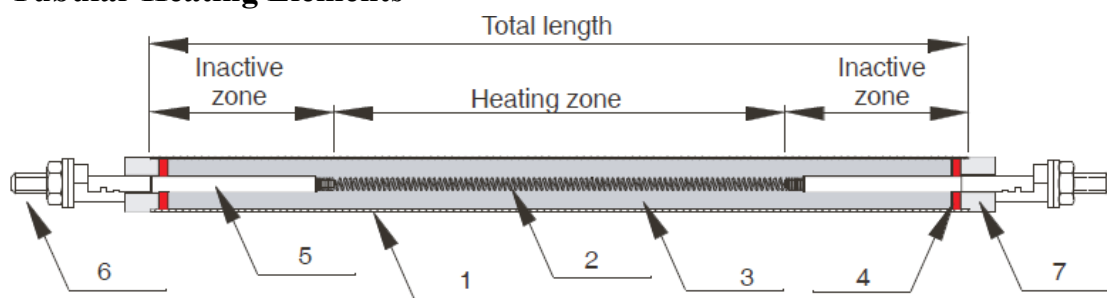




Manufacturer of Electric Heating Elements and Controls

Tubular Heating Elements



1.- Tubular sheath

It changes based on the material to heat and the working temperature. Contact us with our selection of the most standard materials sheaths for your application required also with the different diameter options and tube lengths.

2.- Resistive coil

Resistive wire of Nickel Chrome alloy or other metals. The alloy changes according to the type of application of the heating element. The resistive coil can be made with one or two wires.
This element is the heat source.

3.- Granular insulating

Magnesium oxide electrofused with the adequate characteristics to our constructive standard. When the magnesium oxide is compacted by compression it acquires a good thermal conductivity as well as ensuring correct dielectric strength.

4.- Seal

It protects against humidity penetrating the heating element. Two types of seal according to our constructive standard :

- Airtight seal.
- Extra airtight high temperature seal.

5.- Terminal

Terminal in stainless steel AISI 304.

The length of internal terminal determines the cold zone of the heating element.

6.- Connection terminal

Different types of terminal to connect to electricity supply.

7.- Insulation terminal

Ceramic wall hole to ensure the dielectric strength between tubular sheath and terminal.

Construction Diameter:	Diameter 8.2mm Stainless steel 304, 316L, 321 & Incoloy sheath
Tube Material:	Stainless steel 304, 316L, 321 & Incoloy available for your requirements Fully annealed for bending purposes
Diameter Tolerance:	Tolerance +.010 -.010"
Use of Alloys:	Suitable for heater tube AISI 304 in water or humid environment max. temperature up to 170 ⁰ C. In air max. 220 ⁰ C
Termination:	M3.5 or M4 stainless steel screw & nuts
Watt Density:	Tube watt density of 30 watts sq. in.- suitable for many uses
Custom:	Custom configurations, lengths, watts, volts available

120 Volt	240 Volt	Overall Tube Length		Heated Length		Approx. Wt.	
Catalogue No.	Catalogue No.	inches.	mm	Inches.	mm	Watts	(kg)
SYN-101A	SYN-101B	20.5	520	16.5	420	500	0.16
SYN-102A	SYN-102B	28.7	730	24.8	630	750	0.25
SYN-103A	SYN-103B	37	940	33.0	840	1000	0.32
SYN-104A	SYN-104B	45.5	1155	41.5	1015	1250	0.38
SYN-105A	SYN-105B	53.4	1355	49.4	1255	1500	0.46
SYN-106A	SYN-106B	61.4	1560	57.5	1460	1750	0.51
SYN-107A	SYN-107B	70.3	1785	66.3	1685	2000	0.71
SYN-108A	SYN-108B	86.8	2205	82.8	2105	2500	0.81
SYN-109A	SYN-109B	103.3	2625	99.4	2525	3000	0.91
SYN-110A	SYN-110B	136.8	3476	132.9	3376	4000	1.1

Construction Diameter:	Diameter 11.2mm Stainless steel 304, 316L, 321 & Incoloy sheath
Tube Material:	Stainless steel 304, 316L, 321 & Incoloy available for your requirements Fully annealed for bending purposes
Diameter Tolerance:	Tolerance +.010 -.010"
Temperature Limits:	Suitable for heater tube AISI 304 in water or humid environment max. temperature up to 170 ⁰ C. In air max. 220 ⁰ C

Termination: M4 or M5 stainless steel screw & nuts
Watt Tube watt density of 30 watts sq. in.- suitable for many
Density: uses
Custom: Custom configurations, lengths, watts, volts available
Suitable for heater tube AISI 316L in water environment
Use of Alloys: max. temperature up to 200⁰C. service life if held for
long periods in max. 200-220⁰C
Suitable for heater tube Alloy 840 in air for max.
temperature up to 350⁰C.

