

FURNATEMP® HEATING MODULES (vacuum formed ceramic fiber Board)



FURNATEMP METATEK INDIA PRIVATE LIMITED

302/3-5, Seetharam Industrial Estate, V.P.Road,
Jalahalli Village, Bangalore-560013, Karnataka, India.
GSTIN: 29AAFCF5214K1ZH, CIN: U28150KA2023PTC175221

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The FURNATEMP - blocks are vacuum-formed ceramic fiber modules. The blocks have dense surface, the hot face being harder than the cold face and the core of the material being relatively loose fibers. This gives rigidity of the blocks to carry its weight, elements supporting system and the heating elements over long periods of time and severe thermal cycling.

FURNATEMP FLAT HEATING MODULES

FURNATEMP CYLINDRICAL HEATING MODULES

FURNATEMP HEATING MODULES WITH STRIP

FURNATEMP FLAT MEANDER MODULES

FURNATEMP CYLINDRICAL MEANDER MODULES

FURNATEMP FLAT EMBEDDED MODULES

FURNATEMP CYLINDRICAL EMBEDDED MODULES

FURNATEMP TUBE MODULES

FURNATEMP DIFFERENT SHAPES

FIXING ARRANGEMENT OF BACKUP INSULATION & FURNATEMP MODULE

The furnace will be lined first with ceramic fiber back up insulation comprising of 64, 96 and 128 grade of ceramic fiber which shall be installed with the help of anchor & washer. The hot face insulation will be with FURNATEMP-modules of 100/125mm standard thickness. The total insulation thickness shall be 250 to 350mm.

FURNATEMP blocks are very easily mounted to the furnace shell with the help of S.S.316 studs & bolts. The mounting assemblies in the FURNATEMP - modules are to a depth of 25 - 30 mm from the hot face, and will be covered with fiber plug, there by not exposing the stud to the element temperatures.



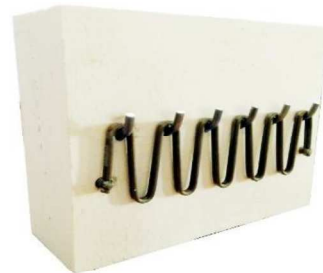
FURNATEMP FLAT HEATING MODULES



FURNATEMP Flat Heating Modules are used in the Furnace having square or Rectangular shape where this Modules can be fitted.

For example: Box type, Bogie Hearth, Fixed Hearth, Continuous Furnaces.

Specially designed heater supporting/hanging hooks are embedded to the board. **ROB with free-radiating heating elements** provide maximum radiation to the furnace hot chamber.



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FURNATEMP CYLINDRICAL HEATING MODULES



FURNATEMP Cylindrical Heating Modules are used in the Furnace having round or circular shape this Modules can be fitted.

For example: Bell type Round furnace, GCF round Furnace, Tubular Furnaces, Round type split Furnaces.

Specially designed heater supporting/hanging hooks are embedded to the board. **ROB with free-radiating heating elements** provide maximum radiation to the furnace hot chamber.

FURNATEMP HEATING MODULES WITH SRTIP



Specially designed heater supporting/hanging hooks are embedded to the board. **SOB (Strip Over Bend) with free-radiating heating elements** provide maximum radiation to the furnace hot chamber.

