THE WONDERFUL WORLD OF WIRE

As station technicians, we're expected to know all about the wire and wiring of our physical plants. But much information seems to be passed down by word of mouth, and it's sometimes hard to find written references to explain all the wiring bafflegab.

Case in point: do you need to use FT4 or FT6 wiring? This rating refers to the flammability of the wire's insulation. Distressingly, the plain old PVC hookup wire we've been playing with for years carries no rating at all. The minimum standard for wire and cables going into a studio or transmitter site today is FT4, which stands for "flame test 4." Almost any cabling you can buy today is FT4 compliant, which basically means that in a fire, the insulation will not contribute to the combustion… it may burn, but it won't burst into flame.

In some jurisdictions, particularly in BC and Ontario, any wiring that runs free through an air plenum for more than, say, three meters, must be rated FT6. FT6 cables are usually Teflon insulated or something similar. If your supplier refers to "plenum-rated" cable, it's probably FT6. This rating means that the wire will not release toxic gases in a fire. FT6 wires typically cost about twice as much as similar FT4 offerings, so it can become important to know what you need to use and when. Sometimes you can't get a particular cable type in an FT6 rating … or can't afford it. Times like that, you need to look at placing the wire inside conduit or fully enclosed wire duct.

That small round beige or white telephone drop cable, used before data came to copper, was called Style "C." Sometime later, it became Style "Z." So far as I can tell, the wire itself didn't change at all – just the name. And for historical purposes, if you're looking at a *really* old installation, you might find a two-tone green twisted pair without a jacket; usually surface-mounted with staples… this was called Style "B." Telco guys usually just refer to any of these cables as "Style."

Then there are the "Cats," or Category ratings. UTP (unshielded twisted pair) wires started out at Category One, which was rated for POTS, or plain old telephone service. You'll never find this stuff anymore. Cat Two is an obsolete type that was used for IBM Token Ring networks up to 4 Mb/s. Cat Three is still in use, good for 16 MHz/10 Mb/s, and popular for 10BaseT Ethernet networks. Cat Four is an obsolete type that was used for 20 MHz/16 Mb/s Token Ring. Cat Five was the original 100 Mb/s Ethernet cable, now obsolete, supplanted by the very popular Cat 5e, which is adequate for 100 MHz/100 or 1000BaseT Ethernet. Next comes Cat 6, rated to 250 MHz. Cat 6a is rated to 500 MHz, which will take you up to 10GBaseT. Cat 7 doesn't even officially exist yet, but informally refers to shielded twisted pair cables with individual pair shielding, and an overall shield, rated to 600 MHz. It's expected that this will carry 100GBaseT Ethernet,

but right now it's still vapourware … don't expect to be able to buy it for another five years or so. And with all that double-shielding, it sounds like it will be a bear to use…

All these frequency ratings, when referring to Ethernet speed ratings, are for a maximum 100 meter run… Incidentally, although the great majority of cabling installed for computer and telephone today is at least Cat 5e grade, for voice over IP telephone, the requirement is for only 0.8 MHz, so even Cat 3 is way more than adequate. Whether you can find suitable cable at your supplier in this grade is another question, however. Sometimes it's just easier to not buck the trend, and use Cat 5e or better, just like everyone else.

By the way, the "Cat" ratings originated with cable supplier Anixter, but the standards today are set by EIA/TIA. These jokers also came up with two competing wiring schemes for RJ45 connectors, T568A and T568B.
All you need to remember is not to mix 'em up, and 99% of everything is wired with scheme "B." It's also handy to know that wiring one end of a cable as "A" and the other end "B" will give you a crossover cable!