

OBJS2

Friday, July 22, 2005

E65007

System Component, Electrical Insulation -Component

INNOVATIVE PAPER TECHNOLOGIES L L C

83 MANVILLE RD PO BOX 739 TILTON NH 03276

System Component:	System Designation	System Temp (Class)
<p>CeQuin 3000, CeQuin 30F, 30F30, F30F, CeQuin 30G, 30G30, G30G, CeQuin 500, CeQuin I, CeQuin IF, IFI, FIF, CeQuin IG, IGI, GIG, CeQuin II, CeQuin V, CeQuin VF, FVF, VFV, CeQuin VG, CeQuin VGV, GVG, CeQuinbord 3000, CeQuinbord CGA, CeQuinbord M, CorQuin, CorQuin (2 ply), TufQuin 110, TufQuin 120, TufQuin PC, TufQuin TF, TFT, FTF, TufQuinbord</p>	<p>QT-180T</p>	<p>180(H)</p>

Underwriters Laboratories Inc.

Complies with IEC Publication 85

Construction Details (Table I)

The use of this insulation system is limited to the combination of materials specified below. Where more than one item is designated under Insulation Function, they may be used together, unless otherwise indicated, or they may be used as alternates to one another. Functions designated "optional" are not necessarily required for every design. Insulation thicknesses and/or layers indicated below are minimum.

Alternate Constructions: |

Winding Wire - Recognized Component - Magnet wire (OBMW2), single build or greater or
 - Recognized Component - Single and Multi-Layer Insulated Winding Wire (OBJT2) or
 - Recognized Component - Appliance Wiring Material (AVLV2)

(unless otherwise noted, winding wire types listed below may be used in combination within a single product)

MW 35 or 200C Polyester-amide-imide (Polyamide-imide)

MW 73 or 200C Polyester-amide-imide (Polyamide-imide)

Bare Conductor - wrapped with any Ground insulation in this table. 2 mils (0.051mm) min., 50% overlap

Ground & Interwinding Insulation

Designation (No.)	mils(mm)	Comments
Arlon (Chase Foster, Keene)		
MT/FM	5 (0.13)	
T/FM	5 (0.13)	
T/FMT	5 (0.13)	
E. I. Dupont de Nemours & Co.		
Nomex 410	5 (0.13)	aramid insulating paper
Nomex 411	12 (0.3)	aramid insulating paper
Nomex 414	5 (0.13)	aramid insulating paper
Nomex 416	5 (0.13)	aramid insulating paper
Nomex 418	5 (0.13)	aramid insulating paper
Nomex 424	5 (0.13)	aramid insulating paper
Nomex 425	5 (0.13)	aramid insulating paper
Nomex 992	10 (0.25)	aramid insulating paper
Nomex 993	8 (0.2)	aramid insulating paper
Nomex 994	8 (0.2)	aramid insulating paper
Nomex E56A	7.5 (0.19)	aramid insulating paper

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CeQuin 3000	5 (0.13)	
CeQuin 30F, 30F30, F30F	5 (0.13)	
CeQuin 30G, 30G30, G30G	5 (0.13)	
CeQuin 500	5 (0.13)	
CeQuin I	5 (0.13)	unfired ceramic based rubber bonded paper
CeQuin IF, IFI, FIF	5 (0.13)	
CeQuin IG, IGI, GIG	5 (0.13)	
CeQuin II	5 (0.13)	unfired ceramic based rubber bonded paper
CeQuin V	5 (0.13)	heat treated unfired ceramic like base rubber bonded paper
CeQuin VF, FVF, VFV	5 (0.13)	
CeQuin VG	5 (0.13)	heat treated unfired ceramic like base rubber bonded paper with glass cloth & acrylic adhesive
CeQuin VGV, GVG	5 (0.13)	
CeQuinbord 3000	5 (0.13)	
CeQuinbord CGA	5 (0.13)	unfired ceramic millboard and rubber bonded paper
TufQuin 110	3 (0.08)	TufQuin portion minimum thickness
TufQuin 120	3 (0.08)	TufQuin portion minimum thickness
TufQuin PC	4 (0.1)	TufQuin PC portion minimum thickness (For Lamination construction)
TufQuin TF, TFT, FTF	3 (0.08)	TufQuin portion minimum thickness
TufQuinbord	3 (0.08)	TufQuin portion minimum thickness

Paramount Paper Tube Mfg. Co.

