



# Heater

## Heat Wire

### 600V LKGB

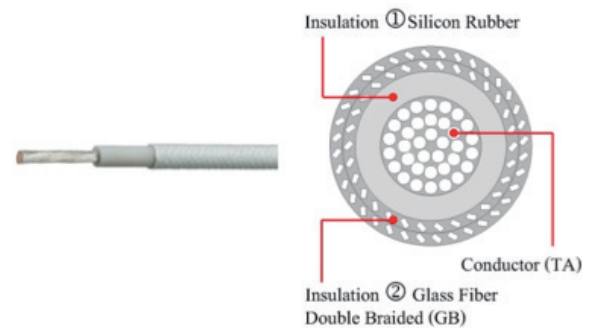
Silicon Rubber and Glass Fiber Double Braided (GB) Wire

Conductor : TA (Tin-coated Copper Wire)

Insulator : ① Silicon Rubber  
② Glass Fiber Double Braided (GB)

Main Usage : As a lead wire for an Electric generator, an Electric Motor, an Electric Furnace, and Other.

Temp. Range - 60 - 180°C	Rated Voltage 600V
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Product	size	Standard electric current value	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C	130°C	140°C	150°C	160°C	170°C
600V LKGB	0.5SQ	10	20.8	20	19.1	18.3	17.3	16.3	15.3	14.1	12.9	11.5	10	8.2	5.8
	0.75 SQ	14	29.1	28	26.8	25.6	24.2	22.9	21.4	19.8	18.1	16.2	14	11.4	8.1
	1.25 SQ	19	39.6	38	36.4	34.7	32.9	31	29	26.9	24.5	21.9	19	15.5	11
	2 SQ	27	56.2	54	51.7	49.3	46.8	44.1	41.2	38.2	34.9	31.2	27	22	15.6
	3.5 SQ	37	77	74	70.8	67.6	64.1	60.4	56.5	52.3	47.8	42.7	37	30.2	21.4
	5.5 SQ	49	102	98	93.8	89.5	84.9	80	74.8	69.3	63.3	56.6	49	40	28.3
	8 SQ	61	127	122	116.8	111.4	105.7	99.6	93.2	86.3	78.8	70.4	61	49.8	35.2
	14 SQ	88	183.2	176	168.5	160.7	152.4	143.7	134.4	124.5	113.6	101.6	88	71.9	50.8
	22 SQ	115	239.4	230	220.2	210	199.2	187.8	175.7	162.6	148.5	132.8	115	93.9	66.4
	38 SQ	162	337.2	324	310.2	295.8	280.6	264.5	247.5	229.1	209.1	187.1	162	132.3	93.5
	60 SQ	217	451.7	434	415.5	396.2	375.9	354.4	331.5	306.9	280.1	250.6	217	177.2	125.3
	80 SQ	257	535	514	492.1	469.2	445.1	419.7	392.6	363.5	331.8	296.8	257	209.8	148.4
	100 SQ	298	620.3	596	570.6	544.1	516.2	486.6	455.2	421.4	384.7	344.1	298	243.3	172.1
	150 SQ	395	822.3	790	756.4	721.2	684.2	645	603.4	558.6	509.9	456.1	395	322.5	228.1
	200 SQ	469	976.3	938	898.1	856.3	812.3	765.9	716.4	663.3	605.5	541.6	469	382.9	270.8
	250 SQ	556	1157	1112	1065	1015	963	907.9	849.3	786.3	717.8	642	556	454	321

### FEP/ PFA/ ETFE/ PTFE

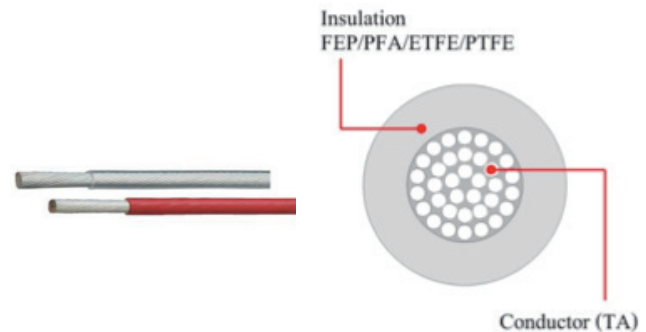
Teflon (FEP/PFA/ETFE/PTFE) Wire

Conductor : TA (Tin-coated Copper Wire)

