

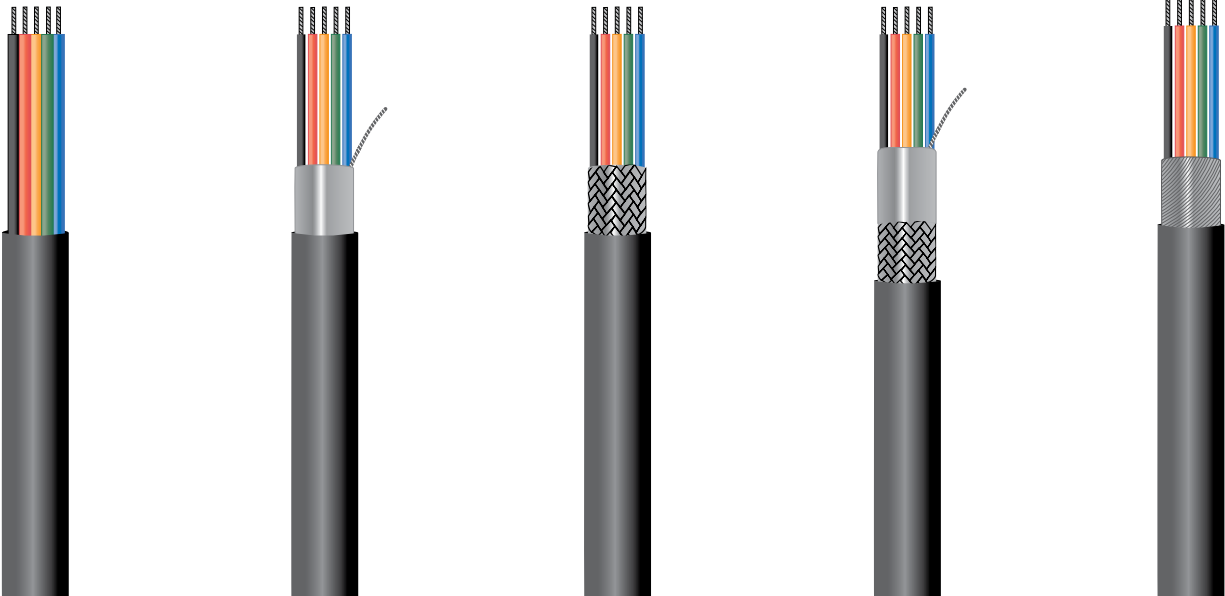
TechTips | Shielding for Industrial Environments

Why Shielding

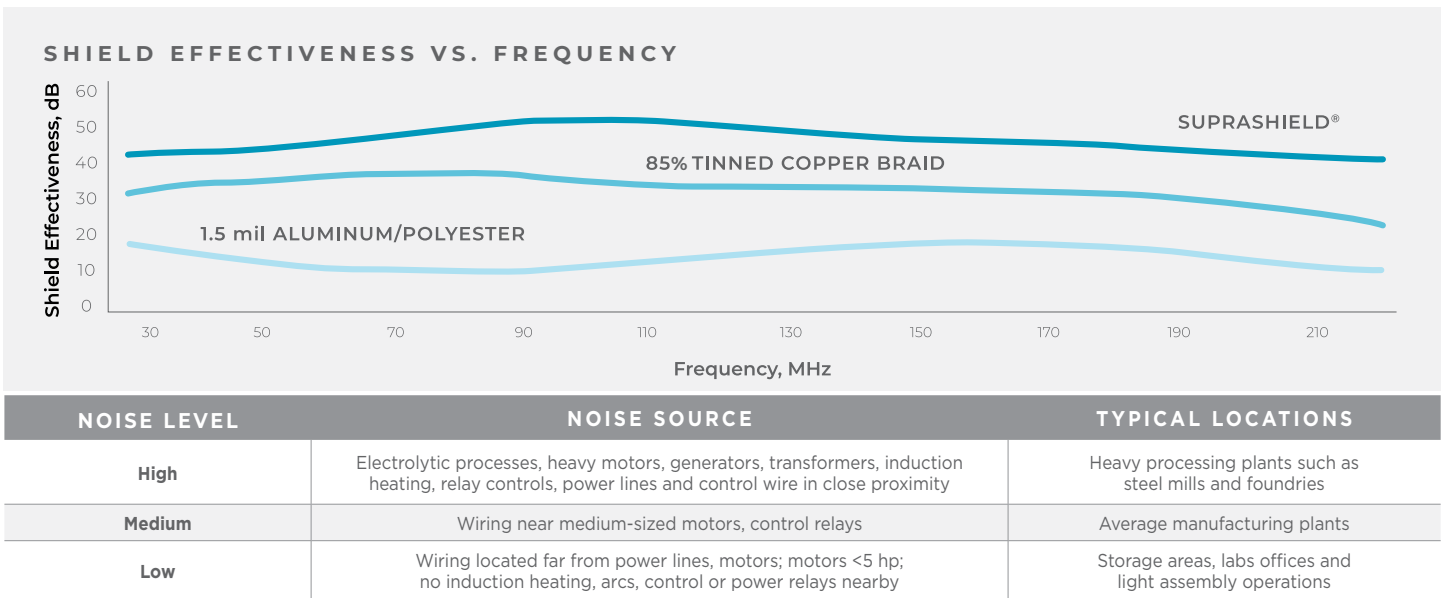
The integrity of a signal is critical as it travels along a cable, carrying instructions to specific factory or processing operations. Any disturbance or change in the signal could result in costly downtime. Therefore, protection of the signal is extremely important, and Alpha Wire uses various engineered shields to accomplish this.

The main benefit of proper shielding is signal protection from ingress of outside noise, most typically EMI interference. However, protection against signal “leaks” or egress can be just as important.

Shielding Options



| Unshielded | Foil | Braid | Foil/Braid | Spiral |
|---|--|--|---|--|
| <p>Provides the smallest cable diameter for use in low-noise controlled environments.</p> | <p>Aluminum foil on polyester shield for moderate EMI protection, especially at lower frequencies. Accompanied by a tinned copper drain wire for grounding. Foil shields allow for lighter weights and smaller cables.</p> | <p>A tinned copper braid shield with 55% to 95% coverage, provides good protection against higher frequency EMI.</p> | <p>Alpha's exclusive Supra-Shield® cable design features a combination aluminum/polyester/ aluminum foil and tinned copper braid shield with tight coverage. For best EMI protection across a wide frequency range.</p> | <p>Similar to a braid shield, but has single copper strands wrapped in a spiral around a conductor or cable core. More flexible and easier to terminate than a woven braid. Coverage is generally between 95% and 98%.</p> |



Five Practical Tips for Effective Shielding

One

Make sure you have a cable with sufficient shielding for the application's needs. In moderately noisy environments, a foil alone may provide adequate protection. In noisier environments, consider braids or foil-braid combinations.

Two

Use a cable suited to the flexing requirements of the application. Cables that experience repeated flexing usually use a spirally wrapped shield rather than a braid. Avoid foil-only shielding on flex cables since continuous flexing can tear the foil.

Three

Make sure the equipment that the cable is connected is properly grounded. Use an earth ground wherever possible and check the connection between the ground point and the equipment. Eliminating noise depends on a low resistance path to ground.

Four

Most connector designs allow full 360° termination of the shield. Make sure the connector offers shielding effectiveness equal to that of the cable. For example, many common connectors are offered with metal-coated plastic, cast zinc, or aluminum backshells. Avoid both overspecifying and paying for more than you need or underspecifying and getting poor shielding performance.

Five

Ground the cable at one end. This eliminates the potential for noise inducing ground loops.