



## Watch-outs & 5 tips for cable color-coding

In the Information and Communication Technologies (ICT) field, there are several reasons to color-code cabling. In this blog, we look at a few reasons why it's worth the time to color-code network cabling both during the initial installation phase and during maintenance visits. We offer four tips for completing this process successfully and also discuss:

- Why color-coding backbone cables can be very useful
- How some colors like orange fiber jackets can cause confusion
- Coding schemes for copper vs premise cable jackets
- The cost of color-coding.

One of the many reasons we suggest color-coding cabling in the ICT field is to identify cross-connect fields edition<sup>1</sup>. For example, white is used for first level backbone cable and brown for interbuilding backbone cables under this standard. Color-coding on backbone cables can be very useful when you have a Class 3 (multiple buildings at the same site) or a Class 4 (multiple buildings at multiple sites) installation under the TIA-606-C Administration Standard.

The original copper color-code is based on Bell System's 25 pair color-code developed in the 1950s. With the invention of polyethylene-insulated conductors (PIC)<sup>2</sup>, it became possible to better identify individual wires over the paper method which used white paper or white paper with a dot or dash. The ANSI/TIA 598-C Standard (the Optical Fiber Cable Color-code) adds two colors (rose and aqua) to the original copper color-code (Table 1 below). This code is used to identify individual strands in a fiber optic cable.

Fiber #	Base color	Abbreviation
1	Blue	BL
2	Orange	OR
3	Green	GR
4	Brown	BR
5	Slate/Grey	SL/GY
6	White	WH

<sup>1</sup> as covered in the TIA/EIA 606-C Administration Standard and better explained in the BICSI ITSIM 7<sup>th</sup> edition

<sup>2</sup> [https://en.wikipedia.org/wiki/25-pair\\_color\\_code](https://en.wikipedia.org/wiki/25-pair_color_code)

<b>7</b>	<b>Red</b>	<b>RD</b>
<b>8</b>	<b>Black</b>	<b>BK</b>
<b>9</b>	<b>Yellow</b>	<b>YL</b>
<b>10</b>	<b>Violet</b>	<b>VI</b>
<b>11</b>	<b>Rose</b>	<b>RO</b>
<b>12</b>	<b>Aqua</b>	<b>AQ</b>

**Table 1**

In addition to the copper color-code, there is also a code for premise cable jackets. Table 2 is the author’s summary of the preferred color-coding scheme for premises cable jackets. It’s also based on the ANSI/TIA 598-C Standard.<sup>3</sup>

<b>Fiber Type</b>	<b>Cable Jacket Color</b>
OM1 62.5/125 µm multimode fiber	Orange
OM2 50/125 µm multimode fiber	Orange
OM3 850 nm laser-optimized 50/125 µm multimode fiber	Aqua
OM4 850 nm laser-optimized 50/125 µm multimode fiber	Erika Violet (Aqua optional)
OM5 850 nm laser-optimized 50/125 µm multimode fiber	Lime Green
OS1 Singlemode fiber	Yellow
OS2 Singlemode enhanced fiber	Yellow

**Table 2**

Using orange fiber jacket color for both OM1 62.5µm and OM2 50.0µm has caused confusion and issues among users. Unfortunately, it’s easy to mix up cables and patch cords with many buildings having OM1 & OM2 fiber installed. There’s also an opportunity to mix up OM3 and OM4 cables because some older OM4 cables are aqua in color.

**Tip #1: Color-code backbone cables**

Backbone cables generally have fewer problems than horizontal cables. However, when backbone cables do have problems, it can be catastrophic because it affects multiple users, floors, or even buildings. It makes sense to make backbone cables easily identifiable and the nominal expense in time and materials is well worth it.

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<sup>3</sup> ANSI/TIA-598-C-2005

For intrabuilding (within the building) use [hook and loop fasteners for low voltage cabling](#) to identify the cable as either first level backbone (White) or as second level backbone (Gray). For interbuilding (between buildings) use hook and loop fasteners to identify the cable as interbuilding backbone (brown). In situations where there are many cables—like a data center—you can also use the Optical Fiber Cable Color-code to help visually identify backbone cables. This will make it easier to visually identify each cable in addition to the labeling required under the TIA-606-C Administration Standard.