FURNATEMP FLAT MEANDER MODULES

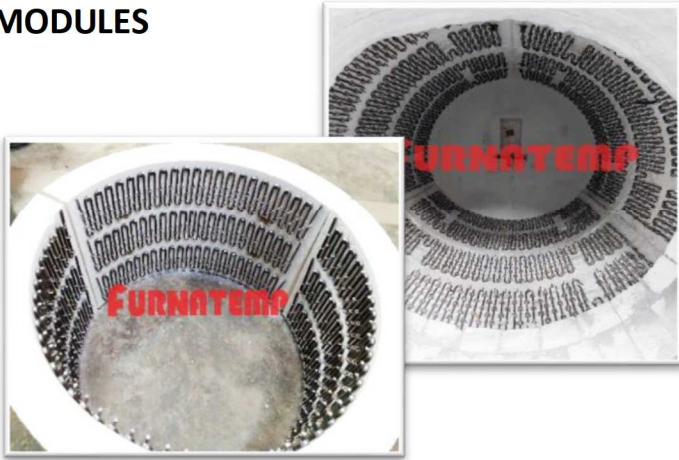


FURNATEMP Flat Meander Modules are used in the Furnace having square or Rectangular shape where this Modules can be fitted.

For example: Box type Furnace Roof & Door

Specially designed U type Meander hooks are embedded to the board along with Element. **ROB with free-radiating heating elements** provide maximum radiation to the furnace hot chamber.

FURNATEMP CYLINDRICAL MEANDER MODULES



FURNATEMP Cylindrical Meander Modules are used in Horizontal Round/Cylindrical Furnaces.

For example: Round type Horizontal split , Rotating & Tilting Furnaces

Specially designed U type Meander hooks are embedded to the board along with Element. **ROB with free-radiating heating elements** provide maximum radiation to the furnace hot chamber.

FURNATEMP FLAT EMBEDDED MODULES



FURNATEMP Flat Embedded Modules are used in the Furnace having square or Rectangular shape where this Modules can be fitted.

For example: Rotating/Rotary & Tilting Furnaces

FURNATEMP CYLINDRICAL EMBEDDED MODULES



FURNATEMP Cylindrical Embedded Modules are used in the Furnace having round or circular shape where this Modules can be fitted

For example: Rotating/Rotary & Tilting Furnaces

FURNATEMP TUBE MODULES



FURNATEMP Tube Modules are specially designed & Manufactured single piece Module. Maximum inner Diameter of the Module is 1000mm. **ROB with free-radiating heating elements** provide maximum radiation to the furnace hot chamber. Due to this special single piece design, Heat loss & pressure loss through the wall is minimized.

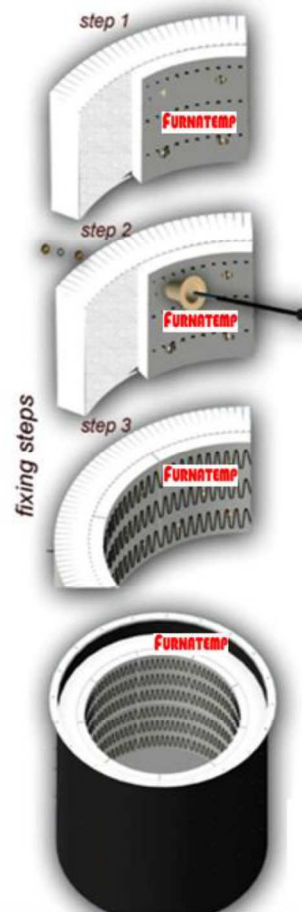
For example: Aluminum LPDC Furnace, All Electrical Heat Treatment round type Furnaces.

FURNATEMP DIFFERENT SHAPES



TECHNICAL DATA FOR FURNATEMP CERAMIC MODULES

Parameter	TL-MS1000	TL-MS1300
Classification temp (°C)	1260	1400
Max- Continuous working temperature (°C)	1150	1300
Density Range (Kg/m ³) Appox	200-230	200-230
Linear Shrinkage (%) (24 hr Continuous working temperature)	2.5<	3.0<
Composition (%)		
Al ₂ O ₃	46	37
SiO ₂	54	50
Z	N	13
Thermal Conductivity (W/mk) **		
At 200°C	0.07	0.07
At 600°C	0.14	0.14
At 1000°C	0.28	0.29
At 1200°C	0.41	0.39
At 1300°C	0.49	0.46



FURNATEMP is a result of continuous R & D endeavor to provide quality heating systems with excellent stability and thermal insulating properties. We are a team of innovative, committed, experienced Engineers and executive team providing solutions in the heating technology space.

