

System Component, Electrical Insulation - Component		E209189
SUMITOMO BAKELITE CO LTD		
2100 TAKAYANAGI FUJIEDA-SHI SHIZUOKA 426-0041 JP		
System Component	System Designation	System Temp(Class)
Sumikon PM-9720, Sumikon PM-9750, Sumikon PM-9820, Sumikon PM-9630, Sumikon PM-9830, Sumikon PM-9850, Sumikon AM-113	SBI4.2	130(B)
© 2013 UL LLC		

Authorization Letter Required for Adoption of this System

**Complies with IEC
Publication 85**

Construction Details (Table I)

**alternate
constructions** 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.

Note: Note 1. When Furukawa or Totoku triple insulated wires are used to produce a winding, no additional ground or interwinding insulation is required to separate this winding from other enameled magnet wire windings or between this winding and grounded or dead metal. Note 2. When a polyurethane basecoat wire without an ANSI MW type is used, no varnish is allowed to be used.

Winding Wire

- Recognized Component - Magnet wire (OBMW2), single build or greater, round or rectangular, copper or aluminum unless stated otherwise for the types listed below
- Recognized Component - Single and Multi-Layer Insulated Winding Wire (OBJT2) listed below
- Recognized Component - Appliance Wiring Material (AVLV2) listed below
- Bare conductors wrapped or interleaved with a paper or film listed below need not be a Recognized Component

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

MW 28 and 130C Polyurethane (Polyamide)
MW 75 or 130C Polyurethane
MW 79 or 155C Polyurethane
MW 80 or 155C Polyurethane (Polyamide)
MW 82 or 180C Polyurethane

Furukawa

TEX-E	3.3 mils (0.08 mm) triple insulated
TEX-ECEW3	3.3 mils (0.08 mm) triple insulated
TEX-ELZ	3.3 mils (0.08 mm) triple insulated

Hitachi Cable Ltd.

UEW	polyurethane base coat
-----	------------------------

Totoku Electric

TIW-2LZX	3.5 mils (0.09 mm) Litz Wire of TIW-2X
TIW-2SLZX	3.5 mils (0.09 mm) Litz Wire of TIW-2SX
TIW-2SX	3.5 mils (0.09 mm) triple insulated
TIW-2X	3.5 mils (0.09 mm) triple insulated
TIW-3LZX	3.9 mils (0.1 mm) Litz Wire of TIW-3X
TIW-3SLZX	3.9 mils (0.1 mm) Litz wire of TIW-3SX
TIW-3SX	3.9 mils (0.1 mm) triple insulated
TIW-3X	3.9 mils (0.1 mm) triple insulated
UEW-3TC	polyurethane basecoat warpped with PET fiber

Ground & Interwinding Insulations

Any Recognized Component Plastic (QMFZ2), polyethylene terphthalate film (PET) 0.98 mils (0.02 mm) - various manufacturers

Designation (no.)	mils(mm)	comments
3M (Minnesota Mining & Mfg Co)		
1	1 (layers)	Recognized Component - Insulating Tape

		(OANZ2)
1298	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1298CR	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318(#)	1 (layers)	Recognized Component - Insulating Tape (OANZ2); (#) - Replaced with suffix B-1, B-2, W-1, W-2, Y-1 or Y-2
1318-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318MW-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318MW-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350CR-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350CR-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350F-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350F-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-3	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1351-1	1 (layers)	
1351-2	1 (0.03)	
1351T-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1351T-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44D	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44D-A	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44T	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44T-A	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
5	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
54	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
55	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
56	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
57	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
58	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
74	2 (layers)	Recognized Component - Insulating Tape (OANZ2)
75	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Super 10	1 (layers)	Recognized Component - Insulating Tape