ParaQuin	5 (0.13)
ParaQuin F	5 (0.13)
Rigid ParaQuin	5 (0.13)
Rigid ParaQuin F	5 (0.13)

Von Roll Isola (Acme)

Acuflex CQM	5 (0.13)	
Acuflex CQMCQ	5 (0.13)	Cequin-Mylar-Cequin (ceramic based rubber bonded paper/PET film/ceramic based rubber bonded paper)

Von Roll Isola (Bedford Materials)

CQG	5 (0.13)
CQM	5 (0.13)
CQT	5 (0.13)
MCQ	5 (0.13)
TCQ	5 (0.13)

Lead Wire (optional)

- 150C EPDM - ethylene propylene diene monomer +
- 150C SI - silicone rubber - with or without glass braid +
- 150C XLPE - chemically crosslinked polyethylene +
- 200C SI - silicone rubber - with or without glass braid

+ To be isolated from direct contact with windings (magnet wire) by any insulating material (tape, layer insulation, sleeving, etc.) listed in this table - unless specifically excluded from this requirement by a special note at the beginning of this table.

Minor Sheet Insulation (optional) layer, outer, wrap, etc.

Designation (No.)	Comments
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Any sheet insulation or tape described in this table with no minimum thickness requirement.

Cotrell Paper Co Inc.

Copaco 125

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CeQuinbord M
CorQuin
CorQuin (2 ply)

Cores, Tubes, Bobbins (optional) (for mechanical support only)

Designation (No.)	Comments
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E. I. Dupont de Nemours & Co.

Rynite 415HP
Rynite 530
Rynite 935

Rynite FR543	
Rynite FR945	
Highlander	
Hi-Temp 600	
Insul-Fab	
Insul-Core	
J. L. Clark Mfg. Co.	
Kapton	
Mylar	
Nomex	
Paramount Tube	
Kraft	
Paratherm	
Rigid Paratherm	
Precision Paper Tube Co.	
Kraft Paper	
Pyroform 360	
Tapes (optional)	
Designation (No.)	Comments
3M (Minnesota Mining & Mfg Co)	
MR93	thermosetting rubber adhesive, reinforced polyester film
MR93B	
MR94	polyester film/non-woven composite
MR94B	thermosetting rubber adhesive, reinforced polyester film
MR95	thermosetting rubber adhesive, polyester film/mat
MR96	thermosetting rubber adhesive, reinforced polyester film
MR98	
1	polyester film/epoxy resin composite
5	acrylic adhesive, polyester film
10	thermosetting rubber, polyester nonwoven/epoxy resin composite
11	thermosetting rubber adhesive, black acetate cloth
20+	polyester nonwoven/epoxy resin composite
27	thermosetting rubber adhesive, glass cloth
28	thermosetting rubber adhesive, acetate cloth
44	thermosetting rubber adhesive, web reinforced polyester film
46	thermosetting rubber adhesive, web reinforced polyester film
54	thermosetting rubber adhesive, polyester film
55	thermosetting rubber adhesive, polyester film/mat
56	thermosetting rubber adhesive, polyester film
57	thermosetting rubber adhesive, polyester film
58	thermosetting rubber adhesive, polyester film
69	thermosetting silicone adhesive, glass cloth
74	thermosetting rubber adhesive, polyester film
75	thermosetting rubber adhesive, double coated polyester film
79	acrylic adhesive, glass cloth
92	thermosetting silicone adhesive, polyimide film
1169	thermosetting rubber adhesive, polyester film
1174	thermosetting rubber adhesive, polyester film/mat
1205	acrylic adhesive, polyimide film
1291	acrylic adhesive, polyester film
1298	acrylic adhesive, polyester film
1310	acrylic adhesive, polyester film
1318	acrylic adhesive, polyester film
1339	acrylic adhesive, polyester film
DeWal Industries Inc.	
D/W 469	thermosetting silicone adhesive, glass cloth
Flouroglass (Mystik)	
7000	silicone adhesive, glass cloth
7001	silicone adhesive, glass cloth
7020	thermosetting rubber adhesive, solvent resistant
7021	thermosetting rubber adhesive, solvent resistant
7344	thermosetting rubber adhesive, polyester film
7805	thermosetting acrylic adhesive, paper/polyester film

