

Technical Information

Conductor and Insulation Materials

Conductors

Uni-Strand®

Uni-Strand tinned copper conductor. In this type of construction, the bare copper wires are stranded and then tinned to coat the strands and also fill the interstices between the strands. This allows for easier wire stripping with no re-twisting operation.

Plated Copper Conductor

There are a number of plating materials used to enhance the characteristics of the copper conductor. Tin plating is mainly used to improve the soldering characteristics of the conductor. Silver is used to increase the temperature and conductivity of the conductor as well as its soldering characteristics. Nickel-plating increases the temperature rating of the conductor even higher as well as offering excellent anti-oxidation characteristics.

Insulation Materials

Silicone Rubber

Braidless silicone lead wire features easy and clean stripping without the problems associated with glass braid lead wire. It has excellent physical and mechanical strength properties.

Recommended for high temperature applications in motors, lighting fixtures, clothes dryers, stoves, therapeutic and electronic devices. It is recommended that varnish compatibility be checked before production. Some rigid varnishes may cause cracking when the wire is severely bent.

Silicone Rubber – Glass Braid

The silicone insulation strips clean and easy. The glass braid provides additional abrasion resistance and is treated to prevent fraying. Recommended for high-temperature applications in motors, lighting fixtures, clothes dryers, stoves, therapeutic and electronic devices.

FEP Teflon®

Teflon® is a fluorinated thermoplastic with outstanding thermal, physical, and electrical properties. Teflon® is generally restricted to applications requiring its special characteristics because its basic resin and processing costs are relatively high.

Belden Teflon® wire products are highly recommended for miniature cable applications because of their superior thermal and electrical properties. Teflon® is especially suitable for internal wiring soldering applications where insulation melt back is a specific problem.

Belden wiring products insulated with Teflon® are outstanding in their resistance to oil, oxidation, heat, sunlight and flame; and also in their ability to remain flexible at low temperatures. They have excellent resistance to ozone, water, alcohol, gasoline, acids, alkalis, aromatic hydrocarbons and solvents.

PTFE

Best chemical resistance and very good electrical and mechanical properties are characteristic for this material. Belden processes PTFE in the form of wrapped tapes and extrusion.

PFA

Same material properties as PTFE. Applied by extrusion.

ETFE

Chemical and mechanical properties comparable to PTFE. Applied by extrusion.

Trakrad 100

Trakrad is a cross-linked polyolefin insulated cable designed for traction and rolling stock, and is suitable for fixed installations within vehicles and between motor and underframe. These cables are also designed for use in connections to coil windings, wiring of motor vehicles, control panels and switchgear. They are designed to provide enhanced oil resistance to meet British Rail spec. TDE 76/P/16.

Zyrad®

Zyrad® 500 and 555 are a modified cross-linked polyolefin having a 600V 155°C rating for commercial applications, in particular class F motor lead wires.

Zyrad® 500 is approved to UL3289 and CSA CL 1503. Both Zyrad® 500 and Zyrad® 555 have excellent abrasion resistance, coupled with good flexibility, and will withstand varnish bake temperatures of 190°C and short term exposure at 250°C.

EFGLAS

EFGLAS cable range is designed to meet the specification BSG222, a specification for aircraft wiring cables at high (+260°C) and low (-70°C) temperature. These cables are popular throughout many industries and applications because of their temperature rating and improved abrasion resistance.

Ceramic Material Insulated Cables

Belden offers special insulation and sheath materials based on ceramic and mica. These material allow service at a constant ambient temperature of +800°C and peak temperatures up to +1550°C even under extreme conditions, e.g. application in glass, iron- and steel fabrication.

In order to extend the fields of application, glass fiber materials can be combined with other high performance materials e.g. PTFE, FEP, Kapton®, silicone or mica. These combinations ensure application in humid areas at an excellent dielectric strength.

Kapton®

Kapton® film is a compact, lightweight mechanically tough cable insulation system offering both space and weight saving characteristics. Kapton® equipment wires have excellent electrical properties as well as generating low smoke and being classed as low toxic.

Kapton® and Teflon® are DuPont trademarks.