Insulator : ETFE (-100 ~ 150°C), FEP (-253 ~ 200°C), PFA (-195 ~ 260°C), PTFE (-253 ~ 260°C)

Main Usage : As a lead wire for an Electric generator, Heating apparatus, Refrigerator and Other

Temp. Range -253 ~ 260°C	Rated Voltage 600V
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# Heater

## 600V FRW

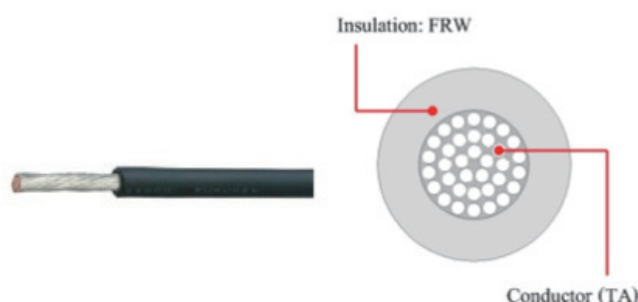
Flexible Fluorine-Contained Heat-resistant Rubber (FRW) Wire

Conductor : TA (Tin-coated Copper Wire)

Insulator : Flexible Fluorine-Contained Heat-resistant Rubber

- Main Usage :
- As a lead wire for an Electric generator, Heating apparatus, Refrigerator and other
  - As a lead wire for Heat-resistant Motor, Car, Work apparatus wiring, Wiring in the board which need a space-saving, Resistor, Anti- oil device, Measuring apparatus etc
  - As a lead wire for wiring inside an equipment with a severe environmental condition

Temp. Range - 60 - 200°C	Rated Voltage 600V
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Product	size	Standard electric current value	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C	130°C	140°C	150°C	160°C	170°C	180°C	190°C
600V FEP 600V FRW	0.3SQ	7	14.1	13.6	13.1	12.6	12.1	11.5	10.9	10.3	9.6	8.9	8.1	7.3	6.3	5.1	3.6
	0.5 SQ	10	20.1	19.4	18.7	18	17.2	16.4	15.6	14.7	13.7	12.7	11.6	10.4	9	7.3	5.2
	0.75 SQ	14	28.2	27.2	26.2	25.2	24.1	23	21.8	20.6	19.2	17.8	16.3	14.5	12.6	10.3	7.3
	1.25 SQ	19	38.2	36.9	35.6	34.2	32.7	31.2	29.6	27.9	26.1	24.2	22.1	19.7	17.1	14	9.9
	2 SQ	27	54.3	52.5	50.6	48.6	46.5	44.4	42.1	39.7	37.1	34.4	31.4	28.1	24.3	19.8	14
	3.5 SQ	37	74.5	71.9	69.3	66.6	63.8	60.8	57.7	54.4	50.9	47.1	43	38.5	33.3	27.2	19.2
	5.5 SQ	49	98.6	95.3	91.8	88.2	84.4	80.5	76.4	72	67.4	62.4	56.9	50.9	44.1	36	25.5
	8 SQ	61	122.8	118.6	114.3	109.8	105.1	100.2	95.1	89.7	83.9	77.6	70.9	63.4	54.9	44.8	31.7
	14 SQ	88	177.1	171.1	164.9	158.4	151.7	144.6	137.2	129.3	121	112	102.2	91.5	79.2	64.7	45.7
	22 SQ	115	231.4	223.6	215.5	207	198.2	189	179.3	169	158.1	146.4	133.6	119.5	103.5	84.5	59.8
	38 SQ	162	326	315	303.5	291.6	279.2	266.2	252.5	238.1	222.7	206.2	188.2	168.4	145.8	119	84.2
	60 SQ	217	436.7	421.9	406.5	390.6	374	356.6	338.3	318.9	298.3	276.2	252.1	225.5	195.3	159.5	112.8
80 SQ	257	517.2	499.6	481.4	462.6	442.9	422.2	400.6	377.7	353.3	327.1	298.6	267	231.3	188.8	133.5	
100 SQ	298	599.7	579.3	558.3	536.4	513.5	489.6	464.5	437.9	409.6	379.2	346.2	309.6	268.2	218.9	154.8	

