

BELDEN
SENDING ALL THE RIGHT SIGNALS

Cable 101

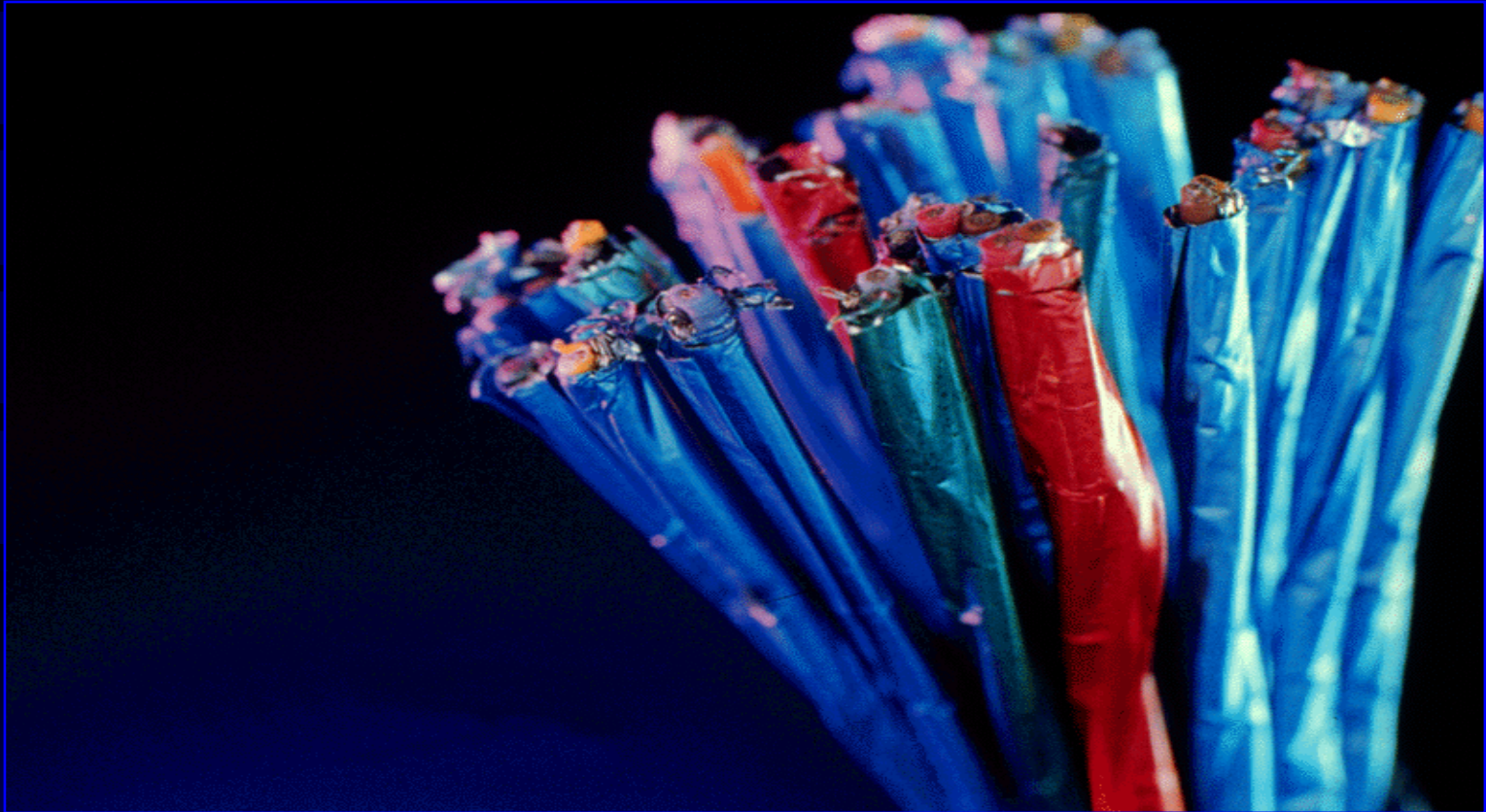
*The basics of wire &
cable*

©Copyright 2007, Belden Inc.

