

|                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|
| <b>OBJS2</b> System Component, Electrical Insulation - Component                                                                                                                                                                                                                                                                                                                                            |                    | <b>E200050</b>      |
| <b>P LEO &amp; CO (B C) LTD</b><br>PO BOX 94250 RICHMOND BC V6Y 2A6 CA                                                                                                                                                                                                                                                                                                                                      |                    |                     |
| System Component                                                                                                                                                                                                                                                                                                                                                                                            | System Designation | System Temp (Class) |
| <b>1P9FR, 1A025, 1PEN2, 1H86A, 1PN2R, 1PEN3, 1PN3R, 1H86R, 2T-TFT.xx, 2T-TFL.xx, 1H802, 2T-TFS.xx, 1H801, 1H803, 1PEN2, 1PEN3, 1PN2R, 1PN3R, 1PG888, 1N012, 1G006, 1G015, 1P130, 1H860, 1K063, 1C821, 1H850, 1PK825, 1PN820, 1PN828, 1G130, 1G155, 1G180, 1K7170, 1K7177, 1K7270, 1P700, 1P702, 1P705, 1P707, 1P717, 1P808, 1P800, 1P801, 1P802, 1P830, 1N008, 1N155, 1P133, 1P135, 1H818, 1H868, 1P701</b> | <b>N82</b>         | <b>200(N)</b>       |
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## 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.

### Winding Wire

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

(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)

Bare Conductor - insulated with any Nomex Ground in this table 2mils (0.051mm) min. OR PTFE or Silicone(w/ or w/o glass braid) lead wire insulated with Kaladex 2000 or any P.Leo Ground in table 1mil (0.025mm) min., 50% overlap

### Ground & Interwinding Insulations

| Designation (no.)                        | mils(mm) comments                   |
|------------------------------------------|-------------------------------------|
| <b>BASF (Honeywell)</b>                  |                                     |
| Petra 130                                | 20 (0.51)                           |
| <b>Dupont Teijin Films</b>               |                                     |
| Teonex Q51                               | 1.0 (0.03) PEN                      |
| <b>E. I. Dupont de Nemours &amp; Co.</b> |                                     |
| Nomex 410                                | 5 (0.13) aramid insulating paper    |
| Nomex 411                                | 11.5 (0.29) 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                                 | 8.25 (0.21) | aramid insulating paper                        |
| Nomex 994                                 | 8.25 (0.21) | aramid insulating paper                        |
| Nomex E56A                                | 7.5 (0.19)  | aramid insulating paper                        |
| Rynite 530                                | 20 (0.51)   | polyethylene terephthalate (PET)               |
| Rynite FR530                              | 20 (0.51)   | polyethylene terephthalate (PET)               |
| <b>Imperial Chemical Industries</b>       |             |                                                |
| Kaladex 2000                              | 1 (0.03)    |                                                |
| <b>Innovative Paper Technologies, LLC</b> |             |                                                |
| CeQuin 3000                               | 5 (0.13)    |                                                |
| TufQuin 110                               | 5 (0.13)    |                                                |
| <b>P. Leo</b>                             |             |                                                |
| 1PEN2                                     | 1 (layers)  | Recognized Component - Insulating Tape (OANZ2) |
| 1PEN3                                     | 1 (layers)  | Recognized Component - Insulating Tape (OANZ2) |
| 1PN2R                                     | 1 (layers)  | Recognized Component - Insulating Tape (OANZ2) |
| 1PN3R                                     | 1 (layers)  | Recognized Component - Insulating Tape (OANZ2) |

### Lead Wires (optional)

200 PTFE - polytetrafluoroethylene  
200 SI - silicone rubber - with or without glass braid

### Minor Sheet Insulations (optional) layer, outer, wrap etc.

**Any sheet insulation or tape described in this table with no minimum thickness requirement.**

| Designation (no.)                    | comments                               |
|--------------------------------------|----------------------------------------|
| <b>Cotrell Paper Co Inc.</b>         |                                        |
| Copaco 125                           |                                        |
| <b>Miki Tokusys Paper mfg.</b>       |                                        |
| PB-2                                 | press board paper                      |
| <b>P. Leo</b>                        |                                        |
| D/M###                               | ### = layer thickness in mils          |
| DMD###                               | ### = layer thickness in mils          |
| DPD###                               | ### = layer thickness in mils          |
| N/M###                               | ### = layer thickness in mils          |
| N/PEN/N-###                          | ### = layer thickness in mils          |
| NMN-###                              | ### = layer thickness in mils          |
| NTN-###                              | ### = layer thickness in mils          |
| RP65                                 |                                        |
| SM61                                 |                                        |
| SR315T                               |                                        |
| SR853T                               |                                        |
| TK-####                              | # - represents thickness layer in mils |
| TP-####                              | # - represents thickness layer in mils |
| <b>Protectolite</b>                  |                                        |
| 1030HT                               |                                        |
| <b>Riegel Products (James River)</b> |                                        |
| Glassine Paper                       |                                        |

