OKAZAKI
MANUFACTURING COMPANY

OKAZAKI Products Guide

MI CABLE

Mineral Insulated Cable

OKAZAKI MI cables are the only MI cables manufactured entirely in Japan at our facilities from raw materials to finished product by way of our proprietary technology. These cables are highly reliable and cost effective.
These cables can be bent, coiled, silver brazed, and welded.

MI Cable

MI Cables for Thermocouples

Conductor Number		Sheath Dia. (mm)	Wall Thickness (mm)	Nominal Conductor Dia. (mm)	Sheath Material	Insulation Material	Conductor Material
	Single	0.08	10% or more of sheath outer diameter	10% or more of sheath outer diameter*	NCF600eq.	MgO	K E J T N
		0.10					
		0.15					
		0.25					
		0.50		15% or more of sheath outer diameter	316SS NCF600eq. 310S SS Hoskins2300 Options 321SS 347SS etc.		
		1.0					
		1.6					
		3.2					
		4.8					
		6.4					
		8.0					
	Double	1.6	10% or more of sheath outer diameter	15% or more of sheath outer diameter			
		3.2					
		4.8					
		6.4					
		8.0					
	Triple	4.8	10% or more of sheath outer diameter	10% or more of sheath outer diameter*			
		6.4					
		8.0					

* A sheath outer diameter of 0.25 mm or less and the nominal conductor diameter for the triple cable do not correspond to JIS standards.

MI Cable

MI Cables for Resistance Thermometers

Conductor Number		Sheath Dia. (mm)	Wall Thickness (mm)	Nominal Conductor Dia. (mm)	Resistance per Wire (Ω/m)	Resistance Variance (Ω/m)	Sheath Material	Insulation Material	Conductor Material
	4	0.8	10% or more of sheath outer diameter	10% or more of sheath outer diameter	25.37 Max.	≦ 0.12	316SS Options 316LSS NCF600eq.	MgO	Nickel, oxygen-free copper
		1.6			6.34 Max.	≦ 0.04			
		3.2			1.59 Max.	≦ 0.008			
		4.8			0.71 Max.	≦ 0.008			
		6.4			0.40 Max.	≦ 0.008			
		8.0			0.25 Max.	≦ 0.008			
		9.0			0.20 Max.	≦ 0.008			
		12.75			0.10 Max.	≦ 0.008			
	6	3.2	10% or more of sheath outer diameter	10% or more of sheath outer diameter	1.59 Max.	≦ 0.008			
		4.8			0.71 Max.	≦ 0.008			
		6.4			0.40 Max.	≦ 0.008			
		8.0			0.25 Max.	≦ 0.008			
		9.0			0.20 Max.	≦ 0.008			
		12.75			0.10 Max.	≦ 0.008			

Reference: We can also manufacture 3-wire types. Contact us for details.

MI Cable

MI Cables for Heaters

Conductor Number		Sheath Dia. (mm)	Resistance Value (Ω/m)		JIS Support	Wall Thickness (mm)	Nominal Conductor Dia. (mm)	Sheath Material	Insulation Material	Dielectric Strength Test Value (V/1min.)	Recommended Value for MAX. Rated Voltage (V or less)	Allowable Temperature (˚C)
			Nickel-chrome (NC)	Nickel (Ni)								
	2	1.6	46.5	3.80	×	≧ 0.16	0.26	316SS NCF600eq. etc.	MgO	300	100	500
		1.9	33.0	—	×	≧ 0.19	0.31			500	100	500
		2.3	22.5	1.74	×	≧ 0.23	0.38			600	100	600
		2.7	16.2	—	×	≧ 0.27	0.45			700	150	600
		3.2	11.5	0.90	×	≧ 0.32	0.53			800	150	650
		3.2	28.0	—	○	≧ 0.32	0.34			1200	200	650
		3.8	8.13	—	×	≧ 0.38	0.63			1000	200	650
		3.8	20.2	—	○	≧ 0.38	0.39			1500	300	650
		4.8	5.10	0.40	○	≧ 0.48	0.79			1500	300	650
		4.8	12.9	—	○	≧ 0.48	0.51			1500	300	650
		6.4	2.85	—	○	≧ 0.64	1.05			1500	300	650
		8.0	1.80	—	○	≧ 0.80	1.32			1500	300	650
	1	1.0	26.9	—	×	≧ 0.10	0.24			450	100	500
		1.6	10.5	1.00	×	≧ 0.16	0.39			600	100	500
		1.9	7.50	—	×	≧ 0.19	0.46			600	150	500
		2.3	5.12	0.50	×	≧ 0.23	0.56			800	150	600
		2.7	3.65	—	×	≧ 0.27	0.66			900	300	600
		3.2	2.60	0.26	○	≧ 0.32	0.77			1500	300	650
		3.2	5.60	—	○	≧ 0.32	0.53			1500	300	650
		3.8	1.83	v	○	≧ 0.38	0.90			1500	300	650
		3.8	4.13	—	○	≧ 0.38	0.62			1500	300	650
		4.8	1.15	0.125	○	≧ 0.48	1.10			1500	300	650
		6.4	0.68	—	○	≧ 0.64	1.47			1500	300	650

* JIS support indicates JIS C 3651. (JIS support may not be available due to the sheath material.)

