

- Laboratory Furnaces
- Industrial Furnaces
- Ovens
- Microwave Furnaces

# LABORATORY FURNACES

**MF** Tmax 500°C - 1200°C

## MUFFLE FURNACE

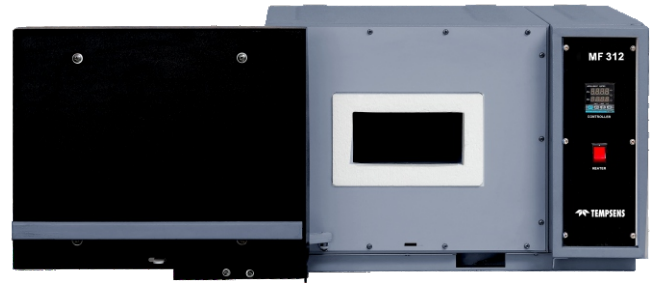
MF laboratory furnace range of general purpose muffle furnace is supplied in four sizes, each available with max operating temperature 500°C to 1200°C.

### Standard Features

- Maximum operating temperature. 500°C to 1200°C
- 1.5, 5, 7.9, 18.5 liter chamber volumes.
- Side way sliding door keeps heated surface away from the users.
- Door limit switch for making heating system off while door in open condition.
- Energy Efficient with reduce heat loss by using advanced insulation refractory.
- Safety controller for over heat protection.
- Thermocouple with NABL Certificate.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Model	Liters	Inside Dimensions (mm) (WxDxH)	kW	Heating Element
MF 312	5	175 X 300 X 95	2.8	Kanthal A1
MF 412	7.9	175 X 300 X150	3.2	Kanthal A1
MF 512	18.5	200 X 400 X 230	8.0	Kanthal A1
MF 112	1.5	100 X 150 X 100	2.0	Kanthal A1

**HTF** Tmax 1400°C / 1600°C / 1800°C

## HIGH TEMPERATURE FURNACE

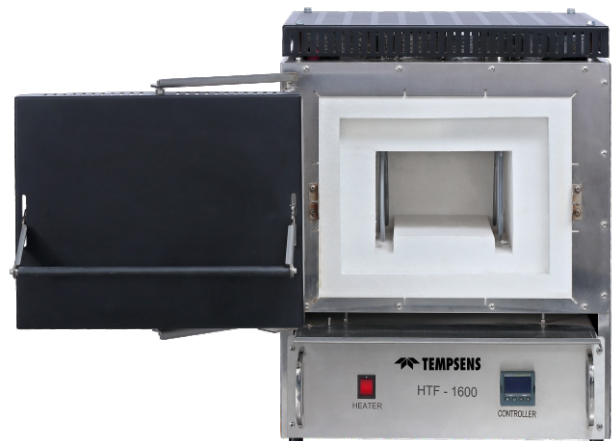
HTF high temperature chamber furnace are classified into the three range of 1400°C, 1600°C and 1800°C models.

### Standard Features

- 1400°C, 1600°C and 1800°C max. operating temperature.
- From 4 to 6.9 liters capacities.
- Advance refractory interior, used in combination with energy efficient low thermal mass insulation.
- Door limit switch for making heating system off while door in open condition.
- Power control through SSR or Thyristor unit.
- Safety controller for over heat projection.
- Thermocouple with NABL certificate.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Model	Liters	Inside Dimensions (mm) (WxDxH)	kW	Heating Element
HTF 1400	6.9	170 X 270 X 150	3.5	Silicon Carbide
HTF 1600	6.9	170 X 270 X 150	3.5	MoSi <sub>2</sub>
HTF 1600G	12.0	175 X 340 X 200	5.0	MoSi <sub>2</sub> (with vacuum)
HTF 1800	4.0	150 X 240 X 110	4.0	MoSi <sub>2</sub>
HTF 1800G	9.0	150 X 330 X 180	5.0	MoSi <sub>2</sub> (with vacuum)

# LABORATORY FURNACES

**TF** Tmax 1200°C/1400°C/1600°C/1800°C

## TUBULAR FURNACE

The tubular furnace is available with max operating temperature up to 1800°C.