### Cores, Tube, Bobbins (optional) (for mechanical support only)

| Designation (no.)          | comments |
|----------------------------|----------|
| <b>Chang Chun Plastics</b> |          |

|                                 |                                     |
|---------------------------------|-------------------------------------|
| PBT-4130                        |                                     |
| T373J                           |                                     |
| T375J                           |                                     |
| <b>Paramount Tube</b>           |                                     |
| ParaQuin                        |                                     |
| ParaQuin F                      |                                     |
| Rigid ParaQuin                  |                                     |
| Rigid ParaQuin F                |                                     |
| <b>Precision Paper Tube Co.</b> |                                     |
| FR9000                          |                                     |
| Heat-Shrink Mylar               |                                     |
| Mylar                           |                                     |
| Pyroform 310                    |                                     |
| Resinite 8108                   |                                     |
| Resinite 8111                   |                                     |
| Resinite 8717                   |                                     |
| Resinite 9120                   |                                     |
| Resinite 9120-1                 |                                     |
| Thermoform 1000                 | Kapton film with amide-imide binder |
| Thermoform 255                  |                                     |
| Thermoform 700                  |                                     |
| Thin Wall P-100                 |                                     |
| Thin Wall P-30                  |                                     |
| Thin Wall P-60                  |                                     |

|                         |
|-------------------------|
| <b>Tapes (optional)</b> |
|-------------------------|

| Designation (no.)               | comments                              |
|---------------------------------|---------------------------------------|
| <b>P Leo &amp; Co (B C) Ltd</b> |                                       |
| 1A025                           |                                       |
| 1C821                           | cotton cloth                          |
| 1G006                           | aramid fiber (Nomex) paper            |
| 1G015                           | silicone adhesive, glass cloth        |
| 1G130                           | glass cloth                           |
| 1G155                           | glass cloth                           |
| 1G180                           | glass cloth                           |
| 1H801                           |                                       |
| 1H802                           |                                       |
| 1H803                           |                                       |
| 1H818                           | reinforced PET, rubber adhesive       |
| 1H850                           | polyester film                        |
| 1H860                           | acrylic adhesive, polyester film      |
| 1H868                           | reinforced PET, acrylic adhesive      |
| 1H86A                           |                                       |
| 1H86R                           |                                       |
| 1K063                           | silicone adhesive, polyimide film     |
| 1K7170                          | Kapton film                           |
| 1K7177                          | Kapton film                           |
| 1K7270                          | Kapton film                           |
| 1N008                           | aramid fiber (Nomex), rubber adhesive |
| 1N012                           | PET film, acrylic adhesive            |
| 1N155                           | aramid fiber (Nomex), rubber adhesive |
| 1P130                           | acrylic adhesive, polyester film      |
| 1P133                           | PET film, acrylic adhesive            |
| 1P135                           | PET film, acrylic adhesive            |
| 1P700                           | polyester film                        |
| 1P701                           | polyester film                        |
| 1P702                           | polyester film                        |
| 1P705                           | polyester film                        |
| 1P707                           | polyester film                        |
| 1P717                           | polyester film                        |
| 1P800                           | polyester film                        |
| 1P801                           | acrylic adhesive, polyester film      |

|        |                                  |
|--------|----------------------------------|
| 1P802  | acrylic adhesive, polyester film |
| 1P808  | polyester film                   |
| 1P830  | acrylic adhesive, polyester film |
| 1P9FR  |                                  |
| 1PEN2  |                                  |
| 1PEN3  |                                  |
| 1PG888 |                                  |
| 1PK825 | polyester knit                   |
| 1PN2R  |                                  |
| 1PN3R  |                                  |
| 1PN820 | woven polyester cloth            |
| 1PN828 | woven polyester cloth            |

### Spacers and Wedges (optional)

**Any material described in this table with no thickness requirement.**

| Designation (no.)                         | comments                                 |
|-------------------------------------------|------------------------------------------|
| <b>Glastic Corp.</b>                      |                                          |
| 1580                                      |                                          |
| 1583                                      |                                          |
| FHT                                       |                                          |
| MTS                                       |                                          |
| SG-200                                    |                                          |
| TSF                                       | polyester/glass                          |
| UTS                                       |                                          |
| <b>Haysite</b>                            |                                          |
| EHC                                       | glass reinforced thermosetting polyester |
| EHG-S                                     |                                          |
| EMD                                       |                                          |
| ETS                                       | NRMA GPO-1 130                           |
| ETS-FR-II                                 |                                          |
| HST-II                                    | glass reinforced thermosetting polyester |
| <b>Nohl</b>                               |                                          |
| APO-1                                     |                                          |
| APO-2                                     |                                          |
| APO-3                                     |                                          |
| <b>Resolite</b>                           |                                          |
| Supersil Polyglas                         |                                          |
| <b>Technical Pultrusions</b>              |                                          |
| Glass Polyester Poltruded Rod             |                                          |
| <b>Von Roll Isola (Bedford Materials)</b> |                                          |
| Supersil                                  |                                          |

