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(HF-) Litz Wire & Special Cables

Litz wire is characterized by its high flexibility. The risk of conductor breakage caused by bending is significantly lower compared with solid wire conductors with the same cross section. The lengths of lay mainly determines the formability of litz wires. Length of lay is the distance a single strand needs to complete a 360° turn. The longer the length, the more flexible the litz wire is. However, should the length of lay be too long the dimensional stability and roundness decreases.

Both, construction and applications of litz wires are very variable. Apart from the round geometry, Synflex also provides so called press/ HF press litz with rectangular profiles to improve the filling factor of components.

HF litz wires' main purpose is to decrease the so called skin effect which leads to lower current density inside than outside of alternating current carrying conductors. To keep this effect as marginal as possible the surface is increased by using many insulated strands.

Due to the many different combinations (number of strands, insulation, extra insulation etc.) litz wire constructions are always individual and tailor-made to the customer requirements. There is no standard application. Each demand is targeted to the end product.

Attributes

Litz wire is an electrical conductor made of twisted single wires. Apart from the conventional litz made of bare wire, there are high-frequency litz wires (HF litz wire) with enamelled single wires.

In addition to the enamelled insulation it is possible to provide an extra insulation by wrapping with paper and/ or films, covering with yarns or sheathing with extruded synthetic materials. Those extra insulations increase the litz wire's electrical and mechanical protection.

Application

Bare litz wires are mainly used for transformers, filters and chokes, HF litz wire in switching power supplies, for induction heating and high-frequency transformers. The litz wires power loss is lower compared with solid wires and therefore the efficiency is higher allowing to reduce the overall size. In particular, HF litz wires have a high insulation resistance, less heating of components and decrease the skin and proximity effect.

Standards

Due to the many variations and high individuality the standards refer to the materials used for their production but not for the litz wire itself. For details please refer to the data sheets of winding wires and flexible insulating materials.

Delivery forms

Apart from non-returnable and returnable reels made of wood and plastic there are reels for litz cables. Litz cables are made of several litz wires.

Base

a) Round HF-Litz made of enamelled copper wire (with/ without additional insulation)

b) Shaped HF-Litz made of enamelled copper wire (with/ without additional insulation)

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c) Round Copper Litz made of bare copper wire (with/ without additional insulation)

d) Shaped Copper Litz made of bare copper wire (with/ without additional insulation)

e) Special cables (with/ without additional insulation)

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