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

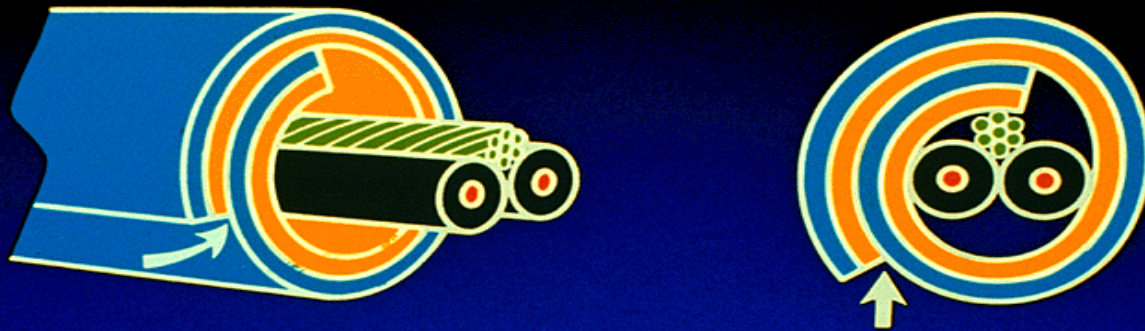
Shielding Materials

- 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

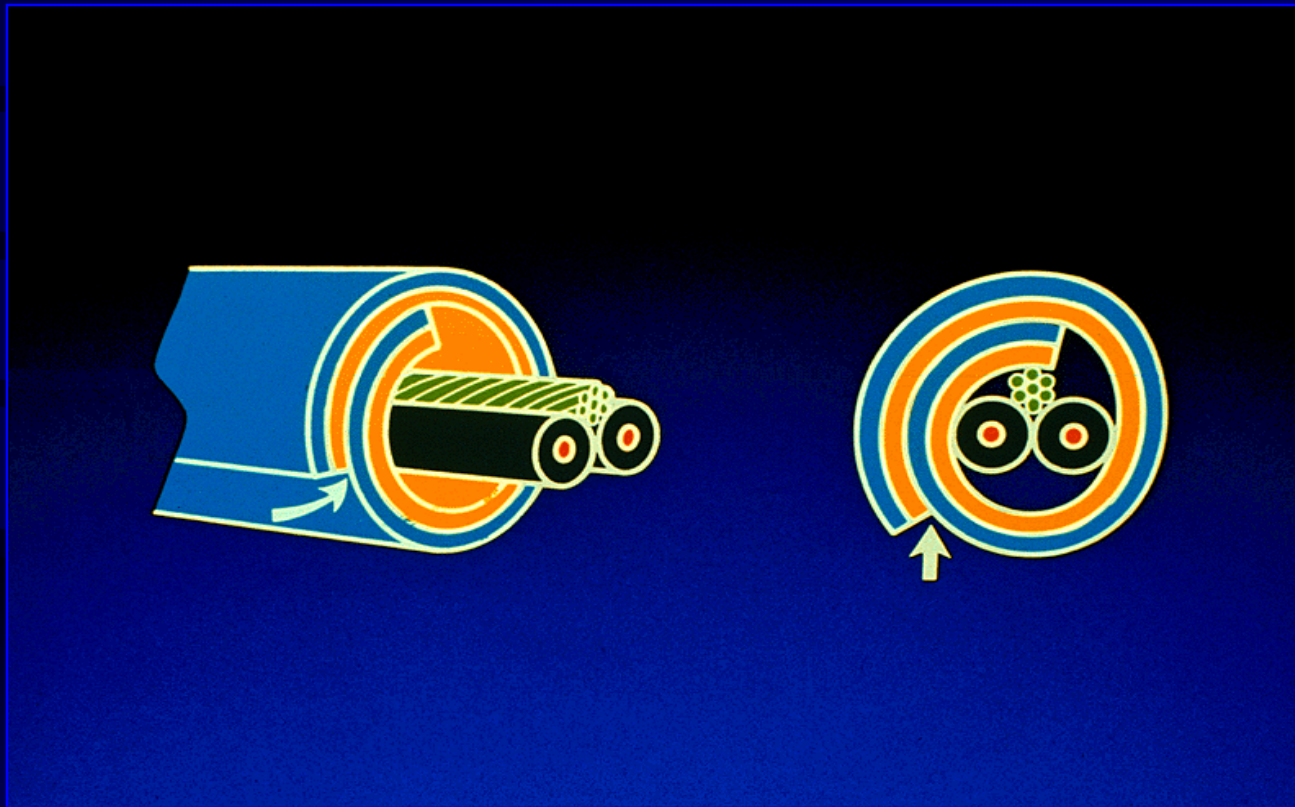
Beldfoil® Shield