### Sleevings (optional)

| Designation (no.)                    | comments                          |
|--------------------------------------|-----------------------------------|
| <b>Atlantic Tubing</b>               |                                   |
| TFL                                  |                                   |
| TFS                                  |                                   |
| TFT                                  |                                   |
| <b>Federal Mogul (Bently Harris)</b> |                                   |
| 1062                                 | silicone rubber coated fiberglass |
| Ben Har 1151-FR                      |                                   |
| Ben Har 1151-XL-200                  | silicone rubber coated fiberglass |
| Ben Har 1151-XL-220                  |                                   |
| Ben Har 1151-XL-240                  |                                   |
| Ben Har Acryl                        |                                   |
| Ben Har Ex Flex (std)                |                                   |
| Ben Har Ex-Flex 1500                 |                                   |
| Ben Har ST (std)                     |                                   |
| Ben Har ST-1250                      |                                   |
| Vinylglass                           |                                   |

**Fluo Tech Industries**

TFL  
TFS  
TFT

**Great Holding**

LeoFlon LW  
LeoFlon SW  
LeoFlon TW

**Hilec (Brand Rex, Voltube)**

HT  
HTS  
Hilec Series 200  
Hilec Series 300  
Hilec Series 400  
Hilec Series 500  
Hilec Series 600  
Hilec Series 700  
Hilec Series 800  
Turbo 117E  
Turbo 117F  
Turbo 117G  
Turbo 117U  
Turbo TUF  
Turbocryl  
Vol-Cryl  
Vol-Flex  
Vol-Glas  
Vol-Glas P  
Vol-Sil

**Hitachi**

Heat Shrink Tube M2

**Insul-Tab inc.**

TFE-300

**Natvar**

Acryliglas  
Natglas  
Natglas T & D  
Natvar 400/461  
Silicone Rubber Coated Fiberglass  
Vinyl Coated Glass Grade A  
Vinyl Coated Glass Grade B  
Vinyl Coated Glass Grade C

**Nichias**

9003-150@  
9003-300@  
9003-60@

**P. Leo**

|           |             |
|-----------|-------------|
| 2T-TFL.xx | teflon tube |
| 2T-TFS.xx | teflon tube |
| 2T-TFT.xx | teflon tube |

**Raychem Corp.**

Thermofit RNF-100

**Remtek**

CFR-125

**Sofanou (Jenisco)**

AW 751

**Sofanou (Markel Corp.)**

Flexite Spiral Cut TFE  
Flexite TFE  
Polytube  
Hygrade Polytube 463  
Hygrade SR 398

**Suflex (Essex)**

Suflex Acrylflex VPI  
Suflex Flexicone 200

Silverflex  
 Suflex Vinylglas  
**Sumitomo**  
 Sumitube F2  
**Varflex**  
 Varglas Non-Fray Type H  
 Varglas Non-Fray Type HM  
 Varglas Non-Fray Type HO  
 Varglas Non-Fray Type HP  
 Varglas S1600  
 Varglas Silicone Resin  
 Varglas Silicone Resin 500  
 Varglas Silicone Rubber ES 4400  
 Silicone Rubber H-A-1  
 Silicone Rubber H-C-1  
 Silicone Rubber H-C-2  
 Varfil B-A-1  
 Varfil B-C-1  
 Varflo B-A-1  
 Varflo B-C-1  
 Varglas Viton 231  
**Various Manufacturers**  
 Untreated Fiberglass  
**Zeus**  
 TFE-LW  
 TFE-SW  
 TFE-TW

### Tie Cords (optional)

| Designation (no.)       | comments                   |
|-------------------------|----------------------------|
| <b>Varflex</b>          |                            |
| 46                      | silicone coated fiberglass |
| 48                      | silicone coated fiberglass |
| <b>Western Filament</b> |                            |
| DHS Series              |                            |
| DPS Series              |                            |
| DRT Series              |                            |

### Potting Compounds (optional)

| Designation (no.)      | comments |
|------------------------|----------|
| <b>EpoxyLite Corp.</b> |          |
| 8705                   |          |
| 8822                   |          |

### Varnishes (optional) Recognized Component - Varnishes (OBOR2)

| Designation (no.)      | comments                                                                                                                                     |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>P. D. George Co</b> |                                                                                                                                              |
| Ripley Resin 468-2(+)  | (+) - May be replaced by prefix "E" and may be followed by a one to five alphanumeric suffix indicated percent of inert filler and/or color. |