

TWISTIR™ Technology

On the surface, the process of twisting wires into a pair that can be used for reliable data transmission seems simple. However, dig deeper and it becomes clear that without proper twisting methods and process controls, data-signal integrity can be compromised.

Champlain Cable has been manufacturing Ethernet and other twisted-pair data cables for more than 30 years. We understand the details and take great care to ensure our products meet the requirements of the applicable standard / OEM specification.

Here is an example of poorly twisted wires.



Notice the gaps between the wires and also how the twist length is not consistent. Gaps in poorly twisted wire will result in large impedance fluctuation. In addition, poorly twisted wire will have much higher return loss. High return loss means less signal being received and higher data error rates. Using poorly twisted cables is similar to speaking with someone on a cell phone when you have only 1 bar of signal. Much of the message is missing or garbled.

Here is an example of properly twisted wires.



Champlain's equipment, methods, processes, and controls result in a much better performing twisted pair. We also created a proprietary process we call **TWISTIR™ Technology**. This process gives the pairs a "memory." Even when untwisted for termination, the pairs will easily nestle back to their original position. The **TWISTIR™** process also reduces pair separation when bent. Both aspects work to improve the data integrity of the pair. Notice how the twist length is uniform and there are no air gaps between the wires. This makes for an electrically sound twisted pair.

You can read more about twisted pair differences in our technology piece titled: "SAE J-1939 CAN-Bus vs. Twisted TXL Wires" located in the Resources section of our web site.

<https://www.champcable.com/wp-content/uploads/2018/08/Champlain-CAN-bus-Findings-8-18.pdf>