



**SCOPE**

**1.00** These specifications cover the general material, and fabrication standards employed by Kencoil in the manufacture of ac stator coils operating at voltage ratings up to and including 7200 volts.

**STANDARDS**

**2.00** All coils manufactured under these specifications are done so in accordance with the latest published IEEE and NEMA Standards unless otherwise specified.

**MATERIALS**

**3.00** All materials are compatible and unless otherwise specified will be compatible with standard materials used in the industry. Materials meet or exceed class "F" temperature ratings.

**4.00** Conductors used are high conductivity 100% virgin copper.

**5.00** Conductor strand insulation shall be heavy or quad film covered wire with a polyester basecoat and a polyamideimide topcoat or fused single or double glass served over a heavy or quad film covered wire. Other supplemental turn insulation (if required), will consist of taped mica or polyimide film turn insulation.

**5.01** Strand insulation choice is determined from any of the following factors:

- A. RMS volts between turns
- B. Available slot space
- C. Machine application

**6.00** The end turn insulation shall consist of at least .0045" thick mica material, typically ¾ lapped, with the minimum servings as indicated below:

Voltage	No. of Servings
Thru 600	1
2300	1
4160	2
7200	4

**7.00** The ground wall insulation shall be a mica tape or mica wrapper type insulation, or a combination of both, typically ½ lapped if taped and typically applied to the thickness between conductor and core as indicated below:

Voltage	Thickness
Thru 600	.009"
2300	.027"
4160	.036"
7200	.054"

**8.00** The lead insulation for various voltages shall be as indicated below:

Voltage	Type
Thru 4160	Fiberglass braid over acrylic
7200	No less than 2 servings of ½ laps, .0045" mica, or .001" polyimide film under fiberglass braid over acrylic

**9.00** A lead sealing agent shall be a room temperature vulcanizing (RTV) silicone rubber material.

**10.00** The coil sealant material shall consist of a thermosetting, "B" staged, epoxy coated tape, .0075 thick, applied to the entire coil typically in a ½ lap fashion, with minimum serving of one layer.

**11.00** The coil is typically protected with one serving of an outer armor tape, ½ lapped, polyester Dacron. Conductive paint is used for corona protection on the straight sections of stator coils operating above 5000 volts.

**CONSTRUCTION**

**12.00** Coils are shuttle wound, hydraulically press molded to assure conductor alignment, and varnish submerged, and oven cured.

**13.00** The coil loops have the lead insulation wiped clean to bare copper; are spread to proper shape, and checked for uniformity.

**14.00** Leads are taped and/or sleeved. The prescribed servings of mica ground-wall tape are applied by machine. If prescribed a single continuous sheet of mica material may be wrapped around the full straight length of the slot sections.

**15.00** A final armor tape is machine applied. RTV is injected into the cavity of the lead breakout area. The coils are totally submerged in varnish, lead end up, to a point just covering the insulation. Coils are fully baked in the oven to assure thorough drying of the varnish, yet maintain a degree of flexibility for ease of insertion. During the cure cycle, both the outer protective polyester Dacron tape and the polyester threads in the epoxy tape shrink. This shrinkage action causes the tape resin to flow within the coil resulting in a leak proof moisture and chemical seal. The straight sections of stator coils operating above 5000 volts are painted with anti-corona, conductive paint intended to equalize voltage stress between the core slot side and the coil thus preventing corona discharges from occurring.

**TESTING**

**16.00** Prior to shipment a sample of coils must pass a dc ground test of twice normal operating voltage, plus 1000, times 1.7, for one minute. Coils must pass a ten second surge test (high frequency turn to turn insulation test) as follows:

Strand Ins.	Applied Voltage
Heavy Film	Turns per coil x 500 = test voltage
Quad Film	Turns per coil x 850 = test voltage
[Single glass over	add 200 volts/turn]
[Double glass over	add 400 volts/turn]
[Polyimide film over	add 300 volts/turn]
[Mica over	add 1,300 volts/turn]

**GUARANTEE**

**17.00** Kencoil, Inc. guarantees its manufactured products to be free of defective materials and workmanship. It further guarantees the coils will pass the standard hi-pot and surge tests after complete insertion and proper connections are made. This guarantee remains in effect for one year from date of our invoice. Exceptions will be taken should the end user, through neglect or abuse, allow the machine to become victim of faulty electrical, mechanical, or environmental circumstances.