7845	thermosetting acrylic adhesive, glass reinforced polyester film
Ideal Tape Co Inc	
730	thermosetting rubber adhesive, glass cloth
7170	thermosetting silicone adhesive, polyimide film
7177	thermosetting acrylic adhesive, polyimide film
7270	thermosetting silicone adhesive, polyimide film
7300	thermosetting silicone adhesive, glass cloth
7307	thermosetting acrylic adhesive, glass cloth
Intertape Polymer Group (Tesa, Tuck, Spinnaker)	
16	acrylic adhesive, polyester film glass reinforced
17	thermosetting rubber adhesive, film/glass filament reinforced
41	thermosetting rubber adhesive, polyester film laminated to rope fiber
51	thermosetting rubber adhesive, glass cloth
58	rubber adhesive, glass cloth
59	thermosetting silicone adhesive, glass cloth
4238	polyester film glass reinforced
4426-00	polyester film laminated to rope fiber
4616-00	glass cloth
4617	glass cloth
4618	glass cloth
51599	polyester film glass reinforced
Permaccel	
P-201	cotton cloth
P-21	thermosetting rubber adhesive, glass cloth
P-212	thermosetting silicone adhesive, glass cloth
P-212HD	thermosetting silicone adhesive, glass cloth
P-213	thermosetting acrylic adhesive, glass cloth
P-221	thermosetting silicone adhesive, polyimide film
P-222	thermosetting silicone adhesive, polyimide film
P-223	thermosetting silicone adhesive, polyimide film
P-224	thermosetting silicone adhesive, polyimide film
P-232	thermosetting silicone adhesive, polyester film
P-235	thermosetting rubber adhesive, polyester film/paper
P-236	thermosetting rubber adhesive, polyester film/paper
P-24	thermosetting rubber adhesive, acetate taffeta cloth
P-240	thermosetting silicone adhesive, polyester film/polyester non-woven
P-242	acetate taffeta cloth
P-243	thermosetting rubber adhesive, polyester film/non-woven mat
P-245	thermosetting rubber adhesive, polyester film/non-woven mat
P-246	thermosetting rubber adhesive, glass cloth
P-247	oil resistant polyester film glass filament
P-248	thermosetting rubber adhesive, polyester film/paper
P-252	semi-cured rubber adhesive, polyester film
P-253	semi-cured rubber adhesive, polyester film
P-254	semi-cured rubber adhesive, polyester film
P-255	semi-cured rubber adhesive, polyester film
P-256	semi-cured rubber adhesive, polyester film
P-257	thermosetting rubber adhesive, polyester film
P-258	semi-cured rubber adhesive, printable polyester film
P-259	semi-cured rubber adhesive, printable polyester film
P-262	flame retardant thermosetting acrylic adhesive, aramid paper
P-263	flame retardant thermosetting acrylic adhesive, aramid paper
P-277	thermosetting rubber adhesive, paper (creped kraft)
P-278	
P-280	thermosetting acrylic adhesive, printable polyester film
P-281	thermosetting acrylic adhesive, printable polyester film
P-286	thermosetting acrylic adhesive, polyester film
P-286HD	thermosetting acrylic adhesive, polyester film
P-421	thermosetting silicone adhesive, PTFE film
P-422	thermosetting silicone adhesive, PTFE film
P-423	thermosetting silicone adhesive, bondable PTFE film
P-424	thermosetting silicone adhesive, PTFE film