### Standard Features

- Maximum operating temperature 1200°C/ 1400°C /1600°C /1800°C
- High Alumina/Quartz ceramic tubes
- Energy efficient design with reduce heat loss by using advanced insulation refractory.
- Multi Zone temperature control for better uniformity.
- Safety controller for over heat protection.
- Thermocouple with NABL certificate.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Model	Inside Dimensions (mm)	kW	Heating Element
TF 1200	50 X200 & 80 X250	2.8	Kanthal A1
TF 1400	50 X200 & 80 X250	3.5	Silicon Carbide
TF 1600	50 X200 & 80 X250	4.0	MoSi <sub>2</sub>
TF 1800	50 X200 & 80 X250	4.0	MoSi <sub>2</sub>

**BLF** Tmax 1200°C/1400°C/1600°C/1800°C

## BOTTOM LOADING FURNACE

Bottom loading furnaces are designed for uniform thermal distribution inside the chamber, easy loading and unloading of sample with help of lifting arrangement.

### Standard Features

- 1200°C/1400°C/1600°C/1800°C maximum operating temperature
- Bottom lifting arrangement : Bottom lifting plate fitted with DC motor ensure smooth lifting & lowering.
- Energy efficient design with reduce heat loss by advanced insulation refractory..
- Safety controller for over heat protection.
- Thermocouple with NABL certificate.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Model	Liters	Inside Dimensions (mm)	kW	Heating Element
BLF 1200	1.8	120 X120 X 120	2.8	Kanthal A1
BLF 1500	1.8	120 X120 X 120	3.0	Silicon Carbide
BLF 1800	1.8	120 X120 X 120	3.0	MoSi <sub>2</sub>



# INDUSTRIAL FURNACES CONTINUOUS / BATCH TYPE

**BF/CF** Tmax 1200°C/1400°C/1600°C/1800°C

## BOX / CHAMBER FURNACE

### Standard Features

- Maximum Temperature : 1200°C/1400°C/1600°C/1800°C
- Temperature Control : Microprocessor Based PID Controller
- Insulation : Ultra High Alumina Low Thermal Mass Insulation
- Thermocouple with NABL certification.
- Safety Controller : For Over Heat Protection
- Heating Element : Kanthal APM / SiC / MoSi<sub>2</sub>
- Power control through thyristor or SSR unit.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



**BHF** Tmax 1200°C/1400°C/1600°C

## BOGIE HEARTH FURNACE

### Standard Features

- Max. temperature : 1200°C/1400°C/1600°C
- Shuttles within the furnace
- Temperature Controller : Microprocessor Based PID Temperature Controller
- Heating Element: Kanthal APM/Silicon Carbide/MoSi<sub>2</sub>
- Insulation : High insulating refractory light bricks/Ceramic Fibre Boards.
- Thermocouple with NABL certificate.
- Furnace close : Swivel door, hinged to the left, Vertical door
- Shuttle guide : Rails in the furnace
- Power control through thyristor or SSR unit.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



# INDUSTRIAL FURNACES CONTINUOUS / BATCH TYPE

**BLF**

**Tmax 1200°C/1400°C/1600°C**

## BOTTOM LOADING FURNACE

### Standard Features

- Maximum Temperature : 1200°C/1400°C/1600°C
- Heating Element : SIC, Kanthal APM, MoSi<sub>2</sub> heating element
- Insulation : Multiple layers of high temperature fiber insulation boards ensure minimum heat loss.
- Bottom lifting arrangement : Bottom lifting plate fitted with DC motor ensures smooth lifting & lowering.
- Power control through thyristor or SSR unit.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Application - Ceramic Sintering

**AF**

**Tmax 1100°C**

## ANNEALING FURNACE

### Standard Features

- Maximum Temperature : 1100°C
- Application : Wire Annealing, Tube Annealing Furnace.
- Feeding Zone : As per requirement of customer
- Cooling Zone : As per requirement of customer
- Temperature Controller : Microprocessor Based Programmable PID Temperature Controller
- Heating Element : Kanthal A1/APM wire
- Power control through thyristor or SSR unit.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



Wire Annealing



Tube Annealing

# INDUSTRIAL FURNACES CONTINUOUS / BATCH TYPE

**PF** Tmax 1100°C

## PIT TYPE ELECTRIC FURNACE

### Standard Features

- Maximum temperature : 1100°C
- Heating Element : Kanthal AI/APM
- Insulation: Ceramic Wool/Refractory Bricks
- Control panel: Separate control panel with ammeter, voltmeter, energy meter
- Door arrangement: Separate door lid
- Water cooling on door to protect the gasket
- Power control through thyristor or SSR unit.