	(OANZ2)	
Bondtec Pacific		
370S	1 (layers)	
371F	1 (layers)	
Dongguan Shin Yahua Electronic Material Co. Ltd.		
CT	2 (layers)	
PZ	2 (layers)	
WF	1 (layers)	
Duck Sung Hitech		
DTS-204	1 (layers)	
DTS-241	1 (layers)	
DTS-280	1 (layers)	
E. I. Dupont de Nemours & Co.		
Nomex® 410	2.0 (0.05) aramid insulating paper	
Nomex® 411	4.5 (0.11) aramid insulating paper	
Nomex® 414	2.0 (0.05) aramid insulating paper	
Nomex® 416	2.0 (0.05) aramid insulating paper	
Nomex® 418	2.0 (0.05) aramid insulating paper	
Nomex® 992	3.9 (0.1) aramid insulating paper	
Nomex® 993	3.2 (0.08) aramid insulating paper	
Nomex® 994, 994 NPT	3.02 (0.08) aramid insulating paper	
Nomex® E56	3.0 (0.08) aramid insulating paper	
Kapton H, V, HN, VN or HA Grades	0.98 (0.02)	
Jingjiang Yahua Pressure Sensitive Glue Co. Ltd.		
CT	2 (layers)	
PZ	2 (layers)	
WF	1 (layers)	
KMP Chemical		
MP4674-B	1 (layers)	
Metal Line Co., Ltd		
800	1 (layers)	
800BT	1 (layers)	
Nichiban Co., Ltd.		
553H-UL	1 (layers)	Recognized Component Insulating Tape (OANZ2)
573H-UL	1 (layers)	Recognized Component Insulating Tape (OANZ2)
945UL-30	1 (layers)	Recognized Component Insulating Tape (OANZ2)
945UL-50	1 (layers)	Recognized Component Insulating Tape (OANZ2)
Nitto Denko		
3161-FT1	1 (layers)	flame retardant polyethylene terephthalate
3161-FT2	1 (layers)	flame retardant polyethylene terephthalate
31CT-1	1 (layers)	
31CT-2	1 (layers)	Polester
31CTF	1 (layers)	flame retardant polyethylene terephthalate
P. Leo		
1H860	1 (layers)	
1K063	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1K7170	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1K7171	1 (layers)	
1K7172	1 (layers)	
1N012	2 (layers)	
1N155	1 (layers)	
1P130	1 (layers)	
1P133	1 (layers)	
1P135	1 (layers)	
1P350	1 (layers)	

1P656	1 (layers)	
1P700	1 (layers)	
1P756	1 (layers)	
1P801	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1P802	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1P808	1 (layers)	
1P830	1 (layers)	
1P833	1 (layers)	
1P9FR	1 (layers)	
Sumitomo 3M Ltd		
Super 10-T	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Super 10-W	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Sumitomo Bakelite		
Sumikon AM-113	11.8 (0.3)	DAP Molding Compound
Sumikon PM-9630	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9720	15.7 (0.4)	Phenolic Molding Compound
Sumikon PM-9750	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9820	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9830	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9850	11.8 (0.3)	Phenolic Molding Compound
Symbio inc.		
35660	1 (layers)	
35660Y	1 (layers)	
35661	1 (layers)	
Tae Hwa		
H5673	1 (layers)	Recognized Component Insulating Tape (OANZ2)
Teraoka		
560S #2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
560S #3	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
560S #5	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #3	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #7	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
630F #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
630F#50-1	1 (layers)	
630F2 #50 (formerly 630F #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
631S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
631S2 #50 (formerly 631S #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
632S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
632S2 #50 (formerly 632S #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
650S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
650S #50	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
652S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
653F #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)

654S #25

1 (0.03)

Lead Wires (optional)

150 GTFE-extruded Tefzel
 150 SI - silicone rubber - with or without glass braid
 200 ETFE - Extruded tetrafluoroethylene
 200 PTFE - polytetrafluoroethylene
 200 SI - silicone rubber - with or without glass braid

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

Designation (no.)	comments
Chang Chun Plastics Co., Ltd. PBT-4130	
E. I. Dupont de Nemours & Co. Rynite FR530	
Furukawa Electric PI-Tube	
Hitachi Cable Ltd Verafit V2	
Kolon Industries KP212V0	
Nissei Electric RSU-1 RSU-2	
Sam Yang 1500-GN30	
Sumitomo Bakelite AM-113 PM-8375 PM-9630 PM-9720 PM-9750 PM-9820 PM-9830 PM-9850	
Sumitomo Chemical E4008	
Toray Industries 1494	

Tapes (optional)

