



Zircar Zirconia, Inc.
"Manufacturer of the original ZIRCAR products" ©

1700 CELSIUS LAB FURNACE TYPE HOT SPOT 110



The Hot Spot 110 is easy to use - Plug and Play

FEATURES

- **Two Models: 110 Volts or 220 Volts**
- **In- Stock Standard Item**
- **Programmable Temperature Controller Holds 2 Programs of up to 8 Steps Each**
- **Space Saving Compact Design**
- **Separate Overtemperature Protection**
- **Low Energy Consumption**
- **Kanthal 1800 Grade Heating Elements**
- **Pre-fired and Pre-programmed**
- **Optional Datalogger Offered**
- **Unique Combination of Zircar Insulations**
- **Fan Cooled Shell & Door Safety Interlock**

We always wanted to buy one of these, but nobody made them. Now for the first time, a 1700°C Lab Furnace that can simply be plugged into a standard 110 Volt, 20 Amp outlet without the need for either a 220 V supply or an electrician. This breakthrough front-loading box furnace is made possible by a unique combination of zirconia and alumina insulation, which exploits the hot strength of alumina and low thermal conductivity of zirconia. The zirconia insulation incorporated in the Hot Spot 110 has the lowest thermal conductivity of any commercially available high temperature insulation. The alumina insulation is a newly developed, state of the art, material with exceptional hot strength. The furnace insulation package is a four layer, graded design that ensures the proper heat flow through each layer for maximum life.

This compact unit easily fits just about anywhere in the laboratory and does not require any special setting surface. The standard cooling fan feature keeps the furnace shell cool enough to protect the user from any potential burn, even at 1700°C.

Our 220 Volt model is supplied with a power supply cord suitable for local configurations.

The furnace is available with an optional datalogger to link the furnace to your computer and record the temperature history in real time and later save the firing curve as an Excel file.

The furnace has a two year warranty for all components except the heating elements.

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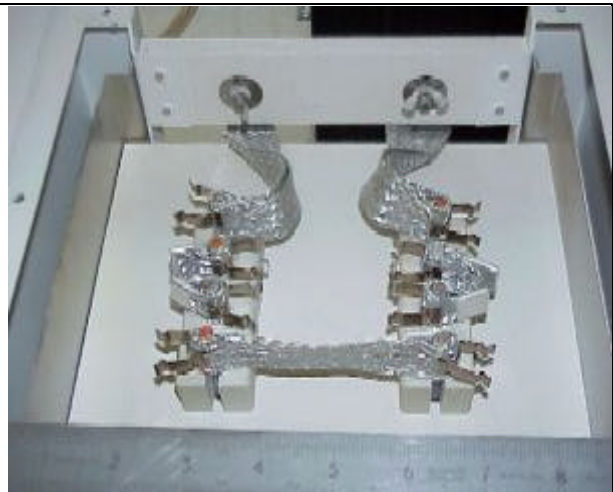
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The outer shell of the HOT SPOT 110 is powder coated heavy gauge steel while the inner shell and face plate are stainless steel.



The furnace is heated by four Kanthal brand 1800 Celsius grade molybdenum disilicide heating elements, which are connected to the power supply by oversized aluminum braids to assure reliable service. The furnace comes standard with a dual element type B thermocouple. One element is connected to the programmable temperature controller, while the other goes to the overtemperature controller. The furnace is available with an optional extra thermocouple for direct connection to a remote chart recorder.



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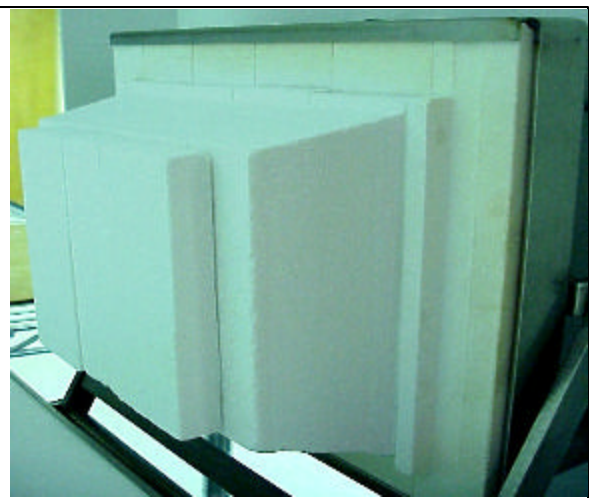
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A shelf system which can double the firing capacity for small parts is available and shown below left. An optional sintering tray is also offered, shown below right with its lid. Additional options are listed on page 6.



