

Koshen Insulator Co Ltd

1st Fl 32 Yi 9th Rd, Xinyi District, Keelung 201 TW

System Component

TIW-1-(Suffix), TIW-1-LZ, TIW-B-(Suffix), TIW-B-LZ

System Designation

KS-B2

System Class

130(B)

Report Date: 2018-04-05

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*An Authorization Letter is Required for Adoption of this System***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 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 below ind

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 (OBTJ2) 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

Designation	mils(mm)	comments
<u>Dongguan Koshen Insulator Co Ltd [E365580] - Recognized Component</u>		
TIW-1-(Suffix)		R/C - Magnet Wires (OBMW2), ANSI MW type: N 79, MW 80, MW 82, MW 83
TIW-1-LZ		R/C - Magnet Wires (OBMW2), ANSI MW type: N 79, MW 80, MW 82, MW 83
TIW-B-(Suffix)		R/C - Magnet Wires (OBMW2), ANSI MW type: N 79, MW 80, MW 82, MW 83
TIW-B-LZ		R/C - Magnet Wires (OBMW2), ANSI MW type: N 79, MW 80, MW 82, MW 83
<u>FURUKAWA ELECTRIC CO LTD [E206440] - Recognized Component</u>		
TEX-E, TEX-EA	3.3 (0.08)	
TEX-ECEW3	3.3 (0.08)	
TEX-ELZ	3.3 (0.08)	
<u>TOTOKU ELECTRIC CO LTD [E166483] - Recognized Component</u>		
TIW-3LZX@@@%\$	3.9 (0.1)	
TIW-3X\$	3.9 (0.1)	
<u>ANSI Type</u>	<u>Temp(°C)</u>	<u>Basecoat(Topcoat)</u>
MW 28	and 130	Polyurethane (Polyamide)
MW 75	and 130	Polyurethane
MW 79	or 155	Polyurethane
MW 80	or 155	Polyurethane (Polyamide)
MW 82	or 180	Polyurethane
MW 83	or 180	Polyurethane (Polyamide)
MW 85	or 180	Polyurethane

Bare Conductor - \$ or (a) - Litz wire may employ a silk covering.

Ground and Interwinding Insulations

any Recognized Component Plastic (QMFZ2), polyethylene terephthalate film (PET) 3

Designation	mils(mm)	comments
<u>3M COMPANY [E17385] - Recognized Component</u>		
1 (a)	3[layers]	
1298 (b)	3[layers]	
1298CR	3[layers]	
1318 clear (a)	3[layers]	
1318-1 (a)	3[layers]	
1318-2 (a)	2[layers]	
1318B-1	3[layers]	
1318B-2	2[layers]	
1318W-1	2[layers]	
1318W-2	2[layers]	
1318Y-1 (a)	3[layers]	
1318Y-2 (a)	2[layers]	
1350-1 (b)	3[layers]	
1350-2 (c)	3[layers]	
1350CR-1	3[layers]	
1350CR-2	2[layers]	
1350F-1 (b)	3[layers]	
1350F-2 (c)	2[layers]	
1350T-1 (b)	6[layers]	
1350T-2 (b)	3[layers]	
1350T-3 (b)	3[layers]	
1351-1 (a)	3[layers]	
1351-2 (c)	2[layers]	
1351T-1 (a)	6[layers]	
1351T-2 (a)	3[layers]	
1351T-3 (a)	3[layers]	
1388W-1 (b)	3[layers]	
1388Y-1 (b)	3[layers]	
27 (a)	3[layers]	
44 (a)	3[layers]	