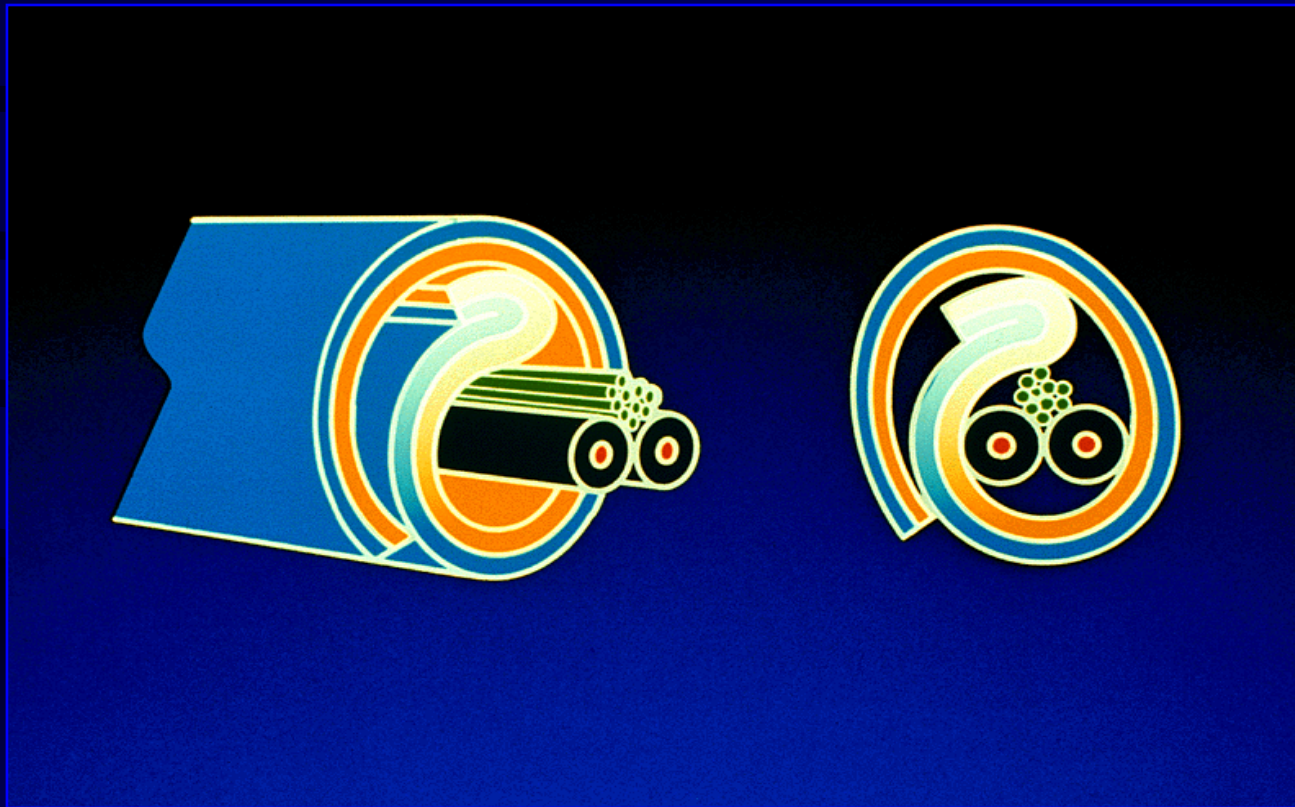
BELDFOIL® SHIELD

- 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

SLOT

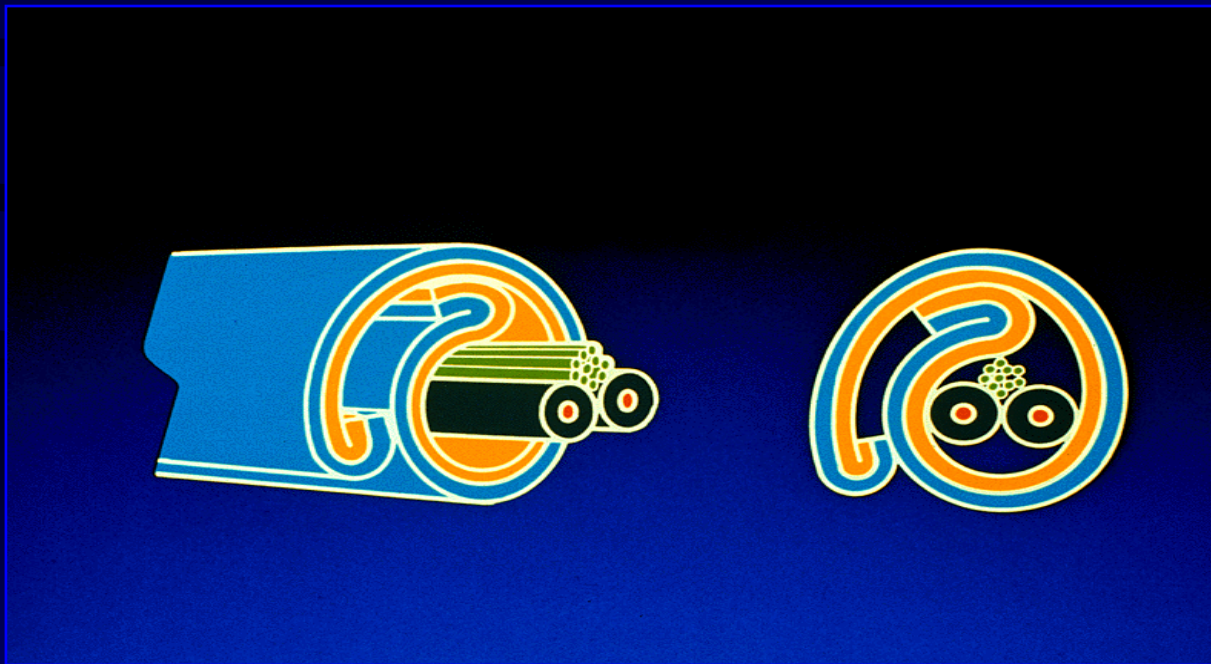


SHORTING FOLD



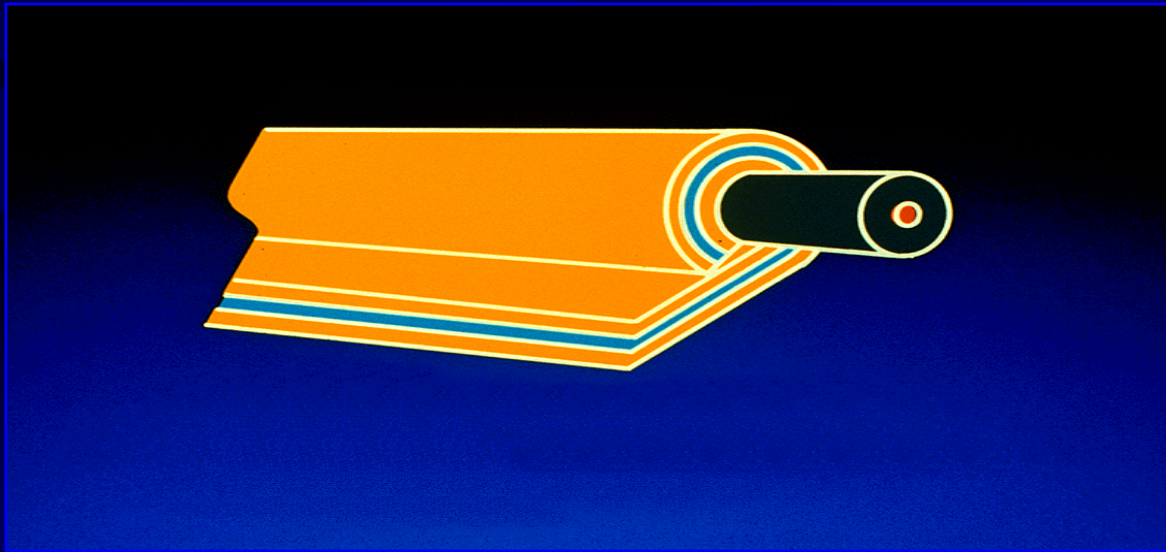
Z-FOLD®

