

Thermocouple Tolerance

Type	Material	Wire Colour Indicator	Temperature Range (°C)	Tolerances (which ever is greater)	
				Standard Limits	Special Limits
B	Platinum 30% Rhodium Platinum 6% Rhodium	Grey (+) Red (-)	870 to 1700	±0.5%	±0.25%
E	Chromel Constantan	Purple (+) Red (-)	0 to 870	±1.7°C or ±0.5%	±1°C or ±0.4%
J	Iron Constantan	White (+) Red (-)	0 to 760	±2.2°C or ±0.75%	±1.1°C or ±0.4%
K	Chromel Alumel	Yellow (+) Red (-)	0 to 1260	±2.2°C or ±0.75%	±1.1°C or ±0.4%
N	Nicrosil Nisil	Orange (+) Red (-)	0 to 1260	±2.2°C or ±0.75%	±1.1°C or ±0.4%
R	Platinum 13% Rhodium Platinum	Black (+) Red (-)	0 to 1480	±1.5°C or ±0.25%	±0.6°C or ±0.1%
S	Platinum 10% Rhodium Platinum	Black (+) Red (-)	0 to 1480	±1.5°C or ±0.25%	±0.6°C or ±0.1%
T	Copper Constantan	Blue (+) Red (-)	0 to 350	±1.0°C or ±1.5%	±0.5°C or ±0.4%
Cryogenic Ranges					
E	Chromel Constantan	Purple (+) Red (-)	-200 to 0	±1.7°C or ±1%	±1.0°C or ±0.5%
K	Chromel Alumel	Yellow (+) Red (-)	-200 to 0	±2.2°C or ±2.0%	-
T	Copper Constantan	Blue (+) Red (-)	-200 to 0	±1.0°C or ±1.5%	±0.5°C or ±0.8%

The tolerances given in the table above are in accordance with ASTM E230. More detailed information on thermocouples can be found within the published standards. Tolerances indicated do not factor in system and installation error. Additionally, process factors such as the heating of the materials and environment can affect initial tolerances.

Not listed above are Tungsten - Rhenium thermocouples (WR, W3 & W5). Aircom has the ability to manufacture these thermocouple types not identified in the standard.

Standards met by Aircom and related thermocouple material suppliers:

-ATSM E230: Standard Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples / Temperature Measurement Thermocouples

-ASTM E585: Specification for Compacted Mineral-Insulated, Metal Sheathed, Base Metal Thermocouple Cable

-ASTM E220: Standard Test Method for Calibration of Thermocouples By Comparison Techniques

-NIST Monograph 175: Temperature-Electromotive Force Referenced Functions and Tables for Letter Designated Thermocouple Types Based on the ITS-90. *The International Temperature Scale of 1990.*