44-T (a)	3[layers]
44D (a)	3[layers]
44D-A (a)	3[layers]
44T-A (a)	3[layers]
5	3[layers]
54 (a)	3[layers]
56 (a)	3[layers]
Super 10 (a)	2[layers]
Super 20 (a)	2[layers]
<u>3M Japan Limited [E59505] - Recognized Component</u>	
SUPER 10-T	1[layers]
SUPER 10-W	1[layers]
<u>CHANG CHUN PLASTICS CO LTD [E59481] - Recognized Component</u>	
T200HF	15 (0.38)
T220NA	15 (0.38)
<u>CHANG SHU LIANG YI TAPE INDUSTRY CO LTD [E246820] - Recognized Component</u>	
LY-19-01-15 (c)(d)	3[layers]
LY-19-01-18 (c)(d)	3[layers]
LY-19-01-20 (c)(d)	3[layers]
LY-19-01-25 (c)(d)	3[layers]
LY-19-01-40 (c)(d)	3[layers]
LY-19-01-85 (e)(d)	3[layers]
LY-19-02-15 (c)(d)	3[layers]
LY-19-02-18 (c)(d)	3[layers]
LY-19-02-20 (c)(d)	3[layers]
LY-19-02-25 (c)(d)	3[layers]
LY-19-02-40 (c)(d)	3[layers]
LY-19-02-85 (e)(d)	3[layers]
<u>DONGGUAN SHIN YAHUA ELECTRONIC MATERIAL CO LTD [E324093] - Recognized Component</u>	
CT* (b)(g)	1[layers]
CT* (c)(g)	1[layers]
PZ* (b)	1[layers]
WF* (c)(h)	1[layers]
<u>DUPONT TEIJIN FILMS U S L P [E93687] - Recognized Component</u>	
MYLAR Mylar A, AP, EL21, MO21	3 (0.08)
<u>E I DUPONT DE NEMOURS & CO INC [E34739] - Recognized Component</u>	
Nomex® 410	5 (0.13)
Nomex® 411	11.5 (0.29)
Nomex® 414	5 (0.13)
Nomex® 416, 416 LAM	5 (0.13)
Nomex® 418, 818, 864LAM	5 (0.13)
Nomex® 464, 464 LAM	5 (0.13)
Nomex® 992, 992PSB	10 (0.25)
Nomex® 993, 993PSB	8.25 (0.21)
Nomex® 994, 994PSB	8.25 (0.21)
<u>E I DUPONT DE NEMOURS & CO INC [E41938] - Recognized Component</u>	
Rynite FR515	16 (0.41)
Rynite FR530(I)(+)(f1), FR530L(I)(+)(f1)	16 (0.41)
<u>HITACHI CHEMICAL CO LTD [E42956] - Recognized Component</u>	
CP-J-8800, CP-J-NAF, CP-J-F(N)	15 (0.38)
<u>INTERTAPE POLYMER GROUP [E20780] - Recognized Component</u>	
4426-00 (41)*	3[layers]
51560-08 (a)	3[layers]
51596-04* (b)	3[layers]
<u>JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD [E302608] - Recognized Component</u>	
FW	3[layers]
WF101	1[layers]
<u>JINGJIANG JINGYANG INSULATING PRODUCT CO LTD [E309872] - Recognized Component</u>	
JY-133	3[layers]
JY-233	1[layers]
<u>JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD [E246950] - Recognized Component</u>	
JY25-A (b)	3[layers]
WF310 (a)	1[layers]
<u>JINGJIANG YAHUA ELECTRONIC SCIENCE&TECHNOLOGY CO LTD [E478268] - Recognized Component</u>	
CT (b)	1[layers]
WF-2901/2 (a)	1[layers]
<u>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD [E165111] - Recognized Component</u>	
CT (b)(g)	3[layers]
CT* (c)(g)	3[layers]
CT* (b)(g)	3[layers]
CT-280B	6[layers]
PZ* (b)	3[layers]
WF* (c)(h)	3[layers]
<u>METAL LINE CO LTD [E162848] - Recognized Component</u>	
800 (a)	6[layers]
800BT	3[layers]
<u>NITTO DENKO CORP [E34833] - Recognized Component</u>	
3161-FR1	3[layers]
3161-FR2	3[layers]
343BN@ (a)	2[layers]