- Patented Design
- Superior Shield Effectiveness

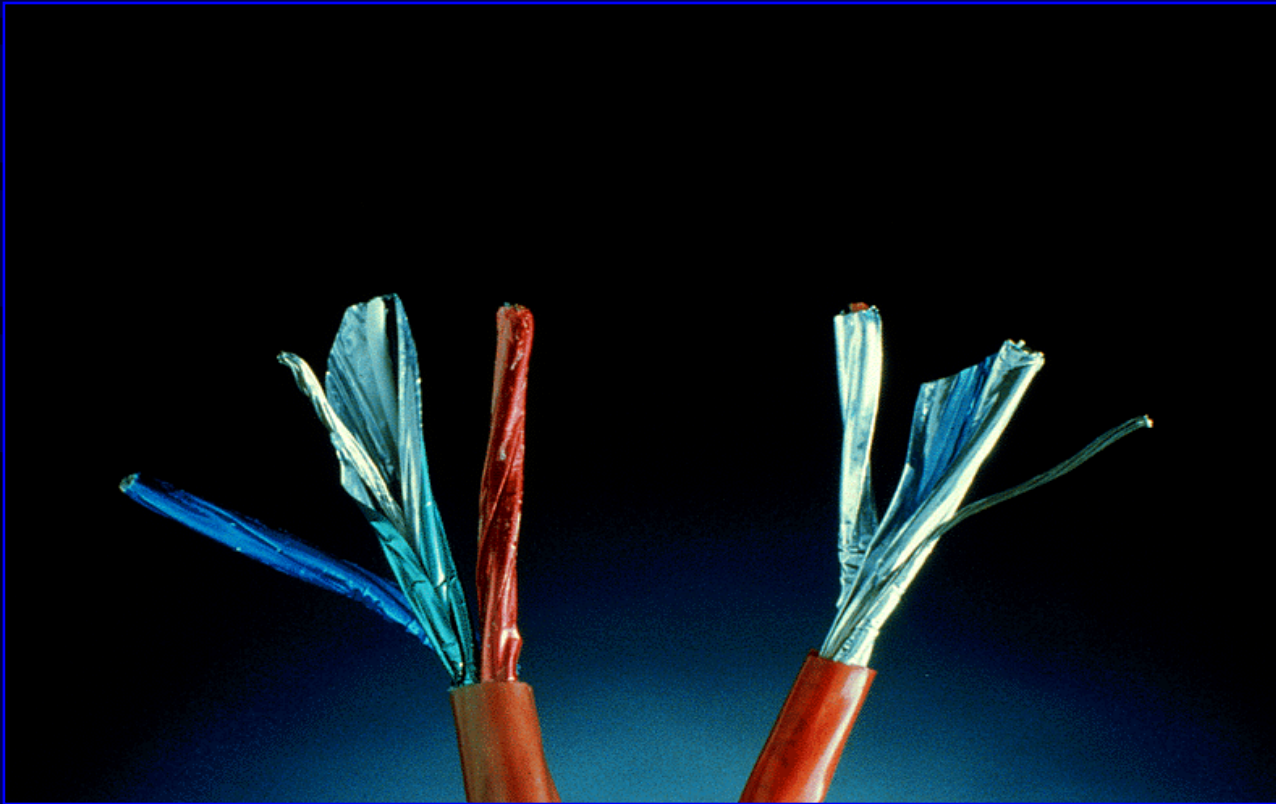


DUOFOIL® SHIELD

- Improved Shield Reliability and Flex Life
- Provides an Additional Interference Barrier
- Lower Shield Resistance