## NIGB

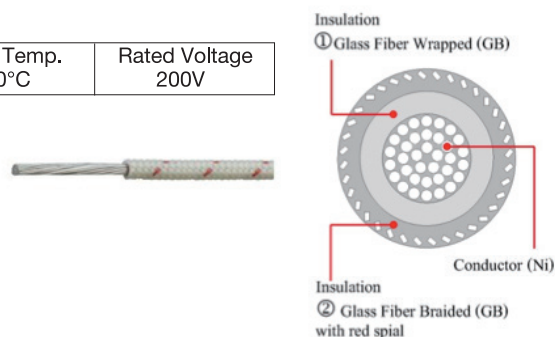
Glass Fiber Wrapped and Braided Insulation (GB) Wire

Conductor : Nickel (Ni)

- Insulator :
- ① Glass Fiber Wrapped (GB)
  - ② Glass Fiber Braided (GB)

Main Usage : • As a lead wire for Electric Furnace, High temperature Furnace, an Electric generator in high temperature etc.

Max. Temp. 300°C	Rated Voltage 200V
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Product	size	Standard electric current value	100°C	110°C	120°C	130°C	140°C	150°C	160°C	170°C	180°C	190°C	
NIGB	0.75SQ	8	7.5	7.3	7.1	6.9	6.7	6.5	6.2	6.0	5.8	5.5	
	1.25SQ	10	9.3	9.1	8.8	8.6	8.3	8.1	7.8	7.5	7.2	6.9	
	2SQ	15	14	13.6	13.3	12.9	12.5	12.1	11.7	11.3	10.8	10.4	
	3.5SQ	25	23.3	22.7	22.1	21.5	20.9	20.2	19.5	18.8	18.1	17.3	
	5.5SQ	30	28	27.3	26.5	25.8	25	24.2	23.4	22.6	21.7	20.7	
	8SQ	40	37.3	36.4	35.4	34.4	33.4	32.3	31.2	30.1	28.9	27.7	
	14SQ	55	51.3	50	48.7	47.3	45.9	44.4	42.9	41.3	39.7	38	
	22SQ	70	65.3	63.6	61.9	60.2	58.4	56.5	54.6	52.6	50.6	48.4	
	38SQ	100	93.3	90.9	88.5	86	83.4	80.8	78	75.2	72.2	69.2	
		size	Standard electric current value	200°C	210°C	220°C	230°C	240°C	250°C	260°C	270°C	280°C	290°C
		0.75SQ	8	5.3	5	4.7	4.4	4.1	3.7	3.3	2.9	2.4	1.7
		1.25SQ	10	6.6	6.3	5.9	5.5	5.1	4.7	4.2	3.6	2.9	2.1
	2SQ	15	9.9	9.4	8.8	8.3	7.7	7	6.3	5.4	4.4	3.1	
	3.5SQ	25	16.5	15.6	14.7	13.8	12.8	11.7	10.4	9	7.4	5.2	
	5.5SQ	30	19.8	18.8	17.7	16.6	15.3	14	12.5	10.8	8.8	6.3	
	8SQ	40	26.4	25	23.6	22.1	20.4	18.7	16.7	14.4	11.8	8.3	
	14SQ	55	36.3	34.4	32.4	30.3	28.1	25.6	22.9	19.9	16.2	11.5	
	22SQ	70	46.2	43.8	41.3	38.6	35.8	32.6	29.2	25.3	20.6	14.6	
	38SQ	100	65.9	62.6	59	55.2	51.1	46.6	41.7	36.1	29.5	20.9	