Designation (no.)	comments
3M (Minnesota Mining & Mfg Co) 1	polyester film/epoxy resin composite
1205	acrylic adhesive, polyimide film
1298	acrylic adhesive, polyester film
1298CR	polyester film
1318(#)	(#) - Replaced with suffix B-1, B-2, W-1, W-2, Y-1or Y-2
1318-1	acrylic adhesive, polyester film
1318-2	acrylic adhesive, polyester film
1318MW-1	
1318MW-2	
1350-1	polyester film
1350-2	polyester film
1350CR-1	
1350CR-2	
1350F-1	
1350F-2	
1350T-1	

1350T-2	
1350T-3	
1351-1	polyester film
1351-2	polyester film
1351T-1	
1351T-2	
1351T-3	
44	thermosetting rubber adhesive, web reinforced polyester film
44D	polyester film/non-woven composite
44D-A	polyester film/non-woven composite
44T	polyester film/non-woven composite
44T-A	polyester film/non-woven composite
5	acrylic adhesive, 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
74	thermosetting rubber adhesive, polyester film
75	thermosetting rubber adhesive, double coated polyester film
92	thermosetting silicone adhesive, polyimide film
MR94	polyester film/non-woven composite
MR94B	thermosetting rubber adhesive, reinforced polyester film
Super 10	polyester film/epoxy resin composite
Super 20	polyester film/epoxy resin composite
Bondtec	
201	
370S	
371F	
DONGGUAN SHIN YAHUA ELECTRONIC MATERIAL CO LTD	
CT	
PZ	
WF	
Duck Sung Tape Co., Ltd	
DTS-204A	
DTS-241	
DTS-280	
JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.	
CT	
PZ	PET film
WF	
KMP Chemical	
MP4674B	
Metal Line	
800	
800BT	
Nichiban	
553H-UL	
573H-UL	
945UL-30	
945UL-50	
Nitto Denko Corp	
3161-FT1	
3161-FT2	
31C	
31CT	polyester
31CT-1	
31CT-2	
31CTF	
343B	
343BN27	

343BN43	
P Leo & Co (B C) Ltd	
1A025	
1A570	
1A605	
1C822	
1E075	
1G006	aramid fiber (Nomex) paper
1G130	glass cloth
1G155	glass cloth
1G180	glass cloth
1G200	woven glass cloth, silicone adhesive
1H818	reinforced PET, rubber adhesive
1H850	polyester film
1H860	acrylic adhesive, polyester film
1H86A	
1H86R	
1K063	silicone adhesive, polyimide film
1K7170	Kapton film
1K7171	silicone adhesive, polyimide film
1K7172	silicone adhesive, polyimide film
1N008	Aramid fiber (Nomex), Acrylic Adhesive
1N012	Aramid fiber (Nomex), Acrylic Adhesive
1N155	Aramid fiber (Nomex), Acrylic Adhesive
1P130	acrylic adhesive, polyester film
1P133	PET film, acrylic adhesive
1P135	PET film, acrylic adhesive
1P350	PET film, acrylic adhesive
1P656	
1P700	polyester film
1P756	
1P801	acrylic adhesive, polyester film
1P802	acrylic adhesive, polyester film
1P808	polyester film
1P830	acrylic adhesive, polyester film
1P833	PET film, acrylic adhesive
1P9FR	
1PEN2	
1PEN3	
1PEN3R	
1PN2R	
1PN820	woven polyester cloth
1PN828	woven polyester cloth
1TF05	
1TF07	
Sumitomo 3M Limited	
2245	
CU-35	
Super 10-T	
Super 10-W	
Symbio Inc	
35660	PET film, acrylic adhesive
35661	PET film, acrylic adhesive
N35660Y	
Taehwa Industries	
A-3338	
E-3338	
H5673	
Teraoka Seisakusho Co., Ltd.	
530F	epoxy varnish impregnated nonwoven polyester fabric, acrylic adhesive
560S #2	
560S #3	
560S #5	
561S #2	

561S #3
 561S #7
 630F#25
 630F#50-1
 630F2 #50 (formerly 630F #50)
 631S #25
 631S #38
 631S2 #50 (formerly 631S #50)
 632S #25
 632S2 #50 (formerly 632S #50)
 635F
 636F
 650S #25
 650S #50
 652S #25
 653F #25
 654S #25
 673A 0.27
 673A 0.5
 673AB 0.27
 673AB 0.45
 673F 0.27
 673F 0.5
 673F 1.0
 673FG 0.27
 673FG 0.45
 831S

Spacers and Wedges

(optional)

Any material described in this table with no thickness requirement.

