

“Cement-On” Thermocouples

- ✓ Response Time in Milliseconds
- ✓ Made from 0.013 mm (0.0005") Foil and 0.25 mm (0.010") Diameter Thermocouple Wire
- ✓ Very Low Thermal Inertia
- ✓ Four Calibrations J, K, E, and T
- ✓ Three Styles Ideal for Surface Measurement

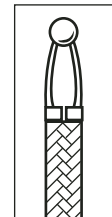
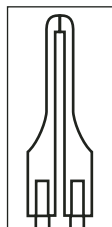
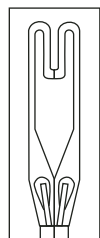
OMEGA introduces its Cement-On, fast response thermocouples for fast surface temperature measurement applications in three convenient styles. Styles 1 and 2 are made from 0.013 mm (0.0005") thermocouple alloy foil by a special process where the butt welded thermocouple junction is 0.013 mm (0.0005") in thickness. Styles 1 and 2 are flat, extremely low inertia construction and are an ideal means of measuring the temperature of both flat and curved metals, plastic and ceramic surfaces where very fast response is desired.

OMEGA's Cement-On Style 1 and 2 thermocouples are fabricated from ANSI "Special Limits of Error" grade thermocouple materials in K, E and T calibrations and yield accurate temperature indication when used with standard thermocouple instrumentation. Styles 1 and 2 have the fastest response. Style 3 is an economy version constructed from 0.25 mm (0.010") diameter bead welded standard limit of error thermocouple wire. It should be used where extremely fast response is not essential.

CO Series Starts at **\$24**



MEETS OR EXCEEDS SPECIAL LIMITS OF ERROR (SLE) AND EN 60584-2: Tolerance Class 1



Note: Dimensions and additional information at omega.com



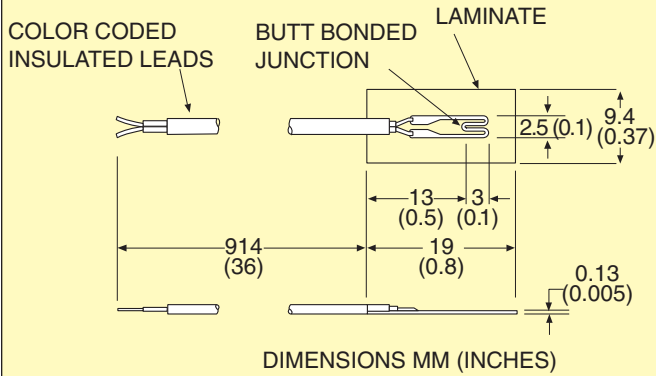
Dimensions and Additional Information Available at omega.com

MOST POPULAR MODELS HIGHLIGHTED!

Model No.	Price	Style	Thermocouple Type	Length	Maximum Temperature °C (°F)*		
					Continuous	600 hr	10 hr
CO1-K	\$34	1	K CHROME [®] -ALOMEGA [®]	1 m (40")	260 (500)	315 (600)	370 (700)
CO1-E	34		E CHROME [®] -Constantan	1 m (40")	260 (500)	315 (600)	370 (700)
CO1-T	34		T Copper - Constantan	1 m (40")	150 (300)	205 (400)	260 (500)
CO2-K	\$34	2	K CHROME [®] -ALOMEGA [®]	150 mm (6")	540 (1000)	540 (1000)	650 (120)
CO2-E	34		E CHROME [®] -Constantan	150 mm (6")	425 (800)	425 (800)	540 (1000)
CO2-T	34		T Copper-Constantan	150 mm (6")	150 (300)	150 (300)	260 (500)
CO3-J	\$24	3	J Iron - Constantan	1 m (40")	260 (500)	370 (700)	370 (700)
CO3-K	24		K CHROME [®] -ALOMEGA [®]	1 m (40")	260 (500)	370 (700)	370 (700)
CO3-E	24		E CHROME [®] -Constantan	1 m (40")	260 (500)	370 (700)	370 (700)
CO3-T	24		T Copper-Constantan	1 m (40")	205 (400)	260 (500)	370 (700)

*The temperature range high limits given are greatly influenced by environmental conditions, installation method, accuracy and lifetime requirements and may vary from the general guidelines listed in the table.
 Style 1 and 3 cannot be used with CC High Temperature Cement; CC Cement will break down insulation.
 Response time when "grounded" or "cemented" to surface: **Style 1** (10 to 20 milliseconds), **Style 2** (2 to 5 milliseconds), **Style 3** (300 milliseconds).
 The response time or "time constant" is the time required to reach 63.2% of an instantaneous temperature change.
 Additional length wire can be ordered for Styles 1 and 3, add \$4 per 300 mm (12"), for Style 2 add \$8 per 300 mm (12").
Ordering Example: CO1-K is a style 1, Type K thermocouple, 1 m (40") long, \$34.