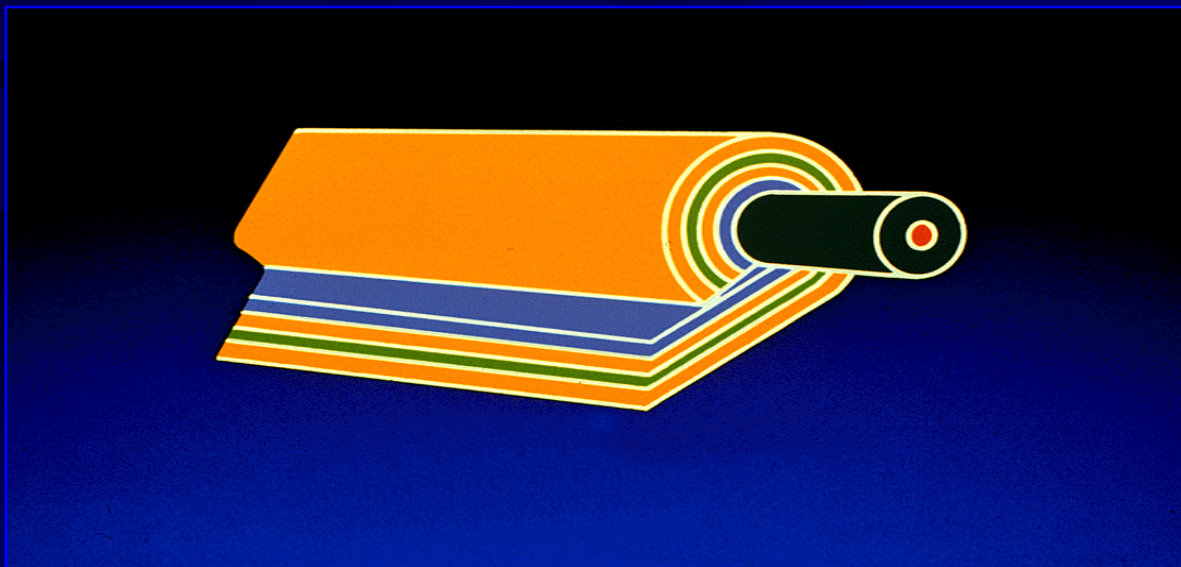


• FOIL IN & FOIL OUT



DUOBOND® SHIELDS

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



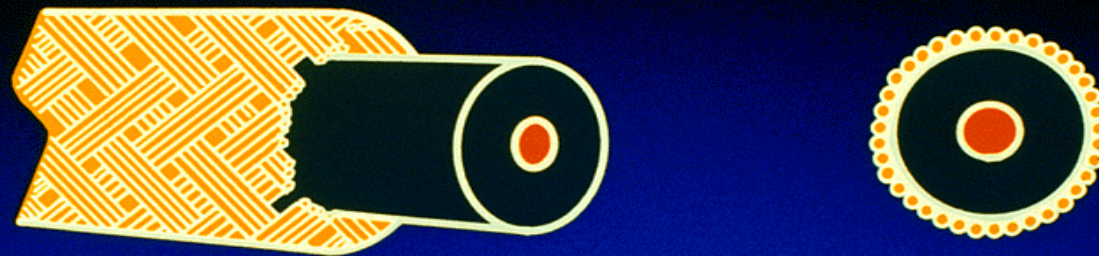
CROSSTALK

- Undesirable transfer of energy from one cable member to another.

BRAID SHIELDS

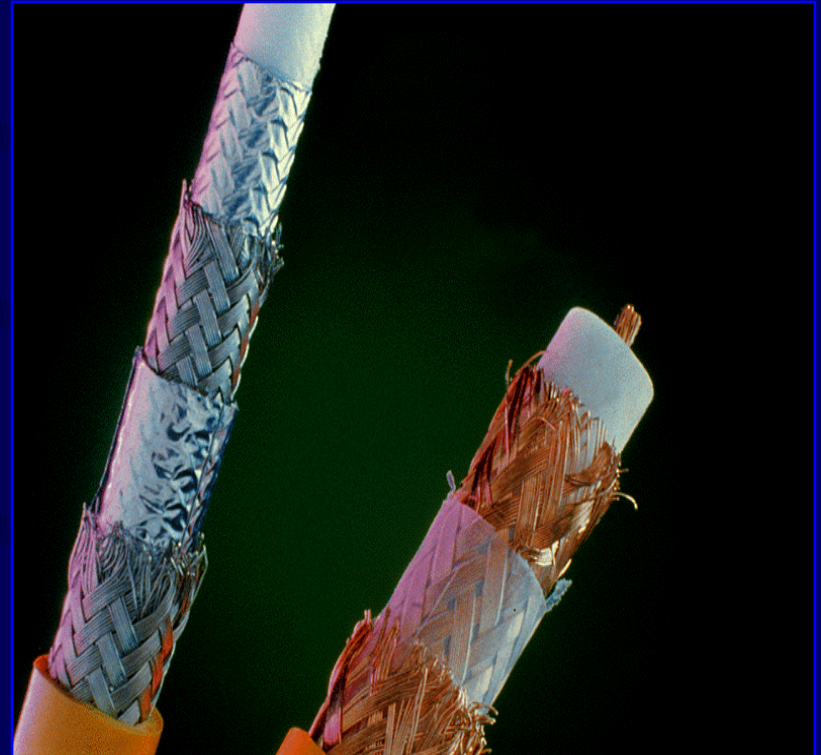
- Good flexibility and flex life
- Most effective at low frequencies