FURNATEMP is an established brand with numerous successful installations with a large list of customers both OEM end users who have empowered us to grow from strength to strength. Our products are being used in nearly all types of Industrial furnaces to a temperature upto 1300 °C.

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FURNATEMP METALIC HEATING ELEMENT DATA

	Fe-Cr-Al Heating Element				Ni-Cr Heating Element	
	FURNA -T1		FURNA-TPM		FURNA-NiCr80	
Standard chemical Components (%)	Al	6.0	Al	6.0	Cr	19-21
	Cr	23	Cr	23	Fe	1 or less
	Fe	Remaining	Fe	Remaining	Ni	77 or more
	Other elements in small quantity					
Max. duty temp. of Heating Elements (°C)	1400		1420		1100	
Electric resistivity 20 °C (μΩ-m)	1.45 ± 5%		1.45 ± 5%		1.08 ± 5%	
Expansion from thermal Factor (for various temperature range)	15.1×10 ⁻⁶ [20°C - 1000°C (°C ⁻¹)]		14.8×10 ⁻⁶ [20°C - 1000°C (°C ⁻¹)]		17.6×10 ⁻⁶ [20°C - 1000°C (°C ⁻¹)]	
			15.9×10 ⁻⁶ [20°C - 1400°C (°C ⁻¹)]			
Yield strength MPa	300-600		300-600		200-600	
Hardness (Hv)	200-240		200-240		150-190	
Melting Point (°C)	1500		1500		1400	
Electric resistance temperature coefficient	33×10 ⁻⁶		15×10 ⁻⁶		58×10 ⁻⁶	
Increase from Oxidation 1,200°C (mg/cm² h)	0.05		0.05		0.25 or less	
Tensile strength	MPa		650-900		700-900	
	(kgf/mm²)		(65-90)		(70-90)	
Specific Gravity	7.1		7.1		8.4	
Elongation (%)	15-25		15-25		20 or more	
Emissivity - fully oxidized material	0.70		0.70		0.88	
Max operating temperature in air (°C)	1250		1250		1100	
Magnetic Properties	Magnetic		Magnetic		Non- Magnetic	
Recommended Surface loading (W/cm²) (for various temperature range)	Max. 5 W/cm² [100- 500 °C]		Max. 6 W/cm² [100- 500 °C]		Max. 5 W/cm² [100- 500 °C]	
	Max. 3 W/cm² [500- 800 °C]		Max. 3.5 W/cm² [500- 800 °C]		Max. 3 W/cm² [500- 800 °C]	
	Max. 2.5 W/cm² [800- 1050 °C]		Max. 3 W/cm² [800- 1050 °C]		Max. 2 W/cm² [800- 1100 °C]	
	Max. 1.5 W/cm² [1050- 1250 °C]		Max. 2 W/cm² [1050- 1250 °C]			

Temperature factor of resistivity of **FURNA-T1 & FURNA -TPM**

Multiply the resistance at the normal temperature by the coefficient [Ct] shown below to obtain the resistance at working temperatures.

Temp. °C	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
Ct	1.00	1.00	1.00	1.01	1.01	1.02	1.02	1.03	1.03	1.04	1.04	1.04	1.04	1.04

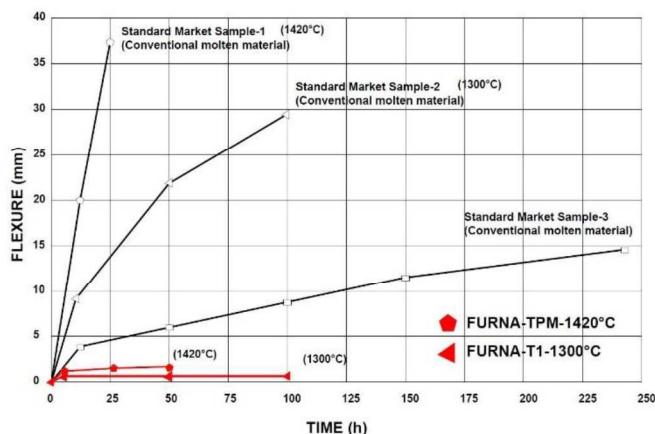
Specific heat capacity of **FURNA-T1 & FURNA -TPM**

