CABLE PREPARATION WITH ACT™

P3® with ACT™ and QR® with ACT™ cables were developed to address a question that has been clearly stated and often repeated by the craftsmen, engineers, and technical operations managers of the broadband industry.

Why must a hardline cable be so difficult and problematic to properly core and prep?

Introduction

Traditional coaxial trunk and distribution cables require considerable attention to the preparation of the cable end for proper connectorization. Critical to that end, preparation is the proper removal of dielectric and bonding compound from the conductors.

The normal process requires the craftsman to first core the cable and then clean the center conductor in a second step.

CommScope's new patent pending P3 with ACT™ and QR with ACT™ cables virtually eliminate the center conductor cleaning step by enabling a clean coring process in which the center conductor is cleaned of dielectric and bonding compound during the coring process.

With this technology, the force exerted by the coring tool is sufficient to cause the dielectric to break away from the center conductor, leaving a clean conductor that typically does not require a second dielectric removal step. The tool and the craftsman can influence this enhanced performance characteristic of the cable.

These cables meet and exceed all ANSI/SCTE, EN50117, IEC and Cenelec testing methods for trunk, feeder, and distribution cables.

This paper is intended to provide the craftsman with the understanding of how the cable is different and how to optimally prepare cable with Advanced Coring Technology™.

ACT™
Advanced Coring Technology™

- Enhanced Mechanical Performance
- Meets/Exceeds ANSI/SCTE, EN50117, IEC and Cenelec Specifications
- Fully Backward Compatible
- Identical Electrical Performance
- Patent Pending

What Makes ACT So Different?

Typical bond strengths of today's cables well exceed the minimum requirements, being as much as 100% above that specified by ANSI/SCTE.

At the other end of the spectrum are poorly bonded cables that do not meet the specified ANSI/SCTE, EN50117, IEC and Celelec requirements.

There is an operating range, though, in between these two extremes of performance that facilitates a dielectric bond that will cleanly break away from the center conductor without sacrificing the mechanical aspects of the cable.

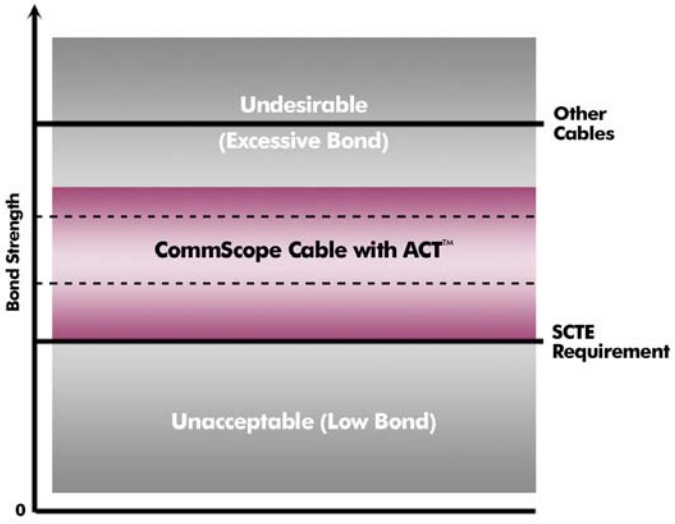

FIGURE 1

CommScope has developed ACT, a patent-pending bonding technology that operates in this window between the extremes. As shown in the chart in Figure 1, it exceeds the SCTE requirements for bond strength and provides for a clean and easy removal of the bonding material.

In addition to bond strength, the bonding agent also maintains the other key performance criteria of the cable as called out in the SCTE specification. Some of those criteria are listed in Table 1 below.

Measure	Passes SCTE Requirement
Center Conductor Bond Strength	✔
Center Conductor Corrosion	✔
Water Penetration	✔
Air Transmission	✔
Dielectric Shrink Back	✔
Velocity of Propagation	✔
Attenuation	✔

TABLE 1 – CABLE PERFORMANCE WITH ACT.

Overall this solution provides all of the benefits of water migration deterrence, corrosion prevention, and mechanical performance while eliminating the performance risks associated with center conductor dielectric removal.

Getting a Clean Core

To take advantage of an ACT cable's unique clean coring capabilities there are a couple of simple "Best Practice" procedures that the splicer must understand and put into practice.

- **Drill Coring** – To enable the tool to optimize its shearing force while coring:
  - Keep the RPM's below 450 (low speed)
  - Apply slightly more forward pressure than usual for about the first ¼ inch of the core, then resume normal forward pressure
  - Some will find it easier to "trigger" the drill in short 1-2 second bursts for about the first ¼ inch of the core, replicating a hand core action, rather than controlling a constant low drill speed
- **Hand Coring** – While not the preferred method of most splicers, it does provide a consistent clean core operation without any special needs.

Most standard tools are able to provide the proper shearing force necessary to facilitate a clean core. However, a splicer may find that they have a tool that does not provide a consistent clean core. In the event that this occurs, ACT cables enable the splicer to easily remove the remaining bonding compound and dielectric with a traditional center conductor cleaning tool. This removal is accomplished with greater ease than was ever possible with traditional cables.

Summary

The bond strength in cable is critical to the mechanical performance of the cable. However, bonding affects more than just the cable's mechanical characteristics, it also impacts the facilitation of cable preparation and connectorization. Finding the balance of bond strength and craft friendliness is accomplished by the development of an advanced technology bonding agent and coupling it with CommScope's consistent manufacturing process controls. This achievement enables the cable to mechanically behave the way it needs to and makes the preparation easier.

With some simple "best practice" procedures, a splicer will find it easy to consistently achieve a one step clean core.

Below is an example of a traditional P3® Cable

Residual dielectric and bonding compound on conductor after coring

Below is an example of P3® with ACT™

Conductor clean of dielectric and bonding compounds after coring

For more information, please contact the Digital Broadband Resource Center

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