



# Thermocouple Temperature Range and Wire Color Code Quick Reference Guide

Use this table to determine the wire type or extension cable type you need based on the temperature range and limits required by your application.

## Temperature Range

Thermocouple Type/Wire	Temperature Range °F (°C)	Grade Designation	Standard Grade Limits °F (°C) whichever is greater	Grade Designation	Special Grade Limits °F (°C) whichever is greater
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4.0 (2.2) or ±0.75%	JJ	±2.0 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4.0 (2.2) or ±0.75%	KK or NN	±2.0 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8% **
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5% **
K*	-328 (-200) to 32 (0)	K	±4.0 (2.2) or ±2%	KK	**

Extension Wire	Range °F (°C)	Designation	Limits °F (°C)	Designation	Limits °F (°C)
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4.0 (2.2)	JJX	±2.0 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1.0)
KX or NX	32 (0) to 400 (200)	KX or NX	±4.0 (2.2)	KKX or NNX	±2.0 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9.0 (5)		
BX	32 (0) to 212 (100)	BX ***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX Alloy ***	±6.7 (3.7)		

\* Thermocouple material is normally supplied to meet tolerances above 0°C (32°F). If material is required to meet tolerances below 0°C (32°F), this must be specified. Special material selection is required.

\*\* Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

\*\*\* Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100°C (212°F). Above 100°C (212°F), PCLW30-6 alloy should be used as the positive extension wire.



**TE Wire & Cable LLC**

107 North Fifth Street, Saddle Brook, NJ, USA

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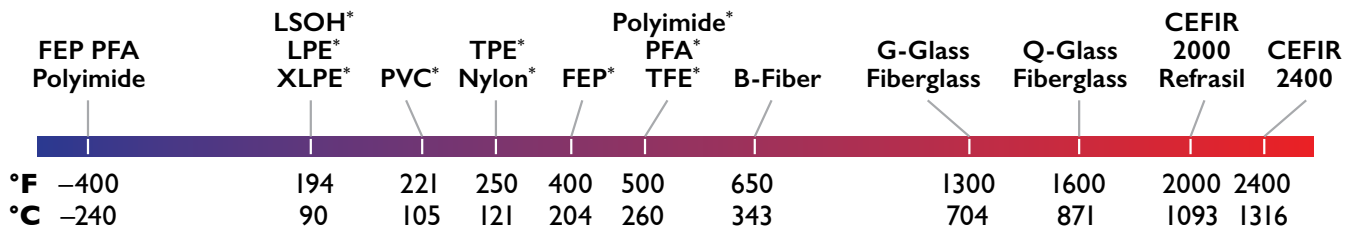
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## Wire Color Codes

Thermocouple Extension Type		 ANSI	 BS	 DIN	 NFC	 JIS	 IEC
JX	Iron +						
	Constantan® -						
KX	Chromel® +						
	Alumel® -						
TX	Copper +						
	Constantan® -						
EX	Chromel® +						
	Constantan® -						
NX	Nicrosil® +						
	Nisil® -						
SX	Copper +						
	Alloy II -						

## TC Wire Insulations



\* Maximum continuous temperature shown. All others show major single use temperature. CEFIR is a registered trade mark of TE Wire & Cable. Refrasil is a registered trade mark of Hitco Carbon Composites, Inc.

TE Wire & Cable is an ISO 9001-2008 certified company. Many TE Wire & Cable products are certified to conform to national and international standards including – UL 13 PLTC, UL 1277 TC, UL 2250 ITC, IEEE 383 Flame test, NEC Article 725, NEC Article 336, ANSI MC 96.1, ASTM E 230, CSA C22.2 No. 239 Type CIC and many more. TE Wire & Cable's calibration laboratory is ISO/IEC 17025: 2005 accredited.



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