120 Volt	240 Volt	Overall Tube Length		Heated Length		Approx. Wt.	
Catalogue No.	Catalogue No.	inches.	mm	Inches.	mm	Watts	(kg)
SYN-201A	SYN-201B	20.5	410	16.1	310	500	0.23
SYN-202A	SYN-202B	22.0	560	18.1	460	750	0.32
SYN-203A	SYN-203B	28.1	715	24.2	615	1000	0.41
SYN-204A	SYN-204B	34.2	870	30.3	770	1250	0.46
SYN-205A	SYN-205B	53.4	1020	40.1	920	1500	0.52
SYN-206A	SYN-206B	46.4	1180	42.5	1080	1750	0.59
SYN-207A	SYN-207B	52.3	1330	48.4	1230	2000	0.67
SYN-208A	SYN-208B	64.1	1630	60.2	1530	2500	0.86
SYN-209A	SYN-209B	76.9	1955	73.0	1855	3000	1.1
SYN-210A	SYN-210B	101.5	2580	97.6	2480	4000	1.4
SYN-211A	SYN-211B	125.9	3200	122.0	3100	5000	1.8
SYN-212A	SYN-212B	149.6	3800	145.6	3700	6000	2.3

Various kind of tubular heating elements having different technical specifications are being used in electrical household appliances. In this regard having to much diversity, our firm carries out the production of tubular heating elements in requested technical specifications in line with the customer's demand and also performs customer special tubular heating element design and development in case it is requested.

Production of any tubular heating element performed by us in order to be used in Air, Water, Oil, Steam, Ice and Acid Environments composing of AISI 304L, AISI 321, AISI 316L, Incoloy 800 and Incoloy 840 Tube Material in 8.2 mm or 11.2 mm Tube Diameter with 0.70mm Tube Wall Thickness in desired Power and Voltage Levels, desired Electrical Connection Type, and desired Physical Form.

In our website you can see only a part of our production for introductory purpose only. If you are interested in those similar to these products or a different type your may not find here, please contact us for feasibility analysis.



Synheat assures in its heating elements manufacturing process the maintenance of the standards of design applied. For our standardised products, the following **systematic** controls are carried out among others

- **Power tolerance accuracy** : +5% -10%
- **Dielectric strength**: 500 V - 1 min In event of a **basic insulation** in normal use with a **safety extra low voltage**
1000 V - 1 min for any **basic insulation**
1500 V - 1 min for a **supplementary insulation**
2000 V - 1 min for a **reinforced insulation**
- **Leakage current**: 0,25 mA

- **Dimensions:** General according industrial standard.

In products of special manufacture, the control parameters are personalised from the design according to the needs of each case.

In compliance with these chapters, the measures required by the norm are carried out under normal functioning temperature. We carries out measures at the highest temperature admitted by each product. One needs to take into consideration that if a sufficient extraction of heat of the resistance isn't guaranteed, it can exceed the maximum temperature and melt or deteriorate. To make sure that the element, once installed on the final heater, keeps on fulfilling the norm you will only need to measure the temperatures of the seal and sheath in all the situations likely to occur, whether during normal use, abnormal functioning or during overheating, and check that it remains within the limits of utilisation of the product detailed below. It is specially advised to study the functioning without a product to heat, for example without ventilation or without being immersed in water, depending on the products. It necessary take the adequate measures in order to avoid the resistance functioning in such conditions and inform the user of the precautions to occur.

The object of our **constructive standard** is to define a standard construction of heating elements depending on the sheath material, its maximum permissible temperature and the type of seal. These three characteristics, and above all the sheath material, should always be chosen bearing in mind the medium in which the element is to work.

Sheath Materials

- **AISI 304L:** Austenitic stainless steel. It presents optimum ability for soldering and good resistance to corrosion at room temperature. If it is kept for some time within the critical temperature interval of 170 to 200°C, an inter-crystalline precipitation of chrome carbide may occur with the consequential inter-granular corrosion.
- **AISI 321:** A specific amount of titanium is added to the components of the AISI304 with the effect of preventing formation of chrome carbide and, thus, preventing the phenomenon of inter-granular corrosion, making this material particularly suitable for use over prolonged periods of time at critical temperature interval. It has good resistance to formation of cinders up to 250°C
- **AISI 316L:** It contains an addition of 2÷3% molybdenum that gives it greater resistance to corrosion by pitting and better performance than the previous steels as far as low tension corrosion is concerned. Carbon content lower than 0.03% that makes it difficult for chrome carbide to form, thus increasing its resistance to inter-granular corrosion.
- **INCOLOY® 840:** Refractory stainless steel with high nickel and chrome content. Good resistance to formation of cinders up to 350°C. It presents high resistance to tension and good resistance to corrosion at high temperatures.