MI Cable

Model No.

Sheath model numbers

Thermocouple sheath

480	B	-	2	K	/	SP
(1) Sheath outer diameter	(2) Sheath material		Conductor number	(4) Thermocouple type		(7) Thermocouple inspection standard and electromotive force tolerance

Resistance thermometer sheath

480	C	-	4	NI	/	A
(1) Sheath outer diameter	(2) Sheath material		Conductor number	(3) Resistance thermometer conductor material		(6) Resistance thermometer conductor structure

Microheater sheath

480	C	-	2	NC	/	MH
(1) Sheath outer diameter	(2) Sheath material		Conductor number	(5) Microheater conductor material		Microheater

(1) Sheath outer diameter: A value that is 100 times the sheath outer diameter (examples: "480" for a diameter of 4.8 mm and "050" for a diameter of 0.5 mm)

(2) Sheath material

Symbol	Material
A	304SS
AL	304LSS
C	316SS
CL	316LSS
CTi	316TiSS
D	310S SS, 310HSS
E	321SS
F	347SS
AG	446SS
B	NCF600eq.
BM	NCF601eq.
BS	NCF825eq.
Q	Titanium
V	HestelloyX
W	Nickel
SN	SC1000N
SA	SC1000H
HK	Hoskins2300

(3) Resistance thermometer conductor material

Symbol	Material
NI	Nickel
CU	Copper

(4) Thermocouple type

Symbol	Note
K	Normal type
KA	Stabilized type
E	—
J	—
T	—
N	—

(5) Microheater conductor material

Symbol	Material
NC	Nickel-chrome
NI	Nickel

(6) Resistance thermometer conductor structure

Symbol	Construction
[Blank]	Standard
A	Toe-out

(7) Thermocouple inspection standard and electromotive force tolerance

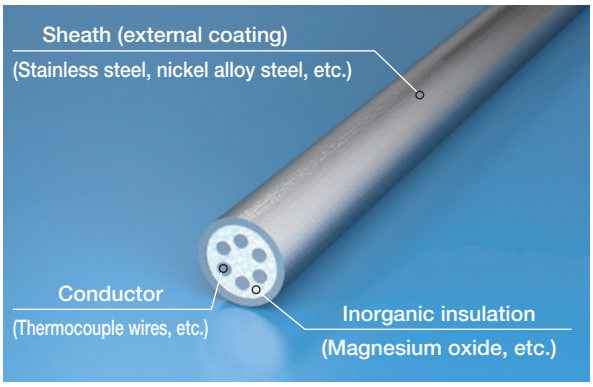
Symbol	Inspection Standard	Electromotive Force Tolerance
C1J	JIS C 1605	Class1
C2J		Class2
C3J		Class3
C1E	IEC 60584-2	Class1
C2E		Class2
C3E		Class3
SP	ASTM E 230	Special
ST		Standard
SPL		Special (low temperature)
STL		Standard (low temperature)

Note
1. It may not be possible to manufacture cables with certain combinations of the symbols listed above.
2. It may be possible to manufacture cables with sheath or conductor materials other than those shown in the above tables. Contact us for details.

MI Cable

OKAZAKI MI cables are the only MI cables manufactured entirely in Japan at our facilities from raw materials to finished product by way of our proprietary technology. These cables are highly reliable and cost effective.

Materials such as stainless steel and nickel alloy steel are used for the sheaths, which gives these cables high heat resistance and corrosion resistance. Furthermore, Okazaki can manufacture cables to meet your application, even if it requires an extremely small outer diameter.
The space between the metal sheath and the linear conductors is also tightly filled with a highly pure, inorganic insulation (such as magnesium oxide) that completely isolates the conductors from air and gas. This reduces the risk of oxidation and corrosion, providing the cables with a longer service life than bare wires while also making the cables cost-effective.



Characteristics

Wide range of supported temperatures

These cables can withstand high temperatures and high pressures and can be used over a wide temperature range from -269 to 1,260˚C.

Excellent uniformity

Our method of firmly filling these cables with inorganic insulation by way of our proprietary technology makes it possible to manufacture longer cables.

Easy to handle

These cables can be bent into curves having a radius that is up to twice the sheath outer diameter, which makes it possible to easily install these cables in a variety of worksite locations. These cables can also be coiled, silver brazed, and welded.

Long service life

Using magnesium oxide, which is chemically stable, as the insulator ensures the cables are airtight and provides them with a longer service life.

High mechanical strength and pressure resistance

These cables can be used reliably even in locations where vibrations occur, in corrosive environments, and in other harsh conditions.

Wide variety of sizes and shapes

Okazaki can manufacture cables with outer sheath diameters ranging from 0.08 to 26 mm to suit various applications.

Inorganic insulation that matches the application

Standard products are made with magnesium oxide (MgO). These cables can also be manufactured with aluminum oxide (Al_2O_3) or silicon dioxide (SiO_2) for special applications.

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