<u>P LEO & CO LTD [E126174] - Recognized Component</u>	
1H86A (o)	3[layers]
1K063	3[layers]
1K7170	3[layers]
1P802	3[layers]
1PFRA	3[layers]
1PN2R	3[layers]
<u>Shanghai Yuxiang Electrical Materials Co Ltd [E474901] - Recognized Component</u>	
YX-5#	5[layers]
<u>SHENZHEN CITY WEICHUANGDA MATERIAL TECHNOLOGY CO LTD [E333581] - Recognized Component</u>	
W-001	3[layers]
<u>SHENZHEN MEIXIN ELECTRONIC CO LTD [E304309] - Recognized Component</u>	
MX-866	3[layers]
<u>SHENZHEN XINHUAHUI PLASTIC & INSULATION MATERIAL CO LTD [E328315] - Recognized Component</u>	
HMT803	3[layers]
HMT804	3[layers]
<u>SUMITOMO BAKELITE CO LTD [E41429] - Recognized Component</u>	
Sumikon PM-9630	15 (0.38)
Sumikon PM-9820	15 (0.38)
PM-9823	15 (0.38)
<u>SUZHOU MAILADUONA ELECTRIC MATERIAL CO LTD [E188295] - Recognized Component</u>	
JY312#	3[layers]
<u>SYMBIO INC [E50292] - Recognized Component</u>	
35660 (a)	2[layers]
35660W	3[layers]
35660Y (e)	2[layers]
35661 (c)	3[layers]
MY130 (b)	3[layers]
MY9XAF (g)	3[layers]
<u>TAE HWA INDUSTRIAL CO LTD [E92677] - Recognized Component</u>	
H-5673 (+)	1[layers]
<u>TERAOKA SEISAKUSHO CO LTD [E56086] - Recognized Component</u>	
630F #25 (a)	3[layers]
630F2 #50 (i)	2[layers]
631S #25 (a)	2[layers]
631S #38 (d)	2[layers]
631S2 #50 (a)	2[layers]
632S #25 (a)	3[layers]
<u>X-FIPER New Material Co., Ltd. [E320646] - Recognized Component</u>	
X-Fiper 316	5 (0.13)
X-Fiper AD30	5 (0.13)
X-Fiper AR30	5 (0.13)
X-Fiper N-756	5 (0.13)
X-Fiper X610	5 (0.13)
X-Fiper X611	5 (0.13)
X-Fiper X612	5 (0.13)
X-Fiper X630	5 (0.13)
X-Fiper X630H	5 (0.13)
<u>XINFENG GHILLIE ELECTRICAL MATERIALS CO LTD [E326305] - Recognized Component</u>	
JL-P208 (a)	3[layers]
JL-P208 (b)	3[layers]
<u>XINYU SHENGDAFENG ELECTRIC MATERIAL CO LTD [E317896] - Recognized Component</u>	
SDF-312	3[layers]
SDF-317	1[layers]
<u>YANTAI METASTAR SPECIAL PAPER CO LTD [E331406] - Recognized Component</u>	
METASTAR YT511	5 (0.13)
METASTAR YT516, YT510	5 (0.13)
METASTAR YT56	5 (0.13)
METASTAR YT564	5 (0.13)

Lead Wires

lead wires are optional for this system

Temp	Insulation
105°C	XLPE - crosslinked polyethylene +
105°C	ETFE - ethylene tetrafluoroethylene +
105°C	PVC - polyvinylchloride +
125°C	XLPO - crosslinked polyolefin
125°C	XLPE - crosslinked polyethylene
125°C	EPDM - ethylene propylene diene monomer
150°C	SR - silicone rubber(with or without braid)
150°C	XLPE - crosslinked polyethylene
150°C	EPDM - ethylene propylene diene monomer
150°C	XLPO - crosslinked polyolefin
150°C	ETFE - ethylene tetrafluoroethylene
180°C	SR - silicone rubber(with or without braid)
200°C	ETFE - ethylene tetrafluoroethylene

+ 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 by a special note at the beginning of this table.

any sheet insulation or tape described in this table with no minimum thickness requirement may be used as a minor sheet material

Tapes

tapes are optional for this system

Designation	comments
<u>3M (Minnesota Mining & Mfg Co)</u>	
11	thermosetting rubber adhesive, black acetate cloth
12	
1318(#)	
1418	
16	
28	thermosetting rubber adhesive, acetate cloth
28L	
44-18	
90	glass cloth
92	
<u>3M COMPANY [E17385] - Listed or Recognized Component</u>	
1205	
27 (a)	
69 (a)	
<u>3M Japan Limited [E59505] - Listed or Recognized Component</u>	
2245	
CU-35C	
<u>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD [E165111] - Listed or Recognized Component</u>	
PF* (d)(g)	
<u>Symbio Inc</u>	
KA00M	
MY90AF	
MY92AF	
MY93AF	
MY9BAF	
MY9YLH	

