

INDUSTRIAL THERMOCOUPLE ELEMENTS

This Section Contains

Noble Metal Thermocouple Elements ☐



Ceramic Insulators ☐



Thermocouple Reference Data ☐



Accuracy of IPS Thermocouple Wire ☐

Please CALL for Quote!

If you can't find what you need

CALL

From Illinois 618-465-7623

From St. Louis 314-231-0752

Fax 618-465-7679

E-mail info@ipscustom.com

NOBLE METAL THERMOCOUPLE ELEMENT

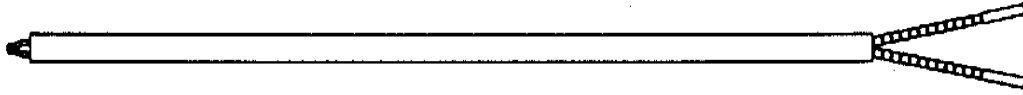
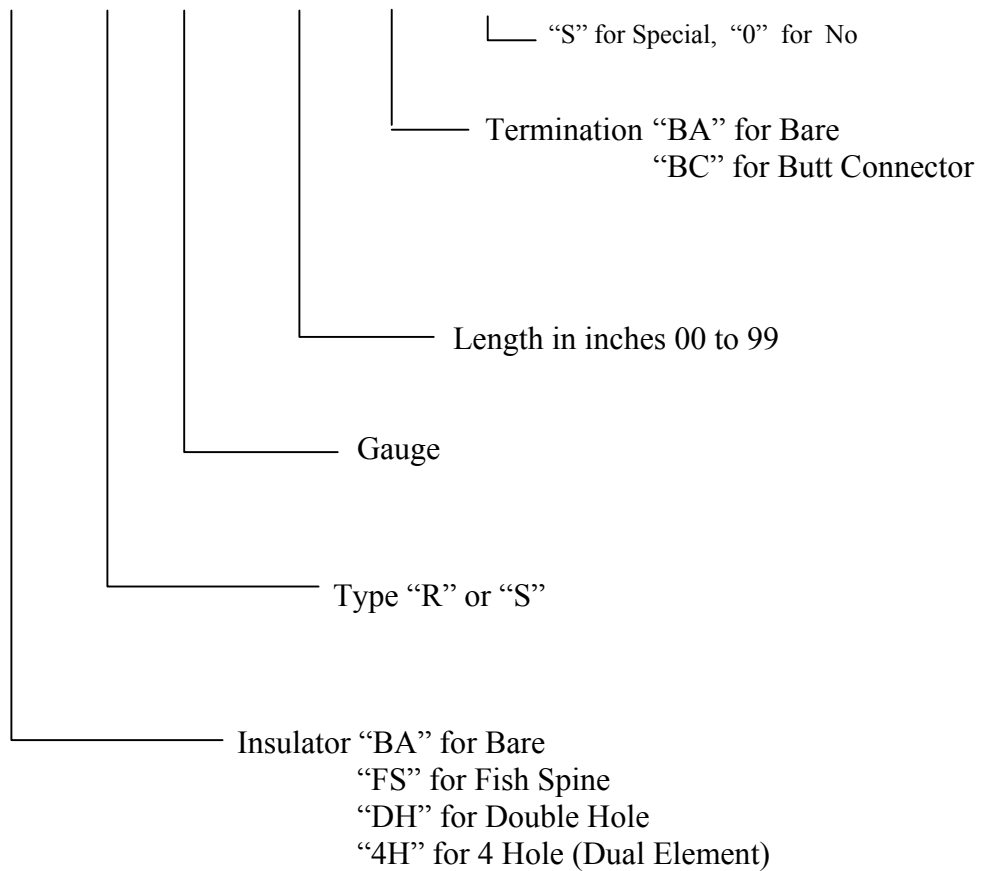


Illustration shown with double hole insulation, fish spine on leads and butt connectors.
Other variations available; please consult the factory.

NMTE - □□ - □ - 24 - □□ - □□ - □



INDUSTRIAL PROCESS and SENSOR

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CERAMIC INSULATORS



ROUND ONE HOLE

WIRE GAUGE	O.D.	BORE	LENGTH	PART #
8	.340"	.209"	1"	I - 20
8	.252"	.156"	1"	I - 34
8	.375"	.160"	1"	I - 35
8	.250"	.156"	3"	I - 36
14-16	.140"	.080"	1"	I - 38
20	.090"	.038"	2"	I - 40



ROUND TWO HOLE

WIRE GAUGE	O.D.	BORE	LENGTH	PART #
8	.468"	.166"	1"	I - 18
8	.778"	.205"	.5"	I - 21
14-16	.218"	.080"	3"	I - 25
20	.150"	.039"	2"	I - 30



ROUND FOUR HOLE

WIRE GAUGE	O.D.	BORE	LENGTH	PART #
14-16	.315"	.080"	1"	I - 42



OVAL TWO HOLE

WIRE GAUGE	O.D.	BORE	LENGTH	PART #
8	.313" X .575"	.193"	1"	I - 10
8	.312" X .500"	.185"	1"	I - 14
8	.284" X .500"	.157"	3"	I - 16
14-16	.250" X .375"	.090"	1"	I - 22
14-16	.187" X .312"	.080"	3"	I - 24
20	.118" X .171"	.042"	3"	I - 32



BALL AND SOCKET (FISH SPINE)

WIRE GAUGE	O.D.	BORE	LENGTH	PART #
8	.400"	.156"	.400"	I - 50
8	.260"	.156"	.260"	I - 52
10-12	.330	.125"	.337"	I - 51
14-16	.170"	.068"	.170"	I - 56
20	.110	.056"	.110"	I - 58

The upper temperature limit of ceramic insulators is 2475°F. Other variations available upon request. Consult the factory for options.