Designation (no.)	comments
Various Manufacturers	
Any material in this table with no thickness restriction.	

Sleevings (optional)

Designation (no.)	comments
Cosmo Link	
PTFE L-type	
PTFE T-type	
Daikin	
EP520	
Great Holding	
TFL	
TFS	
TFT	
Hoechst	
TFBX7100	
Kurabe	
SE-1	
SE-2	
LG Cable	
GSHS-1625	
Nikkan	
E-651 U-1	
E-651 U-2	
S-693 600	silicone coated fiberglass
S-693 F-1	
P. Leo	
2T-TFL.xx	teflon tube
2T-TFS.xx	teflon tube

2T-TFT.xx	teflon tube
Sumitomo	
Sumitube F2	
Zeus	
TFE-LW-150	
TFE-SW-600	
TFE-TW-300	

Tie Cords (optional)

Designation (no.)	comments
Various Manufacturers	
Fiberglass, untreated	

Varnishes (optional) Recognized Component - Varnishes (OBOR2)

Designation (no.)	comments
Elantas Electrical Insulation Elantas Pdg Inc	
468-2(x), E 468-2(x), E 468-2FC(x), E 468-2-7-xxF(x), E 468-2-7FC-xxF(x)	(x) - May be followed by a one to five alphanumeric suffix indicating percent of inert filler and/or color and the actual name of the color and the word 'thixo'. (xx) - Indicates inorganic filler level. Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.
7423	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-3X, and TIW-3SX with or without optional overcoating only.
V1380, V1380FC, V1380FC Black, 80381FC	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-3X, and TIW-3SX with or without optional overcoating only.
V1630FS, V1630, V1630FS50, V1630FS Black, 80361, 80361FS	Can be used with TEX-E, TEX-ELZ, TEX-ECEW3, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.
Hitachi Chemical Co. Ltd	
WP-2952F-2G	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-3X, and TIW-3SX with or without optional overcoating only.
John C. Dolph Co	
BB-346-HF	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.
BB-353	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.
BC-346A, BC-346-A, BC-346B, BC-346AN, BC-346-E	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.
BG-346A	Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.

<p>PDR-1839</p> <p>Kyocera Chemical Corp. (Toshiba Chemical)</p> <p>TVB-2180T++</p> <p>Meiden Chemical</p> <p>#880</p>	<p>Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-2LZX, TIW-2SLZX, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.</p> <p>++ optional suffix Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-2X, TIW-2SX, TIW-3X, and TIW-3SX with or without optional overcoating only.</p> <p>Can be used with MW28, MW75, MW79, MW80, MW82, MW83, UEW-3-TC, TEX-E, TEX-ELZ, TEX-ECEW3, TIW-3X, TIW-3SX, TIW-3LZX, and TIW-3SLZX with or without optional overcoating only.</p>
--	---

Potting Compounds	(optional)
--------------------------	-------------------

<p>Designation (no.)</p> <p>Momentive Performance Materials Japan L.L.C.</p> <p>TSE3331</p> <p>TSE3331K</p>	<p>comments</p>
--	-----------------

Miscellaneous Minor Insulations	(optional)
--	-------------------

<p>Designation (no.)</p> <p>E. I. Dupont de Nemours & Co.</p> <p>Kapton H</p> <p>Kapton HA</p> <p>Kapton HN</p> <p>Kapton V</p> <p>Kapton VN</p> <p>Nomex 410</p> <p>Nomex 411</p> <p>Nomex 414</p> <p>Nomex 416</p> <p>Nomex 418</p> <p>Nomex 424</p> <p>Nomex 425</p> <p>Nomex 992</p> <p>Nomex 993</p> <p>Nomex 994, Nomex 994 NPT</p> <p>Nomex E56A</p> <p>Various Manufacturers</p> <p>Polyethylene Terephthalate Film</p>	<p>comments</p> <p>Recognized Component Plastics (QMFZ2)</p>
---	--

