



Thermocouple Wire

Bare, Matched and Extension Grade Wire

Thermocouple
'Hot Junction' Option

Type C, E, J, K, R, S and T
Bare Thermocouple Wire

24 and 30 AWG
Wire Sizes

Thermocouple Wire

Accu-Glass thermocouple wire is prepared and packaged for use in ultrahigh vacuum applications to 1×10^{-10} Torr. Thermocouple wire is available in both matched and extension grade materials. Wire sizes from 0.010 to 0.032 inch diameters are stocked and available for quick delivery. Both positive and negative thermocouple legs are bare (non-insulated) and sold in paired lengths... by the 'Inch' or the 'Foot'. Dual-bore steatite ceramic insulators are available for use with bare thermocouple wire.

Matched thermocouple wire can be used with our 'standard' Subminiature-D feedthroughs, and where most applications will not register an error. For a detailed explanation on error compensation of non-thermocouple pins in our Subminiature-D feedthroughs, see page 267. Extension grade thermocouple wire is a low-cost alternative to matched materials, and ideal for long wire run applications.

For an added fee, a 'Hot Junction' option (temperature sensing point) is available with any thermocouple pair; where one end of a thermocouple wire-pair is fused (welded) together prior to shipping. For more information and price, see 'Hot Junction' option details on page 107.

Note that continuous lengths of paired thermocouple wire can be purchased. To do so, simply order multiple quantities of any part number and print 'Continuous Length' in the description of the part on your purchase order.

Features

- Bare, uninsulated wire material
- .010 to .032 Inch diameter wire
- UHV compatible material
- High temperature rated to 400°C
- TC positive and negative legs sold in pairs
- Optional 'Hot Junction'
- Custom solutions on request.

Specifications

Vacuum Range

| | |
|-----------------------|--------------------------|
| HV, High Vacuum | 1×10^{-8} Torr |
| UHV, Ultrahigh Vacuum | 1×10^{-10} Torr |

Temperature Range¹

Up to 400°C

Notes

1. Overall assembly ratings must be adjusted to that of its lowest rated component. For cryogenic service, the lowest recommended temperature is -80°C
- § Unless specified otherwise, dimensional units in all sections of this catalog are expressed in inches.

Matched Thermocouple Wire — Operating Temperature¹ / UHV to 1x10⁻¹⁰ Torr

| ANSI Type | Matched Lead Materials | | Pair Length ² | Wire Diameter | Nominal AWG | Model Number | Part Number | Unit Price \$ |
|--|------------------------|--------------|--------------------------|---------------|-------------|--------------|---------------|---------------|
| | (+) Positive | (-) Negative | | | | | | |
| Matched TC Wire — Solid / Bare (non-insulated) / Supplied in Pairs, (+) and (-) Leads | | | | | | | | |
| C ³ | W-5Re | W-26Re | 1" | 0.010 | 30 | TCC-BC-010-1 | 112101 | 12 |
| C ³ | W-5Re | W-26Re | 1" | 0.020 | 24 | TCC-BC-020-1 | 112102 | 25 |
| E | Chromel | Constantan | 1' | 0.010 | 30 | TCE-BC-010-1 | 112105 | 3 |
| E | Chromel | Constantan | 1' | 0.020 | 24 | TCE-BC-020-1 | 112106 | 3 |
| E | Chromel | Constantan | 1' | 0.032 | 20 | TCE-BC-032-1 | 112107 | 3 |
| J | Iron | Constantan | 1' | 0.010 | 30 | TCJ-BC-010-1 | 112109 | 3 |
| J | Iron | Constantan | 1' | 0.020 | 24 | TCJ-BC-020-1 | 112110 | 3 |
| J | Iron | Constantan | 1' | 0.032 | 20 | TCJ-BC-032-1 | 112111 | 3 |
| K | Chromel | Alumel | 1' | 0.010 | 30 | TCK-BC-010-1 | 112113 | 3 |
| K | Chromel | Alumel | 1' | 0.020 | 24 | TCK-BC-020-1 | 112114 | 3 |
| K | Chromel | Alumel | 1' | 0.032 | 20 | TCK-BC-032-1 | 112115 | 3 |
| R ³ | Pt-13Rh | Pt | 1" | 0.010 | 30 | TCR-BC-010-1 | 112117 | 25 |
| S ³ | Pt-10Rh | Pt | 1" | 0.010 | 30 | TCS-BC-010-1 | 112118 | 25 |
| T | Copper | Constantan | 1' | 0.010 | 30 | TCT-BC-010-1 | 112121 | 3 |
| T | Copper | Constantan | 1' | 0.020 | 24 | TCT-BC-020-1 | 112122 | 3 |
| T | Copper | Constantan | 1' | 0.032 | 20 | TCT-BC-032-1 | 112123 | 3 |