# Heater

## NSBL

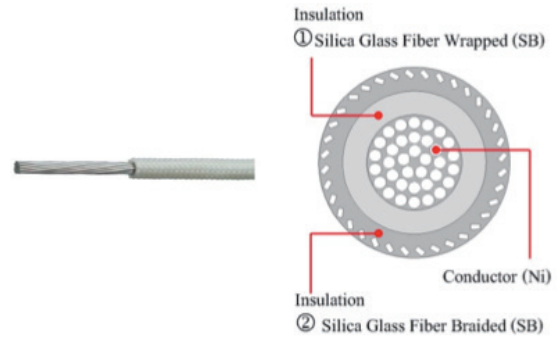
Silica Glass Fiber Wrapped and Braided Insulation (SB) Wire

Conductor : Nickel (Ni)

Insulator : ① Silica Glass Fiber Wrapped (SB)  
② Silica Glass Fiber Braided (SB)

Main Usage : As a lead wire for high temperature furnace and other high temperature apparatus, etc.

Max. Temp. 400°C	Rated Voltage 200V
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## NSBL 6x4-I

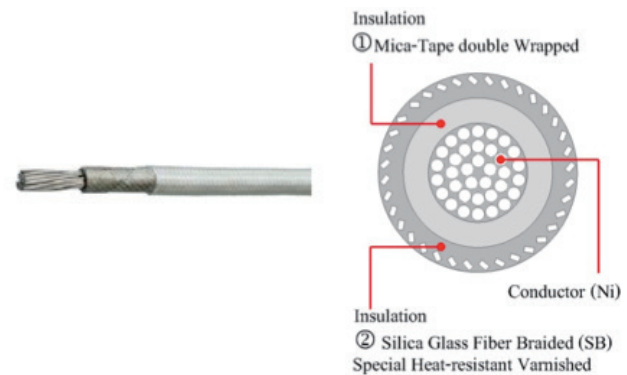
Mica-Tape Double Wrapped and Silica Glass Fiber Braided Insulation (SB) Wire

Conductor : Nickel (Ni)

Insulator : ① Mica-Tape Double Wrapped  
② Silica Glass Fiber Braided (SB),  
Special Heat-resistant Varnished

Main Usage : As a lead wire for a high temperature furnace and high temperature apparatus, etc

