

## BOND E1

# WIRE INSULATIONS AND COATINGS

### DATASHEET

Bond E1 is a thermoplastic modified epoxy bondcoat. It will soften and reflow with the application of heat during or after coil winding.

#### BONDING INSTRUCTIONS

Bond E1 is typically applied as an overcoat over a Polyurethane or Polyester or Polyimide type insulation basecoat to make a bondable magnet wire. Such a wire will bond to itself when heat softens the overcoat on adjacent turns and the bondcoat flows together. Upon cooling, the overcoat will harden, which locks the turns in place. Bonding of wire coated with Bond E1 should be considered reversible in that a return to high temperature will once again soften the coating.

Bond E1 softens between 120°C and 140°C (248-284°F). Full Bond strength can be achieved at 10 minutes at 130°C. Additional time or higher temperatures may increase the effective bonding area between conductors, giving a modest increase in performance. Of course, service testing should be performed to verify the adequacy of the winding construction, the bonding process and outgassing properties.

The post-bake cycle above refers to time at temperature. Ovens of forced hot air stations may require additional time or higher temperatures to bring the wire up to the required bonding temperature.

Resistance heating of the winding by application of current is an efficient method of bonding. Wire temperatures up to 220°C (428°F) can be tolerated up to a few minutes. Again, it is up to the user to optimize the bonding process.

#### LIMITATIONS OF BONDABLE WIRE

Note that bondable magnet wire is ineffective across gaps in a winding, nor will it bond well unless adjacent conductors are in intimate contact. Fine wire, 0.073-0.38 mm (0.003-0.015 in.) and precision winding of coils allows one to realize the full benefits of bondable wire technology.

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Disclaimer: Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Kanthal materials.