Temp °C	20	200	400	600	800	1000	1200	1400
kJ kg ⁻¹ K ⁻¹	0.46	0.56	0.63	0.75	0.71	0.72	0.74	0.80

Thermal conductivity of **FURNA-T1 & FURNA -TPM**

Temp °C	50	600	800	1000	1200	1400
W m ⁻¹ K ⁻¹	11	20	22	26	27	35

High temperature Deformation resistance graph for different Temperature & Grade



FURNATEMP

ISO 9001-2015 COMPANY

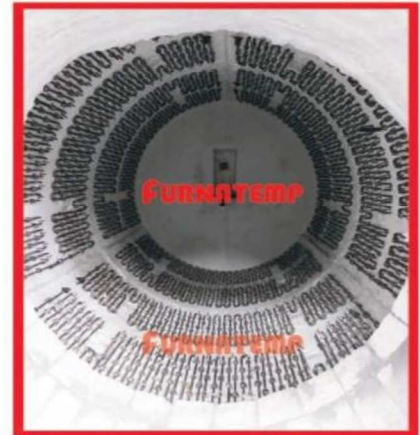
The Heat with Solutions

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Vacuum formed Ceramic Side Panel



Hair Pin / Meander Type Vacuum formed Ceramic Panel



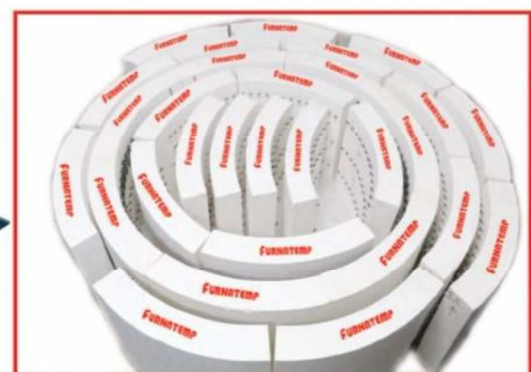
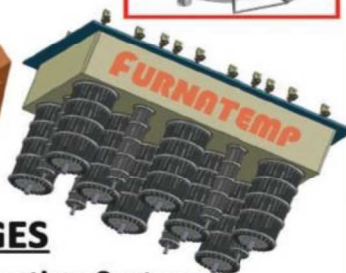
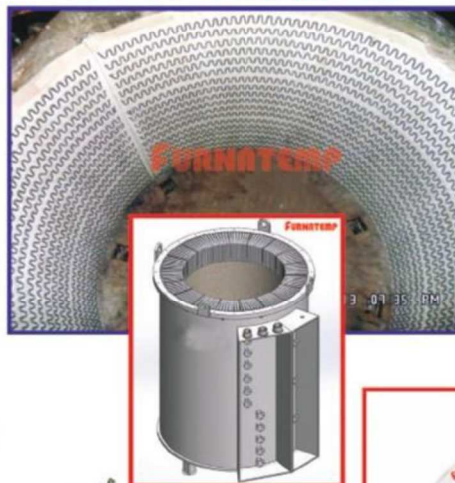
FURNATEMP

1350 KW Furnace

Strip Over Bend (SOB) Heating Element



Pit Furnace Installation



OUR PRODUCT RANGES

Energy Saving Modular Heating Systems
Vacuum Formed Ceramic Fibre Modules
Bundle Rod Heaters, Immersion Heaters
Porcupine Heating Cassettes
Silicon Carbide Heaters
Industrial Furnaces & Ovens
All types of Heating Elements



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Furnatemp Catalogues

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