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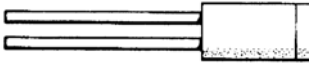
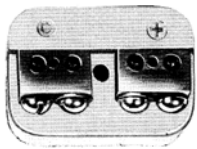
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TERMINATIONS

Style	Description	Illustration
00	Leads bare	
01	Leads with Fish Spine beads	
02	Leads with Fiberglass sleeves	Not shown
03	With terminal block	
04	With spade lugs	
05	Standard size T/C Plug	
06	Standard size T/C Jack	
07	Standard size T/C Plug and Jack	
08	Miniature T/C Plug	
09	Miniature T/C Jack	
10	Miniature T/C Plug and Jack	
BC	Butt connectors and Fish Spine Beads	

Other combinations available, please consult factory.

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THERMOCOUPLE REFERENCE DATA

UPPER TEMPERATURE LIMITS FOR THERMOCOUPLES						
THERMOCOUPLE TYPE	ANSI TYPE SYMBOL	WIRE GAUGE (AWG)				
		8 ga.	14 ga.	20 ga.	24 ga.	30 ga.
Copper – Constantan	T		370°C (700°F)	260°C (500°F)	200°C (400°F)	150°C (300°F)
*Iron - Constantan	J	760°C (1400°F)	600°C (1100°F)	500°C (900°F)	370°C (700°F)	320°C (600°F)
Chromel™ - Constantan	E	870°C (1600°F)	650°C (1200°F)	550°C (1000°F)	430°C (800°F)	430°C (800°F)
Chromel™ - Alumel™	K	1260°C (2300°F)	1100°C (2000°F)	1000°C (1800°F)	870°C (1600°F)	760°C (1400°F)
Nicrosil - Nisil	N	1260°C (2300°F)	1100°C (2000°F)	1000°C (1800°F)	870°C (1600°F)	760°C (1400°F)
Platinum – 10% Rhodium	S				1480°C (2700°F)	
Platinum – 13% Rhodium	R				1480°C (2700°F)	

™ Trademark Hoskins Mfg. Co.

* Magnetic

STANDARD WIRE GAUGES IN DECIMALS OF AN INCH AND MM		
B&S Wire Gauge	Diameter in Inches	Diameter in Millimeter
8	.1285	3.264
14	.0641	1.628
16	.0508	1.291
20	.0320	.8818
24	.0201	.5106

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Accuracy of IPS Thermocouple Wire

IPS insulated and bare thermocouple wire is matched to meet standard initial calibration tolerances (Standard limits) for temperatures above 0°C as given in ANSI MC96.1 and shown in the table.

Wire conforming to special initial calibration tolerances (Special limits), and wire with certified traceable calibration is available on request. Designate special limit grade wire using a double ANSI symbol (e. g. KK, JJ).

Thermocouple wire may be used to manufacture a thermocouple, keeping in mind the temperature limitations of wire size.

Color Code & Initial Calibration Tolerances Thermocouple wire

Type	Color Code	Initial Calibration Tolerances		
Wire Alloys	+/- Individual (Jacket)	Temperature Range	Standard Limits	Special Limits
**Iron (+) vs. Constantan(TM) (-) ANSI Symbol = J	white/red (brown)	+32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +1400°F (+750°C)	+/- 4°F (2.2°C) +/- .75%	+/- 2°F (1.1°C) +/- .4%
CHROMEL® (+) vs. **ALUMEL® (-) ANSI Symbol = K	yellow/red (brown)	-330°F (-200°C) to -165°F (-110°C) -165°F (-110°C) to +32°F (0°C) +32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	+/- 2% +/- 4°F (2.2°C) +/- 4°F (2.2°C) +/- .75%	+/- 2°F (1.1°C) +/- .4%
Copper (+) vs. Constantan(TM) (-) ANSI Symbol = T	blue/red (brown)	-330°F (-200°C) to -85°F (-65°C) -85°F (-65°C) to +270°F (+130°C) +270°F (+130°C) to +660°F (+350°C)	+/- 1.5% +/- 1.8°F (1°C) +/- .75%	+/- .8% +/- .9°F (.5°C) +/- .4%
CHROMEL® (+) vs. Constantan(TM) (-) ANSI Symbol = E	purple/red (brown)	-330°F (-200°C) to -270°F (-170°C) -270°F (-170°C) to +480°F (+250°C) +480°F (+250°C) to +640°F (+340°C) +640°F (+340°C) to +1600°F (+900°C)	+/- 1% +/- 3°F (1.7°C) +/- 3°F (1.7°C) +/- .5%	+/- 1.8°F (1°C) +/- 1.8°F (1°C) +/- .4% +/- .4%
Nicrosil(TM) (+) vs. Nisil(TM) (-) ANSI Symbol = N	orange/red (brown)	+32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	+/- 4°F (2.2°C) +/- .75%	+/- 2°F (1.1°C) +/- .4%

NOTE: Percent limits apply directly to temperature in °C units, but for °F equivalents are applied to the numbers of °F above or below the ice point (+32°F).

(i.e. Limit (°F) = (Temp. °F - 32°F) x Percentage)

Thermocouple wire cannot be expected to meet the limits of error at temperatures below the ice point unless specified at time of purchase.

** Magnetic

* CHROMEL® and ALUMEL® are registered Trademarks of Hoskins Manufacturing Company. IPS reserves the right to substitute equivalent product to CHROMEL® and ALUMEL® at any time.

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