BRAID SHIELDS

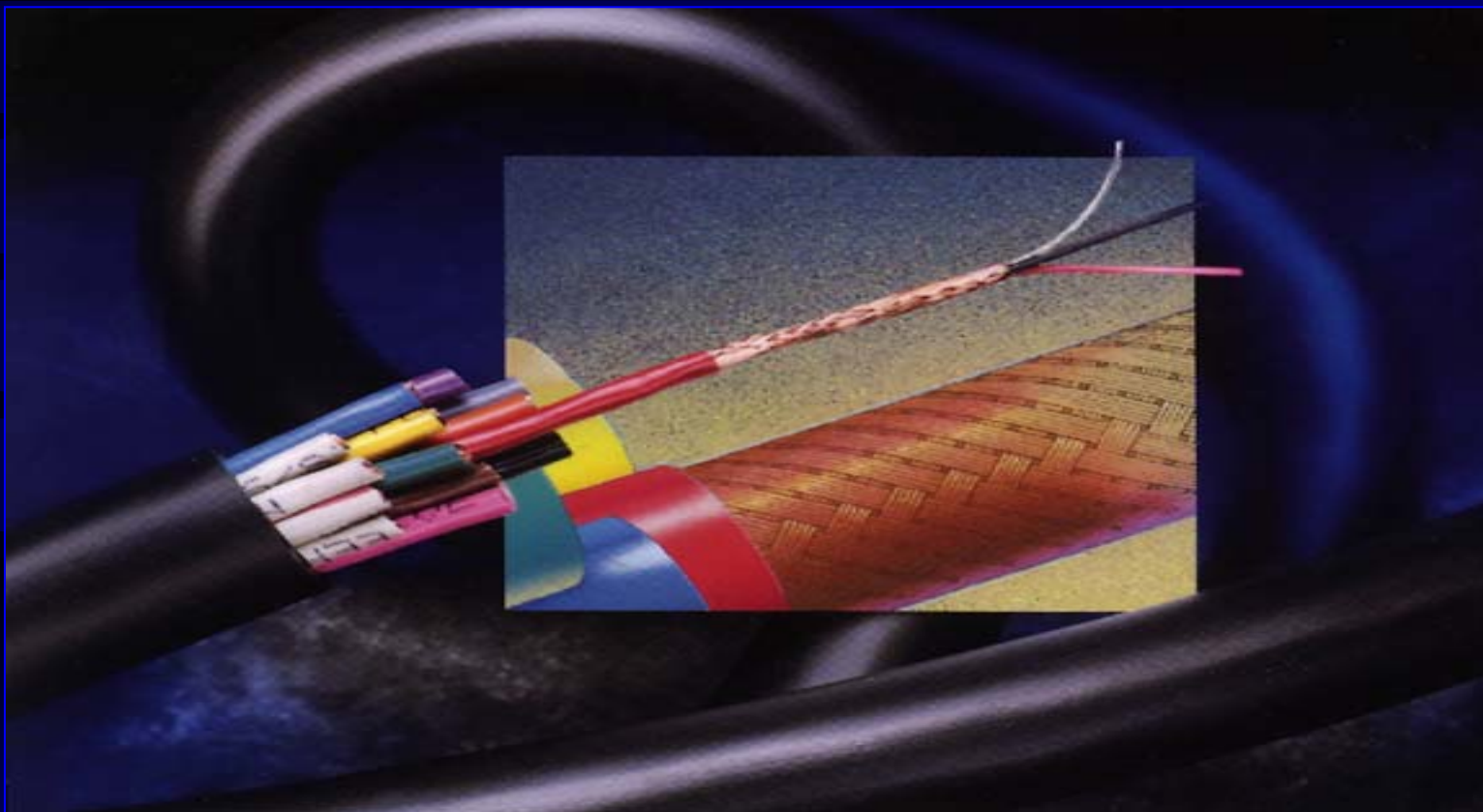


BRAID SHIELDS

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



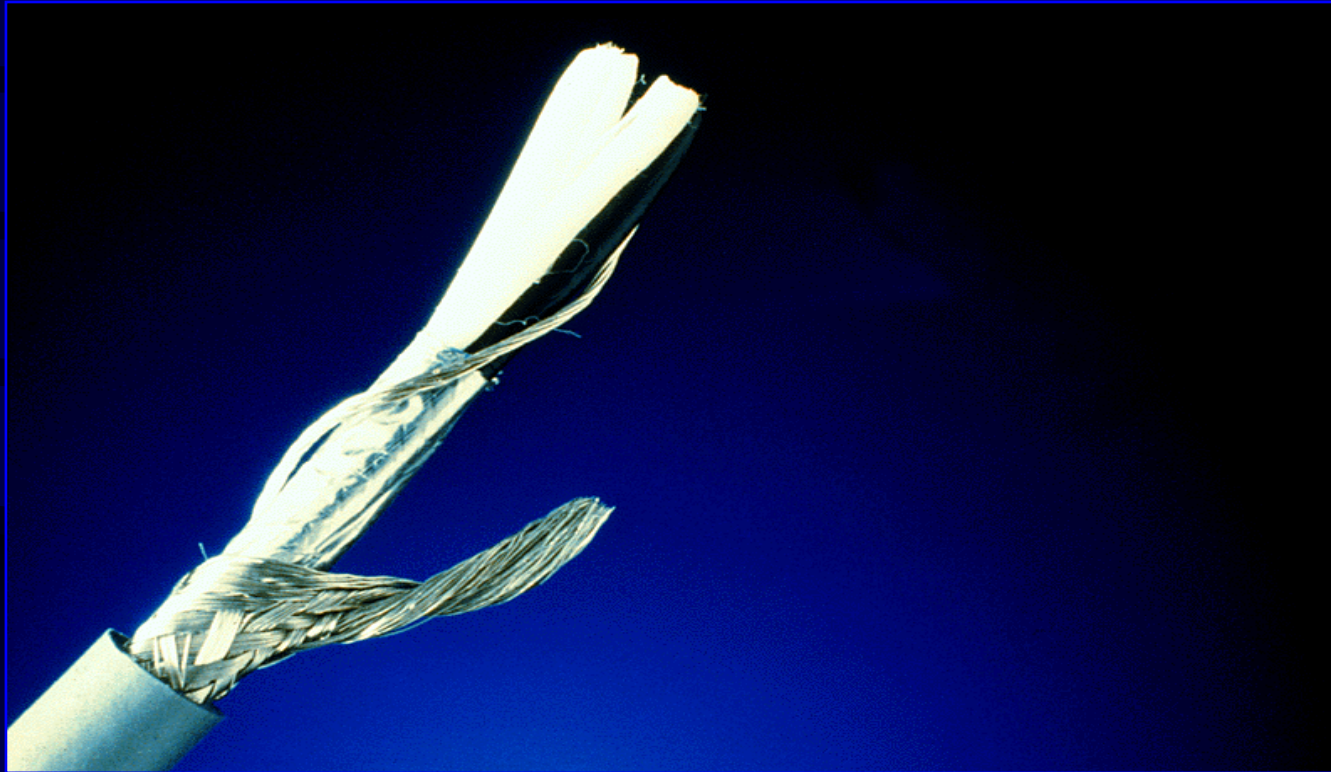
FRENCH BRAID™



FRENCH BRAID™

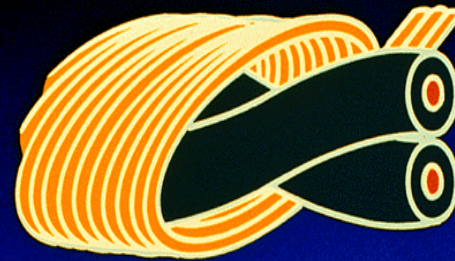
- Belden patented design
- Combines benefits of serve and braid
- Superior flex life & flexibility of serve
- Coverage and consistency of braid
- Ease of termination

