



Mineral Insulated Cable Calibration

NOTE: Letters in parentheses following the sheath material are used with the Ordering Worksheet on page 14-119.

ANSI Type (J) Standard; Special Tolerance (3)

Type J is composed of a positive leg (JP) which is iron and a negative leg (JN) which is approximately 45% nickel, 55% copper. When protected by the compacted mineral insulation and appropriate outer sheath, Type J is usable from 32°F to 1500°F. Type J is not susceptible to short range ordering in the 700 to 1000°F temperature range (+2°F to +4°F drift), which occurs with ANSI Type E and K. This low-cost, stable thermocouple calibration is primarily used with 94% minimum purity MgO insulation and a stainless steel sheath.

ANSI Type (K) Standard; Special Tolerance (4)

Type K is composed of a positive leg (KP) which is approximately 90% nickel, 10% chromium and a negative leg (KN) which is approximately 95% nickel, 2% aluminum, 2% manganese and 1% silicon. When protected by the compacted mineral insulation and appropriate outer sheath, Type K is usable from 32°F to 2300°F and is one of Tempco's most popular calibration types. If the application temperature is between 600°F and 1100°F, we recommend using Type J or Type N because of short range ordering that can cause drift of +2°F to +4°F in a few hours' time. Type K is relatively stable to radiation transmutation and is used in nuclear environments. For applications below 32°F, special alloy selections are usually required.

ANSI Type (E) Standard; Special Tolerance (5)

Type E is composed of a positive leg (EP) which is approximately 90% nickel, 10% chromium and a negative leg (EN) which is approximately 45% nickel, 55% copper. When protected by the compacted mineral insulation and appropriate outer sheath, Type E is usable from 32°F to 1650°F. This thermocouple has the highest EMF output per degree of all ANSI recognized thermocouples. If the application temperature is between 600°F and 1100°F, we recommend using Type J or Type N because of short range ordering that can cause drift of +2°F to +4°F in a few hours' time. For applications below 32°F, special alloy selections may be required.

ANSI Type (T) Standard; Special Tolerance (6)

Type T is composed of a positive leg (TP) which is pure copper and a negative leg (TN) which is approximately 45% nickel, 55% copper. When protected by the compacted mineral insulation and appropriate outer sheath, Type T is usable from 32°F to 662°F. Type T is very stable and is used in a wide variety of cryogenic and low temperature applications. For applications below 32°F special alloy selections may be required.

ANSI Type (N) Standard; Special Tolerance (7)

Type N is composed of a positive leg (Nicrosil) which is approximately 14% chromium, 1.4% silicon, 84.6% nickel and a negative leg (Nisil) which is approximately 4.4% silicon, 95.6% nickel. When protected by compacted mineral insulation and appropriate outer sheath, Type N is usable from 32°F to 2300°F. Type N was designed to overcome several problems inherent in Type K thermocouples. Short range ordering (+2°F to +4°F drift) in the 600°F to 1100°F temperature range is greatly reduced, and the drift rate at high temperatures is considerably less. Type N has also been found to be more stable than Type K in nuclear environments.

ANSI Type (R) Standard Tolerance

Type R is composed of a positive leg (RP), which is 87% platinum, 13% rhodium and a negative leg (RN), which is 100% platinum. When protected by compacted mineral insulation and appropriate outer sheath, Type R is usable from 32°F to 2700°F. Type R is available as standard limits only, ITS90.

ANSI Type (S) Standard Tolerance

Type S is composed of a positive leg (SP), which is 90% platinum, 10% rhodium and a negative leg (SN), which is 100% platinum. When protected by compacted mineral insulation and appropriate outer sheath, Type S is usable from 32°F to 2700°F. Type S has a lower EMF output than Type R and is available as standard limits only, ITS90.

ANSI Type (B) Standard Tolerance

Type B is composed of a positive leg (BP) which is approximately 70% platinum, 30% rhodium and a negative leg (BN) which is approximately 94% platinum, 6% rhodium. When protected by compacted mineral insulation and appropriate outer sheath, Type B is usable from 1600°F to 3100°F. Type B is available as standard limits only, IPTS 1968 scale.

Tungsten—5% Re/Tungsten, 26% Re (C)

This calibration has not been given a letter designation by ANSI. When this calibration is protected by mineral insulation and appropriate outer sheath, it is usable from 32°F to 4200°F. Calibration is used most often with Beryllium Oxide insulation and either molybdenum or tantalum sheath. These combinations can only be used in an inert or vacuum environment.

Miscellaneous (O)

Consult Tempco with your requirements.