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement



**CMF** Tmax 250°C -1200°C

## ELECTRIC CONVEYER MESH-BELT FURNACE

Tempens offer mesh belt oven/furnace for various heat treatment and process applications.

### Standard Features

- Continuous heating purpose of large quantities of goods. Material to be heated is kept on Conveyor belt which continuously rotate through the furnace.
- Maximum temperature (ambient to 1150°C). The furnace is designed to operate with hydrogen atmosphere, cracked ammonia atmosphere, nitrogen and argon atmosphere.
- Energy efficient, Improve productivity and excellent repeatable heat treatment.
- A variable speed drive unit with widely adjustable belt speeds allows the treatment of different thicknesses of materials and grades with varying temperature-time requirements.
- In the cooling section, material will be indirectly air cooled, water cooled or forced-jet cooled depending upon the process requirement.

It houses variable speed drive, PID controllers and thyristor power controller, data logger, dew point meter and oxygen analyser and Gas flow measurement systems are provided to ensure atmosphere stability.



Brazing Furnace



Conveyer Oven

### Applications

- Brazing of metal contact under protective atmosphere
- Annealing of wire, tube etc under protective atmosphere
- Sleeve shrinkage at low temperature
- Hardening, Stress Relieving, Sintering, drying etc.



# LABORATORY AND INDUSTRIAL OVENS

**LO/IO** Tmax- Ambient to 500°C

## LABORATORY / INDUSTRIAL OVENS

Tempens, Laboratory and Industrial ovens Series offered a range of precision electric ovens. They are designed for low temperature thermal treatment such as drying, heating and thermal testing in an air-flow assisted environment.

### Standard Features

- Capacity – 4 Liter to 14000 Liters
- Temperature uniformity throughout the chamber with Forced air convection
- Temperature range up to 500°C
- Digital PID temperature controller
- Safety controller for over-temperature protection
- Tubular Heaters/Nichrome are used as a heating element inside the oven for better uniformity



Four Pocket Oven

### Optional Features

- Provision for gas/vacuum purging application (Ar, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO etc.)
- Programmable PID Controller with RS-232/RS-485/Ethernet & Data Logging Software
- Available in standard or as per customer size requirement

# MICROWAVE FURNACE

**MWF** Tmax- 1200°C

Microwave furnaces represent a system that combines free radiating heating elements with a microwaves field. Key advantages include greater energy efficiency, faster sample heating, more uniform heating and improved material properties

### Standard Features

- Heating system : Microwave by magnetron
- Power rating : 2.45 Ghz with 900 W each x 2 numbers
- Operation : Single phase / AC
- Power output : Two magnetrons with total 1.8 KW
- Maximum temperature : 1200°C (Max)
- Normal Working temps : 1100°C
- Rate of heating : Programmable
- Temperature control : Eurotherm Micro processor based PID programmer cum Digital Temperature Indicator



## APPLICATION OF FURNACES

- ✓ Conveyorized oven for sleeve shrinkage in automobiles.
- ✓ Chamber oven for gas analyzer oven.
- ✓ Four pocket oven for class 10000 clean environment.
- ✓ Oven for drying of MgO beads.
- ✓ High temperature chamber furnace for metal sintering.
- ✓ Oven for pre heat of die cast in aerospace.
- ✓ High temperature bottom loading oxidation furnace for ceramic / metal properties.
- ✓ High temperature test facility (2500°C) for UTM machine
- ✓ Pit furnace for annealing of thermocouple alloys.
- ✓ Pipe annealing for MI cable annealing.
- ✓ Wire annealing furnace for thermocouple alloy wire annealing.
- ✓ Conveyor mesh belt annealing furnace for tubular heater annealing.
- ✓ Conveyor mesh belt annealing with hydrogen environment furnace for brazing of copper contacts.
- ✓ Carbonization furnace for carbonization of coconut shell.
- ✓ Ashing furnace for volatile matters removal at high temperature.
- ✓ Vacuum furnace for gold / mercury evaporation.
- ✓ Chamber furnace for gold annealing.
- ✓ Bogie / Chamber Oven for Heat Treatment of steel.



# THERMAL & CABLE SOLUTIONS



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