Core tubes and Bobbins

(for mechanical support only) cores are optional for this system

Designation	comments
<u>ASAHI KASEI CORP [E48285] - employing Recognized materials</u>	
Leona 1300G(o)	
<u>BASF</u>	
Ultramid A3X2G7	
<u>BASF CORP [E36632] - employing Recognized materials</u>	
Ultramid A3X2G5	
<u>CHANG CHUN PLASTICS CO LTD [E59481] - employing Recognized materials</u>	
LONGLITE T373J	
LONGLITE T375HF	
LONGLITE T375J	
LCP-300	
T200NA	
<u>Chang Chun Plastics Co., Ltd.</u>	
4115 (100% Virgin) (a) (f1)	
PBT-4130	
PBT-5630	
<u>Dongguan Sanpin</u>	
Kraft Paper	
<u>E I DUPONT DE NEMOURS & CO INC [E41938] - employing Recognized materials</u>	
Crastin SK665FR (+)	
Zytel 101(r9)(f1), 101F(r9)(f1), 101L(r9)(f1), E101(r9)(f1), E101L(r9)(f1)	
Zytel 70G13L	
Zytel 70G30L	
Zytel 70G33L(+)	
Zytel FR50(+)(f1)	
<u>HITACHI CHEMICAL CO LTD [E42956] - employing Recognized materials</u>	
CP-J-8200	
CP-J-8600, CP-J-ALPHA-G	
CP-J-8700	
<u>Jiangsu Wote High Performance Materials Co Ltd [E478701] - employing Recognized materials</u>	
SELCION KB40M, KB40BM, KB40(+)	
<u>Kingboard</u>	
KB-6150C	
<u>KINGFA SCI & TECH CO LTD [E171666] - employing Recognized materials</u>	
PBT-RG301(f1), PBT-RG301(ccc)(f1), PBT-RG301(ccc)(R64)(f1)	
<u>NAN YA PLASTICS (HUI ZHOU) CORP LTD [E235269] - employing Recognized materials</u>	
1403G3	
1403G6	
<u>SUMITOMO BAKELITE CO LTD [E41429] - employing Recognized materials</u>	
Sumikon AM-1130, AM-113	
Sumikon PM-8375	
Sumikon PM-9250	
Sumikon PM-9720	
Sumikon PM-9750	
Sumikon PM-9830	
Sumikon PM-9850	
Sumikon PM-AJ	
<u>SUMITOMO CHEMICAL CO LTD [E249884] - employing Recognized materials</u>	

[SUMIKASUPER E4008\(c4\)\(c2\)\(c3\)\(j\)](#)
[SUMIKASUPER E4008L\(gt\)](#)
[TORAY INDUSTRIES INC \[E41797\] - employing Recognized materials](#)
[1494](#)
[WAH HONG INDUSTRIAL CORP \[E150608\] - employing Recognized materials](#)
[WH-8100](#)
[WH-9100](#)
[WINTECH POLYMER LTD \[E213445\] - employing Recognized materials](#)
[Duranex CN7000\(a2\)\(f1\)\(j\)](#)

Tubing and Sleeving

tubing and sleeving are optional for this system

Designation	comments
Changyuan Electronics (Shenzhen) Co Ltd	
CB-HFT	
CB-TT-L	
CB-TT-S	
CB-TT-T	
CYG-KYNAR	
CYG-ZHP	
Chern-Fwuh Enterprise Co Ltd	
FSG-2	
Dongguan City Changjie Metals & Plastic Products Co Ltd	
CJ-TT-L	
CJ-TT-T	
Dongguan Lin Freehardware Plastics Prodct Co., Ltd.	
PTFE Tube	
DONGGUAN SALIPT CO LTD	
SALIPT S-901-300	
SALIPT S-901-600	
Grand Position International Co Ltd	
ST-HS	
ST-SR	
ST-TL	
ST-TS	
ST-TT	
Great Holding Industrial Co Ltd	
TFL	
TFS	
TFT	
Huapeng (Suzhou) Heat-shrinkable Materials Co Ltd	
H-PTFE	
NIKKAN INDUSTRIES CO LTD [E55258] - Recognized Component	
S-693F-1	
S-693V F-1	
Shenzhen Woer Heat-Shrinkable Material Co Ltd	
RSFR-H	
WF	
SHENZHEN ZHONGDIANCHENGUANG ELECTRONIC CO LTD	
CG-L	
CG-S	
CG-T	
Sin Tiong Wah Electrical Products (ShenZhen) Co., Ltd	
FSG-2	
FSG-3	
Zeus Industrial Products Inc	
TFE-300	
TFE-HW-300	
TFE-HW-600	
TFE-LW-150	
TFE-SW-150	
TFE-SW-600	
TFE-TW-150	
TFE-TW-300	

