply UL/CL3-certified Cable that is suitable for most in-wall installations. They meet all (US) standards for resistance to fire, chemicals, abrasion and temperature extremes. They also have a smooth outer casing that makes them easier to pull through the wall framing.



Conclusion

We haven't covered every aspect of the speaker cable debate, but hope that you find this small insight has helped in some small way. The 'rip-off' merchants selling no-name brands of dubious quality are still out there, but with prices coming down over recent years it is very easy to purchase good cable from respectable manufacturers at modest cost. As always, Audio Trends staff members have a wealth of experience and have tried most types. They of course have their favourites and are happy to share their conclusions with you.

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