P-427	thermosetting silicone adhesive, PTFE film
P-430	thermosetting acrylic adhesive, PTFE film
PPI Adhesive Products Ltd	
10140	synthetic rubber adhesive, polyester film
10150	synthetic rubber adhesive, polyester film
10220	polysiloxane adhesive, polyester film
10260	synthetic rubber adhesive, polyester film
10270	synthetic rubber adhesive, polyester film
10280	synthetic rubber adhesive, polyester film
16200	thermosetting rubber adhesive, polyester/polyester fleece
17110	synthetic rubber adhesive, poly/glass cloth
65100	synthetic rubber adhesive, polyamide paper, aramid paper
65110	synthetic rubber adhesive, polyamide paper, aramid paper
70100	thermosetting polyacrylate adhesive, polyimide film
Spec Tape	
ST101	thermosetting rubber adhesive, reinforced polyester film
ST102C	rubber based, pressure sensitive glass filament reinforced polyester film
ST115	thermostable rubber adhesive, polyester glass reinforced
Various Manufacturers	
Cotton, Untreated	
Spacers, Wedges (optional)	
Designation (No.)	Comments
Glastic Corp.	
FHT	
MTS	
SG-200	
TSF	polyester/glass
Haysite	
EHC-P	
ETS-FR	
ETS-FR-II	
H755	NRMA GPO-1 155
HST-II	glass reinforced thermosetting polyester
HTF	flexible, glass reinforced thermosetting polyester
Industrial Dielectric	
4400 C	
Innovative Paper Technologies, LLC	
Cequinbord M	
Nohl	
APO-1	
APO-2	
APO-2PT	
APO-3	
APO-3PT	
NTR-155	
NTR-220	
Spaulding	
Spauldite G-3-789	
Spauldite G-9-851	
Spauldite T-536	
Various Manufacturers	
Hardwood, Untreated	
Sleevings (optional)	
Designation (No.)	Comments
Federal Mogul (Bently Harris)	
Ben Har Acryl A	polyacrylate resin coated fiber glass
Ben Har Acryl C	
Ben Har Ex-Flex 1500 C-3	
Ben Har ST-1250 C3	
1062 A	
1062 B	
1062 C	

Ben Har 1151-FR A
 Ben Har 1151-FR C
 Ben Har 1151-HA-1 silicone rubber coated fiberglass
 Ben Har 1151-XL-200 A
 Ben Har 1151-XL-220 A
 Ben Har 1151-XL-240 A
 1258-2

Hilec (Brand Rex, Voltube)

Hilec 210 C
 Hilec 220 C
 Hilec 400
 Hilec 540 R
 Hilec 610 C
 Hilec 620 C
 Hilec 710 C
 Hilec 720 C

Natvar

Acryliglas 727 N
 Natglas
 Natglas T & D
 Sil/Rub SRG-200

Sofanou (Jenisco)

AC 435
 AW 751
 AW 752
 ER 565
 HT 210
 HT 220
 WV 651
 WV 652

Sofanou (Markel Corp.)

Hygrade SR 398 H-A-1
 Hygrade SR 398 H-B-1
 Hygrade SR 398 H-C-1
 Hygrade SR 398 VW-1

Suflex (Essex)

Suflex Acrylflex C-1
 Suflex Acrylflex C-2
 Suflex Acrylflex C-3
 Suflex Acrylflex F A
 Suflex Acrylflex F B
 Suflex Acrylflex F C
 Suflex Acrylflex VPI
 Suflex Flexicone 200 A
 Suflex Flexicone 200 B
 Suflex Flexicone 200 C-1
 Suflex Silicone Resin A
 Suflex Silicone Resin B
 Suflex Silicone Resin C-1
 Suflex Silicone Resin C-2
 Suflex Silicone Resin C-3
 Suflex Silverflex T & D

Varflex

Varglas A397 F-A-1
 Varglas A397 F-B-1
 Varglas A397 F-C-1
 Varglas Non-Fray Type H
 Varglas Non-Fray Type HO
 Varglas Silicone Resin 500 H-A-1
 Silicone Resin 500 H-B-1
 Silicone Resin 500 H-C-1
 Varglas Silicone Resin A

