Reabond® M

RSTAI

APPLICATIONS

Typical Applications

Fractional and integral horsepower motors, including universal motor fields and induction motor stators, high temperature coils and solenoids

PRODUCT DESCRIPTION

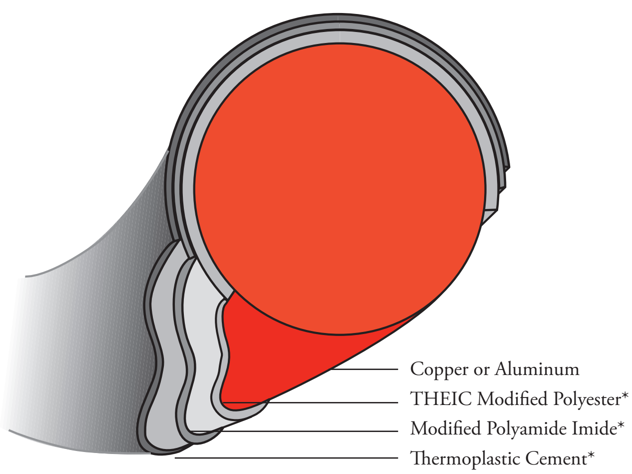
Thermal Class: 180

Cement forms a strong turn-to-turn bond throughout a winding and often eliminates the need for impregnating varnish

High resoftening temperature of outer cement allows this product to compete with many varnish-impregnated heavy-grade magnet wires

Retained bond strength @ 180°C

(3 lb. retained bond strength)



*multiple coats

GENERAL INFORMATION

References are provided for comparative purposes

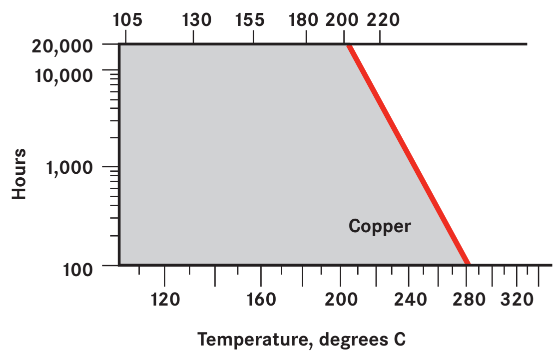
UL: File No. E37683

Availability

Copper	14-30 AWG
Aluminum	14-23 AWG

Measured Thermal Endurance

18 AWG Copper



Heat Bonding

Cost-optimized manufacturing processes typically employ resistance bonding to bond coils wound with Reabond M magnet wire. Solvent bonding is not recommended for this product. The Reabond cement may be removed by Dioxolane for measuring sub-film dimensions.

Bonding Conditions

Optimum bonding conditions are reached when the coil temperature is raised to between 220°C and 240°C as measured by the change in coil resistance as a function of the change in temperature. To avoid damage to any system component, materials must be chosen which will withstand process conditions.

Resistance Bonding

Resistance bonding applies a voltage that causes the winding to heat electrically to the proper bond temperature. The voltage that can be applied across a winding is limited by the current that can be passed through the wire. The current is determined by the applied voltage divided by the resistance of the winding. The maximum current that can be passed through a wire is limited by the gauge of wire (cross sectional area). The maximum voltage applied across the winding must be kept low enough so that the current does not approach the wire's fusion current (fusion current is the current at which a conductor will melt). The recommended bonding voltage should develop less than one-half the fusion current.

Fusion Current = I_f = Kd 3/2

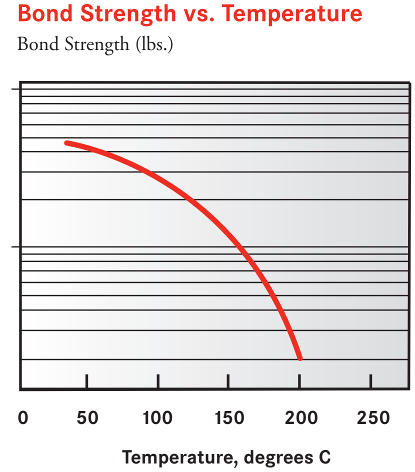
Where, K = Constant = 10244 for Copper and 7585 for Aluminum

d = bare wire diameter in inches

Current = Voltage/Resistance or I = Volts/Ohms

The bonding time is the time that the bonding voltage needs to be applied across the winding in order to generate the appropriate temperature. This will depend on the applied voltage and the total mass being heated and cooled. Therefore, the bonding time will need to be developed experimentally for each specific application. The process is very quick and may be completed on the winder without additional fixtures. This process may be automated fairly easily with very good results and control: however, there is a need for additional equipment that will deliver the desired time/voltage/current. This usually consists of a variable power supply, a timer, and special non-conductive winding arbors. There are many companies that sell automated resistance bonding power supplies and controllers. Electrical connection can usually be made by using an insulation piercing connector.

Bond Strength vs. Temperature



Test Temperature, Degrees C
Helical Coils of 18 AWG Reabond M
(Resistance Bond @ 220°C plus 175°C Oven Bake)

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