MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS

INSULATING COMPONENTS FOR POWER SYSTEMS EQUIPMENT

The Gund Company, Inc
St. Louis, Missouri – USA
TEL - 314.423.5200
FAX - 314.423.9009

MATERIAL DATA SHEET

Item: CeQuin with Glass & Film

Description: CeQuin laminates are a series of unfired, ceramic-like non-asbestos, dielectric insulating papers that have been laminated to another material (substrate) for added strength and cut-through resistance.

The CeQuin series base papers, being principally inorganic, imparts the desired electrical insulation properties; the laminating substrate imparts the needed physical strength.

CeQuin I is a soft, flexible, conformable paper while CeQuin V is a stiff, thermally stabilized paper. CeQuin non-asbestos laminates are available in thicknesses from 3.5 to 60 millimeters and in a variety of strengths and surface textures. They are tough, but comfortable, with good tear, tensile, and stretch properties.

CeQuin laminates have excellent thermal stability becuase of their primary inorganic composition. All show exceptional dimensional stability with negligible shrinkage after one week at 250°C. Dielectric strength remains stable after exposure to high temperatures. They retain over 70% of their original dielectric strength after exposure to 330°C for 1,000 hours.

In addition, CeQuin laminates exhibit exceptionally high initial thermal conductivity. When compared to aramid paper insulation, this property allows for more compact design of equipment with a similar temperature rise, or lower temperature rise in the same size equipment. CeQuin laminates will compress slightly during winding. Wire will imbed in the paper surface, reducing slippage and increasing window fill. CeQuin laminates also readily absorb varnish, which further increases thermal conductivity and results in a more tightly bonded coil thus reducing coil noise.

Application:

CeQuin laminates are ideally suited for:

- Ground, layer, and end-turn insulation in dry type transformers and stick-and-bobbin wound coils
- Spiral and convolute wound tubes
- Wire adn cable manufacture as thermal, flame, or electrical insulation
- Conductor, coil, and phase insulation in rotating equipment

Temperature Resistance:
Since CeQuin laminates are principally inorganic, they are capable of satisfactory performance in the highest temperature electrical insulation systems. When impregnated with thermally stable electrical varnish, they will assume the aging characteristics normal to the saturating resin.

Physical Characteristics:
The base paper, the reinforcing material, and the thickness determine the physical and electrical characteristics. Polyester film laminates have the highest tear strength and excellent cut-through resistance. they also have strong “memory”, meaning they will tend to spring back to their original shape when folded, bent or shaped.

Availability: Fabricated Parts: The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers

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CeQuin IF

Key Characteristics	Test Method	Units - English (SI)	By Thickness, Inches (mm)		
			0.007 (0.18)	0.012 (0.3)	0.018 (0.46)
Tensile Strength	ASTM D-528	lb./1 in. (Kn/m)	5 - 2 (7)	10 - 2 (7)	15 - 3 (24.5)
Grammage	ASTM D-646	lb./yard^2 (kg/m^2)	0.22 (40)	0.32 (40)	0.43 (140)
Dielectric Breakdown	ASTM D-149	V/mil (Kv)	8.3 (0.4)	8.8 (0.6)	3.0 (0.8)

CeQuin VF

Key Characteristics	Test Method	Units - English (SI)	By Thickness, Inches (mm)		
			0.007 (0.18)	0.012 (0.3)	0.036 (0.91)
Tensile Strength	ASTM D-528	lb./1 in. (Kn/m)	5 - 2 (7)	10 - 2 (7)	3 - 30 - 3 (53)
Grammage	ASTM D-646	lb./yard^2 (kg/m^2)	0.22 (40)	0.32 (40)	1.0 (300)
Dielectric Breakdown	ASTM D-149	V/mil (Kv)	8.3 (0.4)	8.8 (0.6)	4.5 (1.9)

CeQuin IR

Key Characteristics	Test Method	Units - English (SI)	By Thickness, Inches (mm)		
			0.006 (0.15)	0.01 (0.25)	0.013 (0.33)
Tensile Strength	ASTM D-528	lb./1 in. (Kn/m)	3 - 3 (12)	7 - 3 (12)	10 - 3 (12)
Grammage	ASTM D-646	lb./yard^2 (kg/m^2)	0.11 (68)	0.27 (68)	0.36 (68)
Dielectric Breakdown	ASTM D-149	V/mil (Kv)	0.6 (0.2)	1.4 (0.5)	2.0 (0.6)

CeQuin VG CeQuin IGI

Key Characteristics	Test Method	Units - English (SI)	By Thickness, Inches (mm)			
			0.01 (0.25)	0.013 (0.33)	0.017 (0.43)	0.23 (0.58)
Tensile Strength	ASTM D-528	lb./1 in. (Kn/m)	7 - 3 (24.5)	10 - 3 (24.5)	7 - 3 - 7 (24.5)	10 - 3 -10 (24.5)
Grammage	ASTM D-646	lb./yard^2 (kg/m^2)	0.27 (140)	0.38 (140)	0.54 (140)	0.65 (140)
Dielectric Breakdown	ASTM D-149	V/mil (Kv)	1.4 (0.5)	2.0 (0.7)	2.8 (1.0)	4.0 (1.2)

CeQuin IFI CeQuin VGV

Key Characteristics	Test Method	Units - English (SI)	By Thickness, Inches (mm)	
			0.09 (0.23)	0.13 (0.33)
Tensile Strength	ASTM D-528	lb./1 in. (Kn/m)	3 - 3 (10.5)	5 - 3 -5 (24.5)
Grammage	ASTM D-646	lb./yard^2 (kg/m^2)	0.27 (60)	0.38 (140)
Dielectric Breakdown	ASTM D-149	V/mil (Kv)	10 (0.5)	4.0 (4.0)