Varglas Silicone Resin B	
Varglas Silicone Resin C	
Silicone Rubber ES 4400 H-A-1	
Silicone Rubber ES 4400 H-B-1	
Silicone Rubber ES 4400 H-C-1	
Silicone Rubber H-A-1	
Silicone Rubber H-B-1	
Silicone Rubber H-C-1	
Varglas 343 acrylic F-A-1	
Varglas 343 acrylic F-B-1	
Varglas 343 acrylic F-C-1	
Tie Cords (optional)	
Designation (No.)	Comments
Federal Mogul (Bently Harris)	
HT-30	Nomex
Hilec (Brand Rex, Voltube)	
FB856	
FB858	
800 Series	fiberglass tape
Varflex	
46	silicone coated fiberglass
48	silicone coated fiberglass
Various Manufacturers	
Fiberglass, untreated	
Potting Compounds (optional)	
Designation (No.)	Comments
Copps Industries, Inc.	
D-105	
Esterlite Co.	
146	
P. D. George Co.	
300	
Ripley Resin Engineering Co Inc	
468-2	
471-5LL	
Varnishes (optional) Recognized Component - Varnishes (OBOR2)	
Designation (No.)	Comments
Dow Corning Corp	
DC-997	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
Insulating Materials Inc.	
701	for use only with ANSI Type MW35 magnet wire.
707	optional suffix A, B or C for use only with ANSI Type MW35 magnet wire.
712C	for use only with ANSI Type MW35 magnet wire.
9637	for use only with ANSI Type MW35 magnet wire.
73517	for use only with ANSI Type MW35 magnet wire.
73538	for use only with ANSI Type MW35 magnet wire.
John C. Dolph Co	
BC-346A, BC-346B, BC-346AN,	for use only with wrapped conductor or ANSI Type MW35 magnet
BC-346-E	wire.
BC-359, BC-359MS	for use only with ANSI Type MW35 magnet wire.
BC-362	for use only with wrapped conductor or ANSI Type MW35 magnet
	wire.
CC-1096	for use only with ANSI Type MW35 magnet wire.
CC-1105, CC-1105HTC	for use only with wrapped conductor or ANSI Type MW35 magnet
	wire.
P. D. George Co	
12-0-12	for use only with wrapped conductor or ANSI Type MW35 magnet
	wire.
12-0-12I	for use only with wrapped conductor or ANSI Type MW35 magnet
	wire.
40, F.C. 40, 13-0-40	for use only with wrapped conductor or ANSI Type MW35 magnet

50, 50S	wire.
60-60, 60-60S	for use only with ANSI Type MW35 magnet wire.
433-75-VTC	for use only with ANSI Type MW35 magnet wire.
600, 600LV, 600LV Quick Cure, 600HC, 600VT	for use only with ANSI Type MW35 magnet wire.
711-F-2106	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
961, 961-40	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
1000	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
P. D. George Co/Sterling	
Wat-A-Var WS-200, -200X, -200X Grey	for use only with ANSI Type MW35 magnet wire.
WS-79028	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
Ranbar Electrical Materials Inc.	
B-142-5*, B-142-6*, B-142-7*, B-142-13*	* with or without suffix -66. For use only with wrapped conductor.
B-185-4	may be followed by 1 or 2 characters, possibly followed by a -66 suffix and possibly by a -B, -R, -S or -T indicating types and amounts of solvents, fillers and/or colors For use only with wrapped conductor.
B-529-@	@ may be followed by the letters A, B, C, F, LV, M, PC, T or a color. for use only with wrapped conductor or ANSI Type MW35 magnet wire.
B-535-5	for use only with wrapped conductor or ANSI Type MW35 magnet wire.
B7-373-@	@ may be followed by the letters A, B, C, F, LV, M, PC, T or a color. for use only with wrapped conductor or ANSI Type MW35 magnet wire.
B7-606-@	@ may be followed by the letters A, B, C, F, LV, M, PC, T or a color. for use only with wrapped conductor or ANSI Type MW35 magnet wire.
534	For use only with wrapped conductor.