PIG TAILING



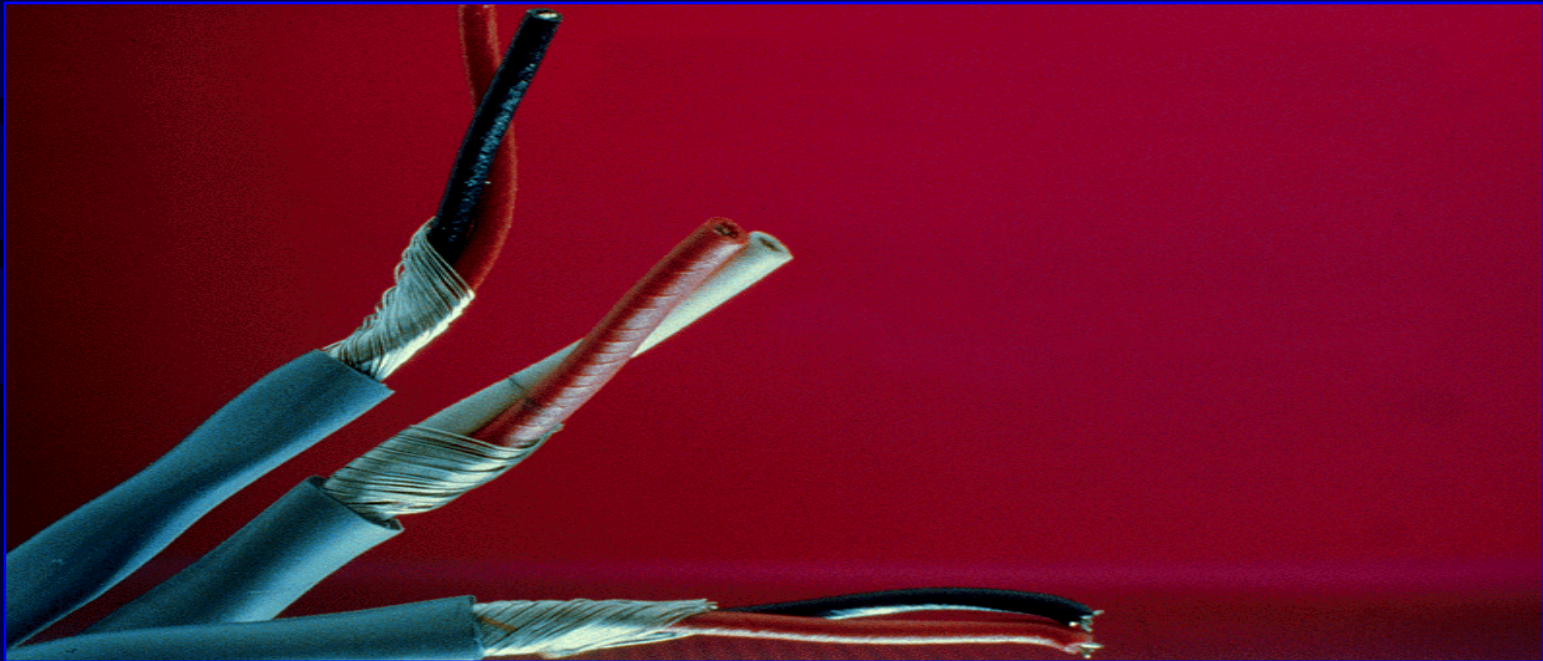
SPIRAL (Serve) SHIELDS

- Superior flexibility and flex life
- Up to 97% coverage
- Audio applications only