System Component, Electrical Insulation - Component		E209189
SUMITOMO BAKELITE CO LTD		
2100 TAKAYANAGI FUJIEDA-SHI SHIZUOKA 426-0041 JP		
System Component	System Designation	System Temp(Class)
Sumikon PM-9720, Sumikon PM-9750, Sumikon PM-9820, Sumikon PM-9630, Sumikon PM-9830, Sumikon PM-9850, Sumikon AM-113	SBI4.2	130(B)
© 2013 UL LLC		

Authorization Letter Required for Adoption of this System

Construction Details (Table II)

alternate
constructions II

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.

Note: Note 1. When Furukawa or Totoku triple insulated wires are used to produce a winding, no additional ground or interwinding insulation is required to separate this winding from other enameled magnet wire windings or between this winding and grounded or dead metal. Note 2. When a polyurethane basecoat wire without an ANSI MW type is used, no varnish is allowed to be used.

Winding Wire

- Recognized Component - Magnet wire (OBMW2), single build or greater, round or rectangular, copper or aluminum unless stated otherwise for the types listed below
- Recognized Component - Single and Multi-Layer Insulated Winding Wire (OBJT2) listed below
- Recognized Component - Appliance Wiring Material (AVLV2) listed below
- Bare conductors wrapped or interleaved with a paper or film listed below need not be a Recognized Component

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

MW 28 and 130C Polyurethane (Polyamide)
MW 75 or 130C Polyurethane
MW 79 or 155C Polyurethane
MW 80 or 155C Polyurethane (Polyamide)
MW 82 or 180C Polyurethane
MW 83 or 180C Polyurethane (Polyamide)

Furukawa

TEX-E	3.3 mils (0.08 mm) triple insulated
TEX-ECEW3	3.3 mils (0.08 mm) triple insulated
TEX-ELZ	3.3 mils (0.08 mm) triple insulated

Totoku Electric

TIW-2LZX	3.5 mils (0.09 mm) Litz Wire of TIW-2X
TIW-2SLZX	3.5 mils (0.09 mm) Litz Wire of TIW-2SX
TIW-2SX	3.5 mils (0.09 mm) triple insulated
TIW-2X	3.5 mils (0.09 mm) triple insulated
TIW-3LZX	3.9 mils (0.1 mm) Litz Wire of TIW-3X
TIW-3SLZX	3.9 mils (0.1 mm) Litz wire of TIW-3SX
TIW-3SX	3.9 mils (0.1 mm) triple insulated
TIW-3X	3.9 mils (0.1 mm) triple insulated
UEW-3TC	polyurethane basecoat wrapped with PET fiber

Various Manufacturers

OBMW2, polyurethane basecoat with or without polyamide topcoat, rated 130 C

Ground & Interwinding Insulations

Any Recognized Component Plastic (QMFZ2), polyethylene terphthalate film (PET) 0.98 mils (0.02 mm) - various manufacturers

Designation (no.)	mils(mm)	comments
3M (Minnesota Mining & Mfg Co)		
1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1205	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318(#)	1 (layers)	Recognized Component - Insulating Tape (OANZ2); (#) - Replaced with suffix B-1, B-2, W-1, W-2, Y-1 or Y-2
1318-1	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
1318-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318MW-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1318MW-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350F-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350F-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1350T-3	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1351-1	1 (layers)	
1351-2	1 (0.03)	
1351T-1	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1351T-2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1351T-3	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1388B-1	1 (layers)	
1388W-1	1 (layers)	
1388Y-1	1 (layers)	
44	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44-A	1 (layers)	
44D	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44D-A	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44T	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
44T-A	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
5	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
54	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
55	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
56	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
57	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
58	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
		Recognized Component - Insulating Tape