STYLE 1



STYLE 1

Cement-On Style 1 thermocouples are the easiest to install. The foil sensor is embedded between two paper thin, glass reinforced high temperature polymer laminates which both support and electrically insulate the foil section as well as provide a flat surface for cementing. The polymer/glass laminate, in general, determines the maximum temperature of the construction which is 260°C (500°F) continuous and up to 370°C (698°F) for short duration. Each Style 1 unit includes 1 m (40") of glass braid insulated 30 gage thermocouple wire which is bonded to the foil and strain relieved by laminate. An application instruction sheet accompanies each packaged Cement-On type thermocouples. Minimum temperature is -195°C (319°F).

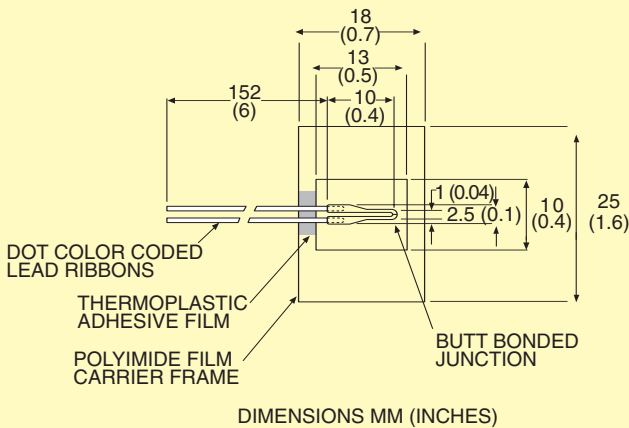
STYLE 2

OMEGA® Cement-On Style 2 thermocouples are recommended where extremely fast surface temperature measurement response time is a requirement. Intimate thermal coupling for this style is achieved by directly bonding the foil junction area to the surface to be measured. For ease of handling, the foil leads come fastened to a polyimide film frame which is tough, flexible, dimensional, stable material rated for 260°C (500°F) continuous service. During application, the foil thermocouple can be peeled from the frame or released by the application of heat. As an alternate, portions of the frame may be cut away by scissor or knife. Minimum temperature is -195°C.

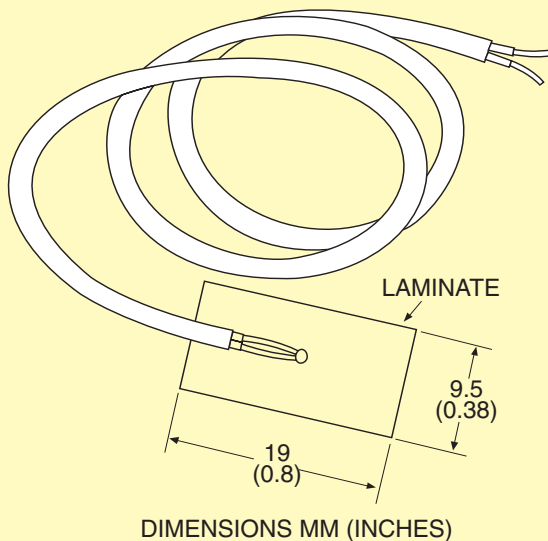
The 150 mm (6") uninsulated foil leads are of 0.05 mm (0.002") material and thus are fragile and should be handled with care during installation.

Note: It is imperative that the leads be electrically insulated from each other as well as being mechanically supported. This can be achieved, for example, by laying and brushing the leads into a layer of insulating cement or epoxy. Before doing this on electrically conductive surfaces, it is best to lay down and let dry, a thin layer of the cement to insure that the leads are insulated from the surface. Insulated thermocouple lead wire can be bonded to the foil leads by silver soldering, or resistance welding. Thirty gage, or smaller lead wire is suggested. An application instruction sheet accompanies each package of thermocouples.

STYLE 2



STYLE 3



Cementing of the junction and lead may be achieved by using OMEGA® CC high temperature cement for temperatures above 260°C (500°F); OMEGABOND® OB-101 or OB-200 epoxies for temperatures below 260°C (500°F). Please note more care is required to install the Style 2 than Style 1 or 3. It is suggested that at least one additional unit be ordered as some experimentation may be necessary to learn the technique of application for these thermocouples.

STYLE 3

Style 3 thermocouples are constructed of 30 gage 0.25 mm (0.010") diameter "Standard Limits of Error" wire. The welded bead thermocouple is embedded in a paper-thin laminate intended for surface applications by bonding with added adhesive. Color-coded, glass braid insulated 1 m (40") leads are supplied. Style 3 probes can be used over the range of -184 to 370°C (-310 to 698°F) depending on the adhesive or cement used, the time of exposure and the environment.



For OMEGA® cements and epoxies see Section F.



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