Tie Cords

tie cords are optional for this system

Designation	comments
Various Manufacturers	
Fiberglass, untreated	

Potting Compounds

potting compounds are optional for this system

Designation	comments
CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO LTD [E317561] - employing Recognized materials	
GUIBAO 4926	
Chengdu Guibao Science & Technology Co.,Ltd	
4926Z	
Dong Guan Etto Electric Material Co., Ltd.	
3300A-1/3300B-1	Epoxy Potting Compound

4400A-1/3300B-1

DONG GUAN SHI PAI HUA CHUANG MATERIAL FTY [E304477] - employing Recognized materials
808A/B-H, H907-H##

DONGGUAN CITY HENG ERLANG INDUSTRIAL CO LTD
 EP3189
 EP3189-7
 G657-3

DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD [E218090] - employing Recognized materials
3300

Dongguan Huachuang Insulation Materials Co Ltd
 H907-H##

Dow (ZJG) Investment limited company
 CN-8760
 DC-160
 EE-1100

Fong Young Chemical Co., Ltd.
 E-532A/H532B
 E-536A/H-536B

GUANGZHOU HUITIAN FINE CHEMICAL LTD
 5297
 5299#

Jiagang Synthetic Materials Co Ltd of Jiaying
 910 (G)A/B

LinkTech Silicone Material Co.,Ltd
 Encapsil 1200
 Encapsil 1400
 Encapsil 1401-150

Momentive Performance Materials
 TSE-3331K

Momentive Performance Materials [E36952] - employing Recognized materials
TSE3331

MOMENTIVE PERFORMANCE MATERIALS JAPAN L L C [E56745] - employing Recognized materials
TSE382-C, TSE382-W, TSE382-B, TSE382-G

SHENZHEN SISUN SILICONE TECHNOLOGY CO LTD [E248811] - employing Recognized materials
XS1110, XS1119

SHIN-ETSU SILICONE TAIWAN CO LTD [E174951] - employing Recognized materials
KET-132 A/B
KET-132 A/B H(f2), KET-66P A/B(f2)

U-BOND SPECIALITY CHEMICAL MATERIAL LTD
 UB-5217

U-BOND Technology INC [E250719] - employing Recognized materials
UB-5203A/UB-5203B

Zhengzhou Zhongyuan Silande High Technology Co., Ltd. [E342437] - employing Recognized materials
MF211
MF211G

Varnishes

varnishes are optional for this system

Designation

comments

ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC [E75225] - Recognized Component
1000 Water Borne, 1000-50, 1000-70, 1000-70B, 1000-70-xx, 1000 Low VOC, ELAN-safe
210U01-50, ELAN-safe 210U01-75, 1000-25, 1000-70 Mod. II at 25% NVM
468-2 (d), 468-2FC (d), 468-2-7-xxF (d), 468-2-7FC-xxF (d)
V1380, V1380FC, V1380FC Black, 80381FC
V1630, V1630FS, V1630FS50, V1630FS Black, 80361, 80361FC

For use on only MW79, MW80, MW82, MW83, MW85

HANG CHEUNG COATINGS (HUIYANG) LTD [E200154] - Recognized Component
8562*

HITACHI CHEMICAL CO LTD [E72979] - Recognized Component
WP-2952F-2G, WP-2952F-2G(Y), WP-2952F-2G(YL), WP-2952F-2G (YS), WP-2952F-2G(FC), WP-2952F-2G(H), WP-2952F-2G(K)

John C Dolph Co [E317427] - Recognized Component
AC-43, EB-43-HG, EB-43-FB, AC-43-66, EG-43/698-D, EG-43/759-D, ER-43/368-D
BC-346A, BC-346-A, BC-346B, BC-346-E, BB-348, BB-346-HF, BC-346HF, BG-346A, BB-346-A, BB-346/A, BC-370
BC-356, BC-359, PDR-1695, BB-359FR, BB-359MS, BC-359/569-D

KYOCERA Corporation [E83702] - Recognized Component
TVB2180T*(a)

NOROO PAINT & COATINGS CO LTD [E93947] - Recognized Component
DVB-2085(*)
DVB-2177(@)

For use on only MW79, MW80, MW82, MW83, MW85

SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD [E228349] - Recognized Component
T-4260(a)

ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD [E335405] - Recognized Component
E962