74	2 (layers)	(OANZ2)
75	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
92	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Super 10	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Bondtec Pacific		
370S	1 (layers)	
371F	1 (layers)	
Dongguan Shin Yahua Electronic Material Co. Ltd.		
CT	2 (layers)	
PZ	2 (layers)	
WF	1 (layers)	
Duck Sung Hitech		
DTS-241	1 (layers)	
DTS-280	1 (layers)	
E. I. Dupont de Nemours & Co.		
Nomex® 410	2.0 (0.05)	aramid insulating paper
Nomex® 411	4.5 (0.11)	aramid insulating paper
Nomex® 414	2.0 (0.05)	aramid insulating paper
Nomex® 416	2.0 (0.05)	aramid insulating paper
Nomex® 418	2.0 (0.05)	aramid insulating paper
Nomex® 992	3.9 (0.1)	aramid insulating paper
Nomex® 993	3.2 (0.08)	aramid insulating paper
Nomex® 994, 994 NPT	3.2 (0.08)	aramid insulating paper
Nomex® E56	3.0 (0.08)	aramid insulating paper
Kapton H, V, HN, VN or HA Grades	0.98 (0.02)	
Jingjiang Yahua Pressure Sensitive Glue Co. Ltd.		
CT	2 (layers)	
PZ	2 (layers)	
WF	1 (layers)	
Metal Line Co., Ltd		
800	1 (layers)	
800BT	1 (layers)	
Nichiban Co., Ltd.		
553H	1 (layers)	Recognized Component Insulating Tape (OANZ2)
Nitto Denko		
3161-F	1 (layers)	
P. Leo		
1H818	1 (layers)	Recognized Component-Insulating Tape (OANZ2)
1H860	1 (layers)	
1K063	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1K7170	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1K7172	1 (layers)	
1N155	1 (layers)	
1P130	1 (layers)	
1P133	1 (layers)	
1P135	1 (layers)	
1P350	1 (layers)	
1P656	1 (layers)	
1P700	1 (layers)	
1P756	1 (layers)	
1P801	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1P802	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
1P830	1 (layers)	

1P833	1 (layers)	
1P9FR	1 (layers)	
Sumitomo 3M Ltd		
Super 10-T	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Super 10-W	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
Sumitomo Bakelite		
Sumikon AM-113	11.8 (0.3)	DAP Molding Compound
Sumikon PM-9630	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9720	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9750	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9820	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9830	11.8 (0.3)	Phenolic Molding Compound
Sumikon PM-9850	11.8 (0.3)	Phenolic Molding Compound
Symbio inc.		
35660	1 (layers)	
35660Y	1 (layers)	
35661	1 (layers)	
Tae Hwa		
H5673	1 (layers)	Recognized Component Insulating Tape (OANZ2)
Teraoka		
560S #2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
560S #3	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
560S #5	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #2	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #3	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
561S #7	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
630F #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
630F#50-1	1 (layers)	
630F2 #50 (formerly 630F #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
631S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
631S #38	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
631S2 #50 (formerly 631S #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
632S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
632S2 #50 (formerly 632S #50)	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
650S #25	1 (0.03)	Recognized Component - Insulating Tape (OANZ2)
650S #50	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
652S #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
653F #25	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
654S #25	1 (0.03)	
673A 0.27	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
673A 0.5	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
673AB 0.27	1 (layers)	Recognized Component - Insulating Tape (OANZ2)

673AB 0.45	1 (layers)	
673F 0.27	1 (layers)	Recognized Component Insulating Tape (OANZ2)
673F 0.5	1 (layers)	Recognized Component Insulating Tape (OANZ2)
673F 1.0	1 (layers)	Recognized Component Insulating Tape (OANZ2)
673FG 0.27	1 (layers)	Recognized Component - Insulating Tape (OANZ2)
673FG 0.45	1 (layers)	

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
Various Manufacturers	
Any materials in this table with no thickness restriction	

Cores, Tubes Bobbins

(optional) for mechanical support only

Designation (no.)	comments
E. I. Dupont de Nemours & Co.	
Kapton H	
Kapton HA	
Kapton HN	
Kapton V	
Kapton VN	
Nomex 410	
Nomex 411	
Nomex 414	
Nomex 416	
Nomex 418	
Nomex 424	
Nomex 425	
Nomex 992	
Nomex 993	
Nomex 994	
Nomex E56A	
Rynite FR515	
Rynite FR530	
Sam Yang	
1500-GN30	
Sumitomo Bakelite	
AM-113	
PM-8375	
PM-9630	
PM-9720	
PM-9750	
PM-9820	
PM-9830	
PM-9850	
Sumitomo Chemical	
E4008	
E4008L	
Toray Industries	
1494	
EC41G-30	
Various Manufacturers	
Any materials in this table with no thickness restriction	

