



Minimum bending  
radius: 3 x OD

# Heating Element

Single core without cold ends: 1 Nc and 1 Hc types

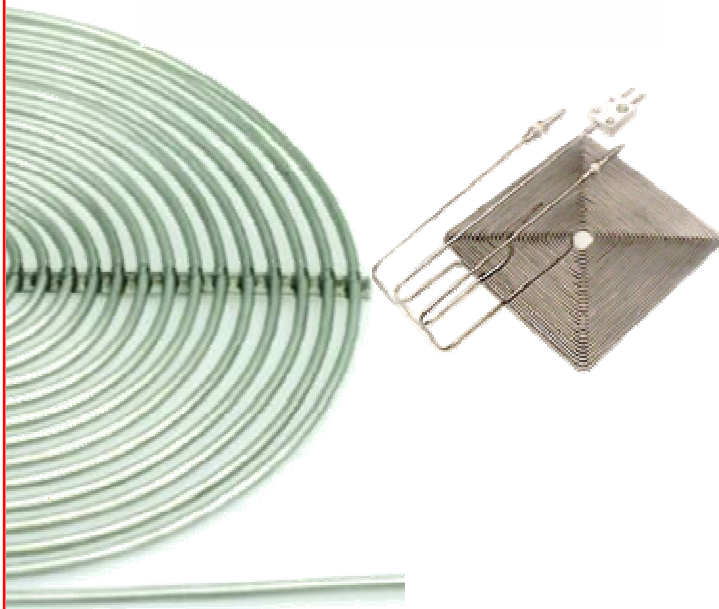
Heaters insulated from the sheath by highly compacted mineral powder.

Suitable for all kind of applications when the power density is low (<100 W/m) and the ends do not go through an insulated wall.

- Working temperature : from cryogenic temperatures up to 1000°C with Inconel® alloy sheath.
- Outer diameter range available from 0.5 up to 6 mm and length up to 150 m
- Compatible UHV, O<sub>2</sub>, pressure up to 2000 bars (2)
- Minimum bending radius:  
Stainless steel sheath: twice the outer diameter,  
Inconel® sheath: 3 times the outer diameter

## Materials

- **Core:** Nickel-chromium 80/20 over the whole length.
- **Insulant:** Highly compacted mineral powder.
- **Standard sheath:** stainless steel 304L - DIN 1.4306 (Code Ac) or Inconel® alloy 600 (I) according to the working temperature.
- **Sheath materials for special applications :**  
austenitic stainless steels:  
 . titanium stabilized (AISI 321, DIN 1.4541)  
 . niobium stabilised (AISI 347, DIN 1.4550)  
 . Molybdenum stabilized, low carbon content (AISI 316L, DIN 1.4404)  
 refractory stainless steel (AISI 310, DIN 1.4841)  
 Please consult us



## Standard types

Sheath \ O.D. in mm	Stainless steel 304L	Inconel® alloy 600	Stainless steel 304L	Inconel® alloy 600
	1 Nc Ac	1 Nc I	1 Hc Ac	1 Hc I
Line resistance in ohms/m at 20°C*				
0.5	50		-	
1.0	12.5		28	
1.5	5.5		12.4	
2.0	3.1		7	
2.5	1.98		4.5	
3.0	1.38		3.1	
4.0	0.77		1.75	

\*) tolerance: ± 8%  
Variation from 0 up to 1000°C

## Maximum voltage

The voltage is determined by calculation. However, it must be limited at 110V for diameters 1 and 1.5 mm and to 220/380 V for larger diameters.

When temperature exceeds 600°C, it is advisable to use an isolating transformer.



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### Swaging

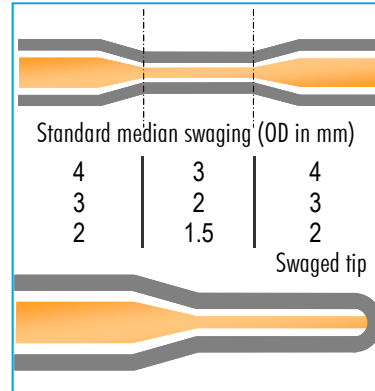
To increase the dissipated power without excessively heating up the connectors, a solution with swaging could be the answer.

**Median swaging** allows the power to be doubled. Numerous combinations of diameters are possible

**Swaged tip** allows multiplication of the power by a factor of 4. In this case, the end of the cable is normally grounded. The ratio between the diameters is 1 to 2.

This solution can be used when the power supply does not exceed 48 VDC or 24 VAC.

The purpose of the swaged tip is to double or to quadruple the power of the element.



### Connection to supply cable

The THERMOCOAX heating elements are designed to work in very diverse and severe conditions.

Our connection range covers this diversity and the specific requirements of any applications.

The most common used connectors are issued from the plastic range where the maximum working temperature is 200°C and the metal/ceramic range where temperature can reach 600°C and operate in vacuum down to 10<sup>-9</sup> bars.

More details are given in data sheet **E185**.



### Seal glands and bushings

Any form of brazing or welding of a heating element through a wall requires some skill, and to facilitate the mounting, a range of small seal-glands have been developed and adopted for the standard THERMOCOAX dimensions.

More details are given in data sheet **E186**.



THERMOLOK seal gland



Bushing

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More information in the brochure  
« How to choose your heating element »