Max. Temp. 400°C	Rated Voltage 600V
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Product	size	Standard electric current value	150°C	200°C	210°C	220°C	230°C	240°C	250°C	260°C	270°C	280°C	
			0.75SQ	10	10.4	9.3	9.1	8.8	8.6	8.3	8.1	7.8	7.5
1.25SQ	15	15.6	14	13.6	13.3	12.9	12.5	12.1	11.7	11.3	10.8		
2SQ	20	20.9	18.7	18.2	17.7	17.2	16.7	16.2	15.6	15	14.4		
3.5SQ	30	31.3	28	27.3	26.5	25.8	25	24.2	23.4	22.6	21.7		
5.5SQ	40	41.7	37.3	36.4	35.4	34.4	33.4	32.3	31.2	30.1	28.9		
8SQ	50	52.1	46.6	45.4	44.2	43	41.7	40.4	39	37.6	36.1		
14SQ	70	73	65.3	63.6	61.9	60.2	58.4	56.5	54.6	52.6	50.6		
22SQ	90	93.8	83.9	81.8	79.6	77.4	75.1	72.7	70.2	67.7	65		
38SQ	130	135.5	121.2	118.2	115	111.8	108.4	105	101.4	97.7	93.9		
60SQ	170	177.2	158.5	154.5	150.4	146.2	141.8	137.3	132.6	127.8	122.8		
	size	Standard electric current value	290°C	300°C	310°C	320°C	330°C	340°C	350°C	360°C	370°C	380°C	390°C
NSBL 6x4-I	0.75SQ	10	6.9	6.6	6.3	5.9	5.5	5.1	4.7	4.2	3.6	2.9	2.1
	1.25SQ	15	10.4	9.9	9.4	8.8	8.3	7.7	7	6.3	5.4	4.4	3.1
	2SQ	20	13.8	13.2	12.5	11.8	11	10.2	9.3	8.3	7.2	5.9	4.2
	3.5SQ	30	20.7	19.8	18.8	17.7	16.6	15.3	14	12.5	10.8	8.8	6.3
	5.5SQ	40	27.7	26.4	25	23.6	22.1	20.4	18.7	16.7	14.4	11.8	8.3
	8SQ	50	34.6	33	31.3	29.5	27.6	25.5	23.3	20.9	18.1	14.7	10.4
	14SQ	70	48.4	46.2	43.8	41.3	38.6	35.8	32.6	29.2	25.3	20.6	14.6
	22SQ	90	62.2	59.3	56.3	53.1	49.7	46	42	37.5	32.5	26.5	18.8
	38SQ	130	89.9	85.7	81.3	76.7	71.7	66.4	60.6	54.2	47	38.3	27.1
	60SQ	170	117.6	112.1	106.3	100.3	93.8	86.8	79.3	70.9	61.4	50.1	35.4
	80SQ	220	152.1	145.1	137.6	129.7	121.4	112.4	102.6	91.7	79.5	64.9	45.9
	100SQ	240	166	158.3	150.1	141.5	132.4	122.6	111.9	100.1	86.7	70.8	50



## Heater

### TYPE OF CONDUCTOR MATERIAL

Material Type	Symbols	Heat Resistance (temp.)	Density	Temp. Coefficient (20°C)	Resistance peculiar to volume Ω. Cm	Properties
Tin Coated Copper	TA	150 °C	8.89	0.0039	1.8	It is used widely because Copper wire is uniformly electricity-coated by Tin. The soldering characteristics are good.
Silver-Coated Copper	SA	200 °C	8.95	0.0039	1.72	Heat Resistance is improved because Copper wire is uniformly electricity-coated by Silver.
Nickel-Coated Copper	NA	260 °C	8.89	0.004	1.83	Excellence in Heat Resistance because Copper wire is uniformly electricity-coated by Nickel.
Nickel	Ni	500 °C	8.79	0.006	9.6	To be use in high temperature, Excellence in Anticorrosion.
28 % Nickel Coated copper	28N	400 °C	8.8	0.0039	2.46	This conductor is coated by 28% Nickel of peculiar to volume, it is of Super-Heat-resistant to the temperature of 400°C, High conductivity as well.

### THE TABLE OF PROPERTIES AND MATERIAL TYPE OF INSULATION AND SHEATH

Material Type	Symbols	Water-proof	Oil-proof	Chemical-proof	Environment	Insulation Resistance	Cold-proof(°C)	Temp. proof(°C)	
Braided	Glass Fiber	GB	-	-	-	Excellent	Invalid	Frost	350
	Silica Glass Fiber	SB	-	-	-	Excellent	Invalid	Frost	700
	Alumina Fiber	CB	-	-	-	Excellent	Invalid	Frost	1100
Teflon®	Flexible Teflon®	FRW	Good	Good	Good	Invalid	Excellent	-60	200
	FEP	FEB	Excellent	Excellent	Excellent	Invalid	Excellent	-253	200
	PFA	PFA	Good	Excellent	Excellent	Invalid	Excellent	-195	260
	PTFE	PTFE	Excellent	Excellent	Excellent	Invalid	Excellent	-253	260
	ETFE	ETFE	Good	Excellent	Excellent	Invalid	Excellent	-100	150
	Elastomer	SPH	Good	Good	Good	Good	Excellent	-60	135
Others	Silicone Rubber	K	Normal	Invalid	Normal	Good	Good	-60	180