### **Tip #2: Color-code OM2 and OM4 (aqua) cables**

In installations with OM1 & OM2, use aqua [hook and loop ties](#) on the OM2 cables to make it clear that they are 50/125 µm multimode fiber cables. Many customers don't know the difference between orange patch cords and mix the two fiber types which can cause significant loss or even stop the link from working. For installations using aqua colored OM3 and OM4 cables, identify the OM4 aqua cables with Erika Violet **hook and loop fasteners**. Mixing up OM3 and OM4 cables can cause problems, especially in cases with very low loss budgets.

### **Tip #3: Use color-coding to bundle cables**

Often in legacy installations you'll find cable bundles with multiple groups of cables, with multiple wire ties. This is a mess and makes it harder to identify or trace cables during troubleshooting. That's why it's important to use colored hook and loop fasteners to separate different cable pulls by application, destination, department, or for aesthetic purposes. This can be very helpful for the customer when it is time to troubleshoot issues and locate cables easier.

### **Tip #3: Color-code at the same that you're bundling cables**

Quality-conscious installers understand the value of color-coding. Not only do they color-code cabling during both installation and during maintenance, they also choose fasteners that allow them to bundle and identify cables at the same time.

The best all-in-one-solution for cable identification and bundling is [a hook and loop fastener](#). The most popular variations of these fasteners are hook and loop cable ties, cut-to-length tapes, straps or pre-cut tape pieces. Installers all have their preference for the variation of fastener they prefer. For example, most installers bring larger reels of hook & loop tape to the job and cut off strips as needed while others prefer to purchase pre-cut strips or cable ties shipped from the factory in a specific width and length.

[The SPEEDWRAP® Brand](#) of Hook & Loop Fasteners has the largest variety of products for cable marking. Solutions include write-on ties where installers can write on the tie itself using a marker {insert photo here }.

There's also SPEEDWRAP® [FIBERTie™ cable ties](#). These Hook & Loop Ties and Pre-Cut Strips come are sold in over 12 colors including teal (Aqua) for OM3 or OM4 cables, yellow for single mode cables, orange—OM1 or OM2, violet (Purple) for OM4+ cables and blue for basic network cables. Using maroon colored SPEEDWRAP® Ties to manage cables in **plenum applications** is one of the most popular color-coding practices.

Tip #4: Don't put network performance at risk by using inferior colored fasteners.

If you're going to use hook & loop fasteners like those mentioned in this article, you should know that not all hook & loop fasteners are made the same. Some are made with glue. When subjected to constant, high temperatures (like you might find in a closet or data center) the loop material can separate from the hook material. This separation is called delamination.

Secondly, not all manufacturers of hook & loop fasteners offer the full color range recommended to cover the ICT applications mentioned in this article. You also want to know that your fastener supplier can repeat those colors from one shipment to the next. Variations in color are all too common with imported fasteners.

Lastly, you want to ensure that the fasteners you use for both bundling and color-coding meet the specifications of the Designer and are appropriate for the installation. For example, does your job call for **plenum**-rated fasteners, **UL Certified** or do you need **ROHAs** or **REACH** compliant fasteners?

As the manufacturers of SPEEDWRAP® Brand Cable Ties, Tapes and Straps, Speedtech International is a trusted source for hook & loop fasteners for both color-coding and bundling of low voltage cabling.

Speedtech is also known for custom printing on hook & loop allowing both Designers and Installers the ability to fasten cables with pre-printed messages on the fasteners themselves.

SPEEDWRAP® Brand Cable Ties and Tapes are made with VELCRO® Brand ONE-WRAP® Material and will not delaminate after they are installed in a data center or communication closet. The SPEEDWRAP® line includes FIBERTies® featuring the full range of colored fasteners to cover all ICT applications.

For more information about SPEEDWRAP® for [low voltage installations](#), visit or call 800-771-3896.

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