Hot Junction Option⁴ — Fused Thermocouple Leads (temperature sensing point)

| | | | |
|-----------------------|-----------------------|------------|----|
| Fuse leads at one end | Append to Part Number | .40 | 15 |
|-----------------------|-----------------------|------------|----|

1. Thermocouple operating temperatures on page 268. 2. Multiple quantities ship in one continuous length. 3. Refractory "Type-C" (Tungsten-Rhenium) and Noble metal "Type-R" and "S" (Platinum-Rhodium) TCs are sold in one inch increments. 4. Factory added option for listed thermocouple wires. Price is added to wire unit price. For example, part number 112101.40 would have a final price of \$27.

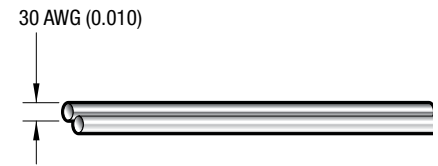
Extension Thermocouple Wire¹ — 425°C Maximum / UHV to 1x10⁻¹⁰ Torr

| ANSI Type | Extension Lead Materials | | Pair Length ¹ | Wire Diameter | Nominal AWG | Model Number | Part Number | Unit Price \$ |
|--|--------------------------|--------------|--------------------------|---------------|-------------|-----------------|---------------|---------------|
| | (+) Positive | (-) Negative | | | | | | |
| Extension TC Wire — Solid / Bare (non-insulated) / Supplied in Pairs, (+) and (-) Leads | | | | | | | | |
| EX-C | Alloy 405 | Alloy 426 | 1' | 0.010 | 30 | TCXC-BC-010-1 | 112103 | 3 |
| EX-C | Alloy 405 | Alloy 426 | 1' | 0.020 | 24 | TCXC-BC-020-1 | 112104 | 3 |
| EX-RS | Copper | Alloy 11 | 1' | 0.020 | 24 | TCEXRS-BC-020-1 | 112112 | 3 |

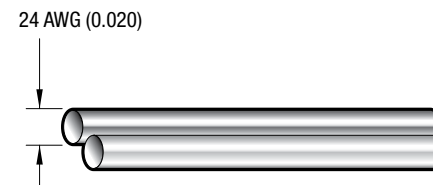
1. Extension grade wire is a low-cost alternative to matched thermocouple materials.

Ceramic Insulators — 400°C / UHV to 1x10⁻¹⁰ Torr

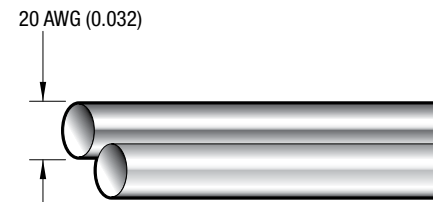
| T/C Type | Material | Bore Diameter | OD | Qty. / Length | No. Holes | Nominal AWG | Model Number | Part Number | Unit Price \$ |
|--|----------|---------------|-------|---------------|-----------|-------------|--------------|---------------|---------------|
| Dual Bore — Steatite Ceramic Insulators | | | | | | | | | |
| All | Ceramic | 0.020 | 0.123 | 12 / 1ft | 2 | 24 | BC-CER-INS | 112292 | 22 |



112101 / Type C Thermocouple Wire



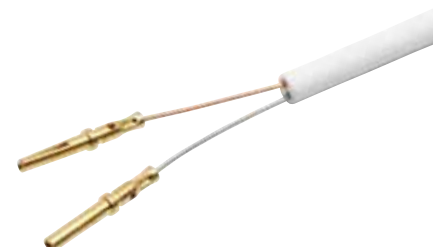
112106 / Type E Thermocouple Wire



112115 / Type K Thermocouple Wire



.40 Welded "Hot Junction"



Wire with Ceramic Insulators