

# Thermocouples medical-grade

## Technical specification

A medical-grade thermocouple is a device based on thermo-electric properties composed of dissimilar metals in bifilar and multi-filar forms using traditional thermocouple alloys. Thermocouples are used for measuring temperatures during therapeutic procedures.

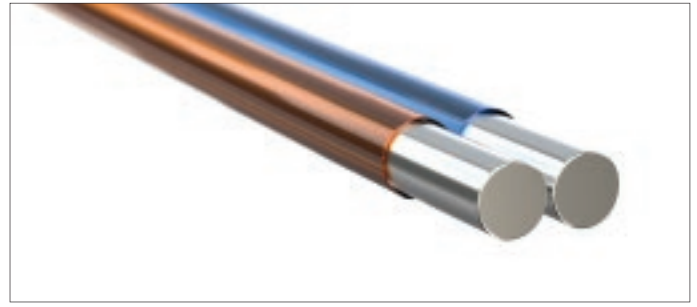
Thermocouples are commonly used to treat tachycardia and atrial fibrillation, as well as measuring the tissue temperature during radiofrequency ablation of cardiac arrhythmias. They are also used in ventilators.

Type of thermocouple	Temp. range [°C]	Tolerance		
		Standard	Special	Standard
Thermothal P (KP)/Thermothal N (KN) (Type K)	from 0 to 1250	±2.2°C or ±0.75%	–	–
Thermothal P (EP)/CUPROTHAL (EN) (Type E)	from 0 to 900	±1.7°C or ±0.5%	–	–
Copper/CUPROTHAL (TN) (Type T)	from 0 to 350	±1°C or ±0.75%	–	–
Iron (JP)/CUPROTHAL (JN) (Type J)	from 0 to 750	±2.2°C or ±0.75%	–	–
Nicrosil (NP)/Nisil (NN) (Type N)	from 0 to 1300	±2.2°C or ±0.75%	–	–
Thermothal P (KP)/Thermothal N (KN) (Type K)	from 0 to 1250	–	±1.1°C or ±0.40%	–
Thermothal P (EP)/CUPROTHAL (EN) (Type E)	from 0 to 900	–	±1°C or ±0.40%	–
Copper/CUPROTHAL (TN) (Type T)	from 0 to 350	–	±0.5°C or ±0.40%	–
Iron (JP)/CUPROTHAL (JN) (Type J)	from 0 to 750	–	±1.1°C or ±0.40%	–
Nicrosil (NP)/Nisil (NN) (Type N)	from 0 to 1300	–	±1.1°C or ±0.40%	–
Thermothal P (KP)/Thermothal N (KN) (Type K)	from -200 to 0	–	–	±2.2°C or ±2%
Thermothal P (EP)/CUPROTHAL (EN) (Type E)	from -200 to 0	–	–	±1.7°C or ±1%
Copper/CUPROTHAL (TN) (Type T)	from -200 to 0	–	–	±1°C or ±1.5%

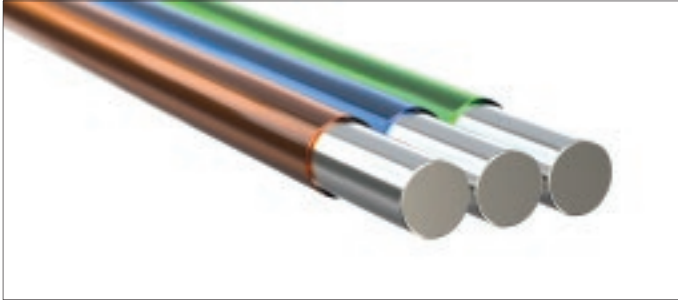
The tolerance is whichever is the greater value. American specifications ASTM E 230 – ANSI MC 96.1



Single



Bifilar



Trifilar



Quadfilar

Alleima manufactures thermocouple sensor wire and lead wire in multiple alloys. The thermocouple alloys can be delivered in individual single strands or in bi-filar and multifilar configurations. Alloys available include

- Ni-Ni leads for PTC, and NTC, thermistors
- Thermocouple types K, T, E, and N (others on request)
- Precious metals Pt, Pt10Ir, Pt20Ir

Alleima manufactures wire from all the above alloys and coats wire with insulation from diameters of AWG24 (0.5104 mm) to as small AWG 50 (0.0205 mm). The most popular insulations are Polyimide (PAC) which is good to continuous temperatures of 240°C, and solderable insulations such as Poly-Nylon and Polyesterimide.

- Some alloys can be drawn to even smaller sizes
- Broad selection of Polymer Insulations available.
- Wire manufactured as single conductors bare, insulated, bifilar, or multifilar forms.

#### Materials development is in our dna

Working with the latest technology to solve challenges that no one has ever really solved before, that's what Alleima does – and we have a lot of experience to refer to.

Drawing on an extensive knowledge of metallurgy, including more than 200 metals and alloys, along with customization and configurations such as coiling and coating,

Alleima works closely with medical device manufacturers to design and build medical wire components perfectly calibrated for the customer's application.

Send us your enquiry. Together, we can design a process and a product uniquely suited to your needs. Let us inspire your innovation – whatever your product, there is an Alleima material to suit!

#### Contact information

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