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Subject: Re: Effect of Length

Posted by [Keith Larson](#) on Mon, 02 Aug 2010 14:27:29 GMT

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Insulated wires have two advantages. One is protecting the wire itself from abrasion and corrosion. As an example, you have probably seen plenty of copper wire turn green because of chemically reactive insulation, but this takes time. The other is maintaining a constant conductor spacing. For a one loop inductor, I'm pretty sure the inductance is a function of the area within the loop. Anyhow, if you 'unzip' a section of wire the inductance will go up by quite a bit.

In most instances where the wire is not severely undersized the ratio of wire to speaker resistance is usually large enough that the effects of wire resistance are un-noticeable. Its usually when the ratio is 1:10 or less that things start to become noticeable and eventually obvious. By the way I would like to add here that I understand that using the word 'noticeable' is very subjective. The bottom line is that if you have a good ear or know what to listen for, things become more noticeable, or, simpler yet, tilt your head a few degrees for a new experience! FWIW, as far as measuring goes, changes on this scale are easy to spot.

The only thing that really effects wire in the short term is temperature. The resistance of many metals (IE copper) is directly proportional to absolute temperature, so its not surprising that unless the wire is really bad and goes from cold to on fire, its not going to change much.

Note: Heat tends to build up much faster in the voice coil of the speaker with some coils potentially getting VERY hot. Temperature swings of 200'C are common, so were talking about nearly a  $(270+200)/270$  change in resistance.

On the other hand, the connections are by far much more influenced by the environment.

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