Tapes (optional)

Designation (no.)	comments
3M (Minnesota Mining & Mfg Co)	
1	polyester film/epoxy resin composite
1205	acrylic adhesive, polyimide film
1218	
1318(#)	(#) - Replaced with suffix B-1, B-2, W-1, W-2, Y-1 or Y-2
1318-1	acrylic adhesive, polyester film
1318-2	acrylic adhesive, polyester film
1318MW-1	
1318MW-2	
1350F-1	
1350F-2	
1350T-1	
1350T-2	
1350T-3	
1351-1	polyester film
1351-2	polyester film
1351T-1	
1351T-2	
1351T-3	
1388B-1	
1388W-1	
1388Y-1	
44	thermosetting rubber adhesive, web reinforced polyester film
44A	
44D	polyester film/non-woven composite
44D-A	polyester film/non-woven composite
44T	polyester film/non-woven composite
44T-A	polyester film/non-woven composite
5	acrylic adhesive, 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
74	thermosetting rubber adhesive, polyester film
75	thermosetting rubber adhesive, double coated polyester film
92	thermosetting silicone adhesive, polyimide film
MR94	polyester film/non-woven composite
MR94B	thermosetting rubber adhesive, reinforced polyester film
Super 10	polyester film/epoxy resin composite
Super 20	polyester film/epoxy resin composite
3M Taiwan	
PIA220	
Bondtec Pacific Co.	
201	
260R	
370S	
371F	
Chyun Yih Tape Co., Ltd.	
PB-416F	
DONGGUAN SHIN YAHUA	
ELECTRONIC MATERIAL CO LTD	
CT	
PZ	
WF	
Duck Sung Hitech Co., Lt	
DTS-204	
DTS-241	
DTS-280	

**JINGJIANG YAHUA PRESSURE
SENSITIVE GLUE CO., LTD.**

CT	
PZ	PET film
WF	
Metal Line	
800	
800BT	
Nichiban	
553H	
Nitto Denko Corp	
3161F	polyester
343B	
P Leo & Co (B C) Ltd	
1A024	
1A025	
1A570	
1C821	cotton cloth
1C822	
1E070	
1E075	
1ECE7	
1G006	aramid fiber (Nomex) paper
1G015	silicone adhesive, glass cloth
1G08S	
1G130	glass cloth
1G15A	
1G180	glass cloth
1G200	woven glass cloth, silicone adhesive
1G20H	
1H818	reinforced PET, rubber adhesive
1H850	polyester film
1H860	acrylic adhesive, polyester film
1H86A	
1H86R	
1K062	
1K063	silicone adhesive, polyimide film
1K063CR	
1K06A	
1K12A	
1K220	
1K7170	Kapton film
1K7172	silicone adhesive, polyimide film
1K7177	Kapton film
1K717A	
1K7200	
1KPIA	
1KPIS	
1KPST	
1N008	Aramid fiber (Nomex), Acrylic Adhesive
1N015	
1N020	
1N030	
1N155	Aramid fiber (Nomex), Acrylic Adhesive
1P130	acrylic adhesive, polyester film
1P133	PET film, acrylic adhesive
1P135	PET film, acrylic adhesive
1P316	
1P350	PET film, acrylic adhesive
1P656	
1P700	polyester film
1P717	polyester film
1P756	
1P801	acrylic adhesive, polyester film
1P802	acrylic adhesive, polyester film

