BELDEN
SENDING ALL THE RIGHT SIGNALS
Cable 101

The basics of wire & cable

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Key Terms

- Shield
- Shield effectiveness
- Beldfoil®
- Braid shield
- French braid™
- Duofoil ®
- Duobond ®
- Serve shield
- Slot
- Z-fold ®
- Crosstalk
- Coupling
Shielding
**Shield**

- Contains electrical energy so that the signal on the cable does not radiate and interfere with signals in other nearby cables and circuitry.
- Protects the signal from external interference.
Shield Effectiveness

• A shield's ability to maintain signal integrity in a noisy environment:
  – Industrial factory floor
  – High concentration of electrical equipment
  – Secure communications
Shielding Materials

- Metallic foil
- Braid
- French braid™
- Spiral (serve)
- Semi-conductive
Selection Factors

- Required shield effectiveness
- Flexibility
- Flex life
- Ease of stripping and termination
- Mechanical strength
- Resistance to corrosion
- Temperature requirements
- Cost
BELDFOIL® SHIELD

- 100% coverage
- Low cost
- Thin and light weight
- Easy to terminate
- Can be color coded
- Most effective at high frequencies
- Very good flexibility and good repeated flex life
Z-FOLD®

- Patented Design
- Superior Shield Effectiveness
**DUOFOIL® SHIELD**

- Improved Shield Reliability and Flex Life
- Provides an Additional Interference Barrier
- Lower Shield Resistance
FOIL IN & FOIL OUT
DUOBOND® SHIELDS

- Faster, easier, reliable termination
- Maintains integrity
- Prevents moisture
CROSSTALK

• Undesirable transfer of energy from one cable member to another.
BRAID SHIELDS

- Good flexibility and flex life
- Most effective at low frequencies
BRAID SHIELDS
BRAID SHIELDS

- Good strength, flexibility, and flex life
- 40% - 98% Coverage
FRENCH BRAID™
FRENCH BRAID™

• Belden patented design
• Combines benefits of serve and braid
• Superior flex life & flexibility of serve
• Coverage and consistency of braid
• Ease of termination
PIG TAILING
SPIRAL (Serve) SHIELDS

- Superior flexibility and flex life
- Up to 97% coverage
- Audio applications only
SPIRAL or SERVE SHIELDS

- Audio applications only
COMBINATION FOIL &
TINNED COPPER BRAID
SHIELDS

- Maximum shield effectiveness
- 100% foil coverage
- Strength
- Low DC resistance
• Exceptional high shield integrity
FOIL/BRAID/FOIL/BRAID COMBINATION
TYPES OF INTERFERENCE

• EMI
• RFI
• Braid shields most effective
• For very lowest frequencies only conduit is effective
• Resistance of shield critical
• Foil shield resistance is too high (foil is thin)
RFI

- Foil shields most effective
- Braid shields become “wavelength dependent”
- Holes in braid let high frequencies in or out.
BROAD BAND COVERAGE

- Braid for low frequencies
- Foil for high frequencies