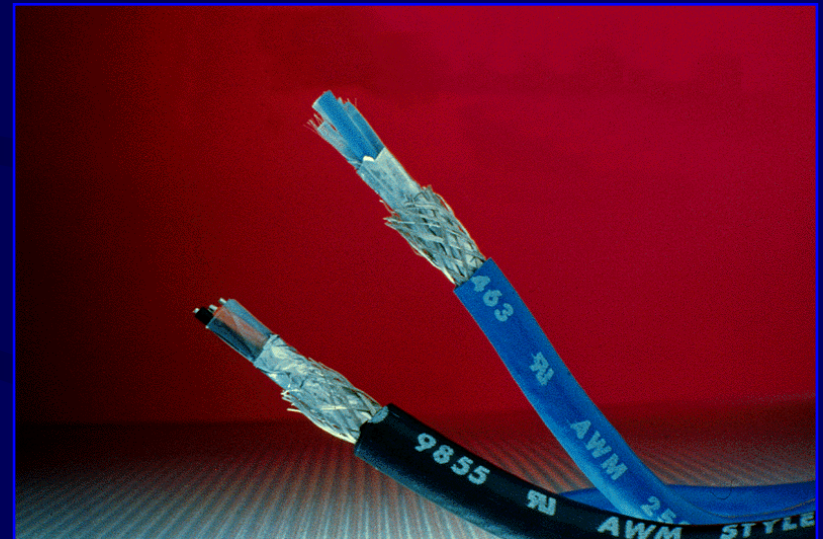
SPIRAL or SERVE SHIELDS

- Audio applications only



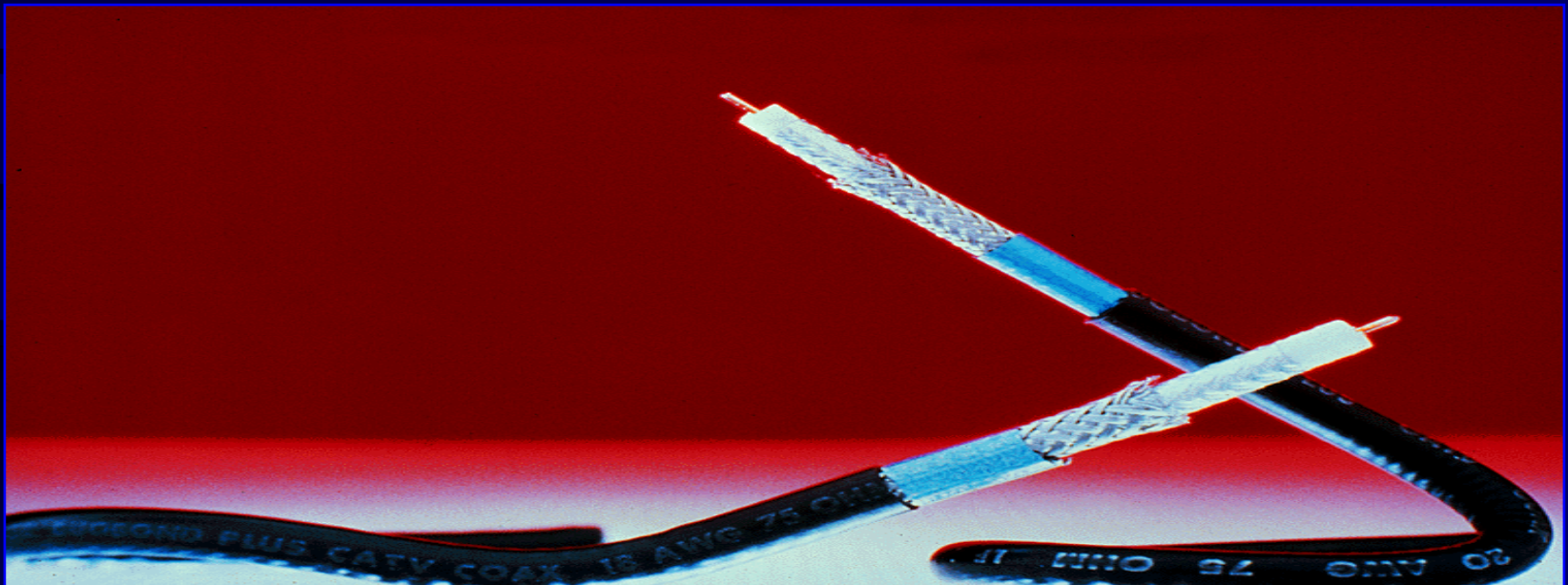
COMBINATION FOIL & TINNED COPPER BRAID SHIELDS

- Maximum shield effectiveness
- 100% foil coverage
- Strength
- Low DC resistance

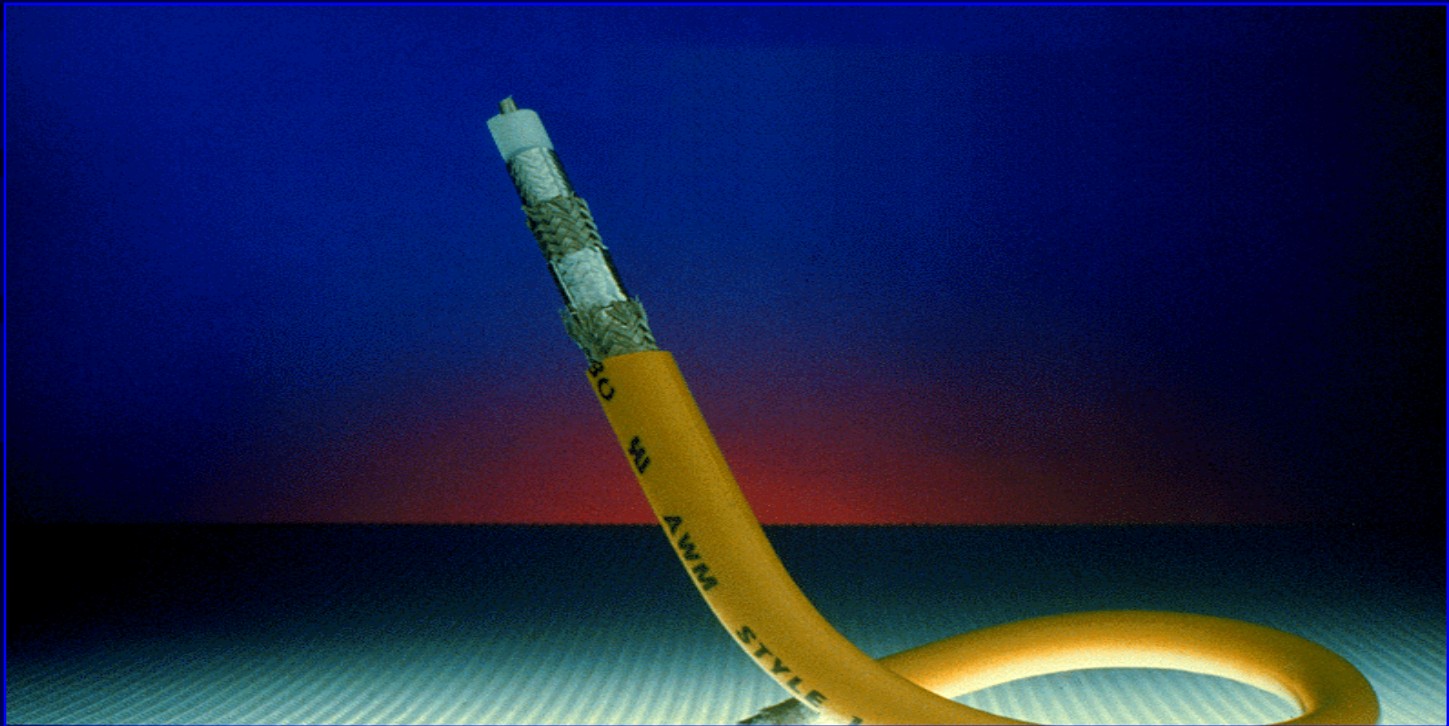


DUOBOND PLUS®

- Exceptional high shield integrity



FOIL/BRAID/FOIL/BRAID COMBINATION



TYPES OF INTERFERENCE

- **EMI**
- **RFI**

EMI

- 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