1P830	acrylic adhesive, polyester film
1P833	PET film, acrylic adhesive
1P9FR	
1PEN2	
1PENS	
1PETS	
1PG880	
1PG888	
1PN2R	
1PN3R	
1PN820	
1PN828	woven polyester cloth
1PPS2	
1PS25	
1PS2A	
1TF08	
1TT02	
Sumitomo 3M Limited	
2245	Copper Foil Tape
CU-35C	Copper Foil Tape
Super 10-T	
Super 10-W	
Symbio Inc	
35660	PET film, acrylic adhesive
35660Y	
35661	PET film, acrylic adhesive
KA00M	
KA180E	
KA180H	
KA180K	
MY9YAF	
MY9YLH	
Taehwa Industries	
A-3338	Copper Foil Tape
E-3338	Copper Foil Tape
H5673	
Teraoka Seisakusho Co., Ltd.	
530F	epoxy varnish impregnated nonwoven polyester fabric, acrylic adhesive
560S #2	
560S #3	
560S #5	
561S #2	
561S #3	
561S #7	
630F#25	
630F#50-1	
630F2 #50 (formerly 630F #50)	
631S #25	
631S #38	
631S2 #50 (formerly 631S #50)	
632S #25	
632S2 #50 (formerly 632S #50)	
635F	
636F	
638F#25	
650S #25	
650S #50	
652S #25	
653F #25	
654S #25	
673A 0.27	
673A 0.5	
673AB 0.27	
673AB 0.45	

673F 0.27
 673F 0.5
 673F 1.0
 673FG 0.27
 673FG 0.45
 831S

Copper Fiol Tape

Spacers and Wedges

(optional)

Any material described in this table with no thickness requirement.

Designation (no.)	comments
Various Manufacturers	
Any material in this table with no thickness restriction.	

Sleevings (optional)

Designation (no.)	comments
Chang Yuan	
CB-HFT	
CB-TT-L	
CB-TT-S	
CB-TT-T	
Furukawa	
PI-Tube	
Great Holding	
TFL	
TFS	
TFT	
Hitachi	
Versafit V2	
Hoechst	
TFBX7100	
Kurabe	
SE-1	
SE-2	
LG Cable	
GSHS-1625	
Longwell	
LHS-125FR	
Nikkan	
E-651 U-1	
E-651 U-2	
S-693 600	silicone coated fiberglass
S-693 F-1	
S-693V F-1	silicone coated fiberglass
Nissei Electric Co., Ltd	
RSU-1	
RSU-2	
P. Leo	
2T-TFL	
2T-TFS	
2T-TFT	
Sumitomo Electric Fine Polymer	
Sumitube F2(Z)	
Zeus	
TFE-LW-150	
TFE-SW-600	
TFE-TW-300	

Tie Cords (optional)

Designation (no.)	comments
Various Manufacturers Fiberglass, untreated	

Varnishes (optional) Recognized Component - Varnishes (OBOR2)

Designation (no.)	comments
Elantas Electrical Insulation Elantas Pdg Inc	
468-2(x), E 468-2(x), E 468-2FC(x), E 468-2-7-xxF(x), E 468-2-7FC-xxF(x)	(x) - May be followed by a one to five alphanumeric suffix indicating percent of inert filler and/or color and the actual name of the color and the word 'thixo'. (xx) - Indicates inorganic filler level. This varnish cannot be use with UEW-3-TC winding wire
V1380FC V1630FS	
Hang Cheung Petrochemical 8562C	
Hitachi Chemical Co. Ltd WP-2952F-2G	
John C. Dolph Co BC-346A, BC-346-A BC-359	This varnish cannot be use with UEW-3-TC winding wires
Kyocera Chemical Corp. (Toshiba Chemical) TVB-2024 TVB-2180T++	++ optional suffix
Meiden Chemical #880	
Noroo Paint & Coatings Co Ltd DVB-2085	
Wu Jiang TaiHu Insulating Material Co., Ltd. T-4260 (a)	

Potting Compounds (optional)

Designation (no.)	comments
GE Toshiba Silicone TSE3331 TSE3331K	
Momentive Performance Materials Japan L.L.C. TSE3331 TSE3331K	

Miscellaneous Minor Insulations

Designation (no.)	comments
E. I. Dupont de Nemours & Co. Kapton H Kapton HA Kapton HN Kapton V Kapton VN Nomex 410 Nomex 411 Nomex 414 Nomex 416 Nomex 418 Nomex 424	

Nomex 425
Nomex 992
Nomex 993
Nomex 994, Nomex 994 NPT
Nomex E56A

Various Manufacturers

Polyethylene Terephthalate Film Recognized Component Plastics (QMFZ2)