The door hinges upward on an articulating mechanism that assures correct door seal alignment minimizing heat loss around the door seal and saving table space. An automatic latch holds the door open while loading and unloading. A door safety switch disengages power to the elements when the door is open to prevent accidental contact with live elements. The door remains cool because it is constructed without dense ceramic reinforcements, which would draw heat from the hot face out to the shell. Our door insulation design isolates the hot face insulation from the cold face insulation.



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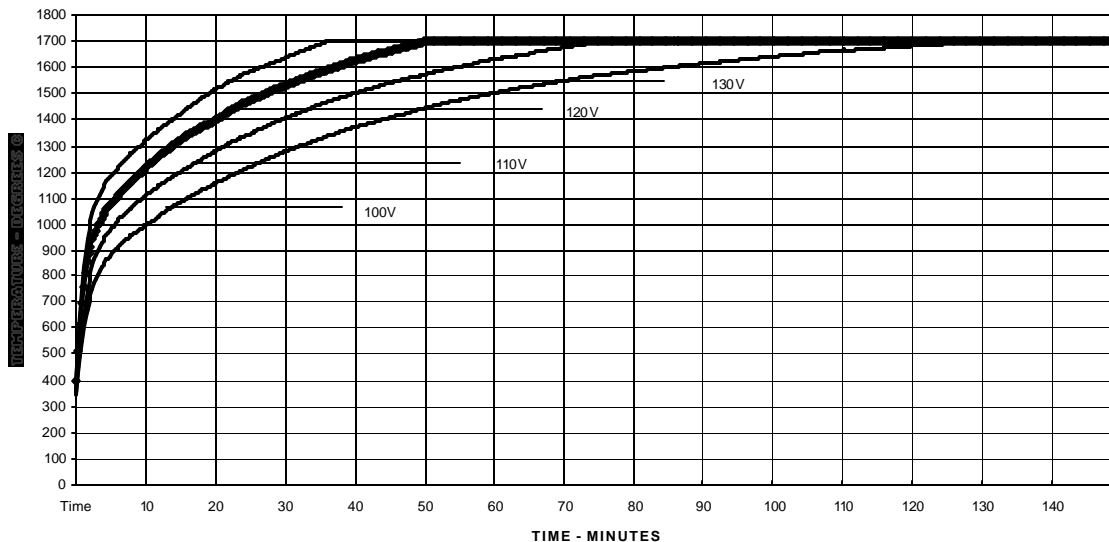
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SPECIFICATIONS

Maximum Continuous Use Temperature	1700°C
Chamber Size	5" wide X 4" high X 5" deep
Working Size (Ware Space)	3.5" wide X 4" high X 3.5" deep
Overall Size (Door Closed)	20" wide X 16.5" deep X 16" high
Overall Size (Door Open)	20" wide X 19" deep X 27" high
Weight (Standard Model)	108 pounds
Thermocouple	Dual Element Type B (Pt6%Rh vs. Pt30%Rh)
Molybdenum Disilicide Heating Elements	Four Kanthal 1800 grade , 3mm/6mm diameters
Power Supply Requirement for 110 Volt Model	110V,20A, 60Hz standard US duplex outlet
Power Supply Requirement for 220 Volt Model	220V, 10A, 50-60 Hz , configurable power cord
Element Current at 1700 C Soak	40 Amps AC at 5.5Volts
Transient Peak Current Surge on Start Up	40 Amps AC at 110 Volts
Power Line Consumption at 1700 C Soak	935 Watts

HOT SPOT 110 HEAT UP RATE VS. TIME AT DIFFERENT INPUT VOLTAGES



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ORDERING INFORMATION

The order item code for the HOT SPOT 110 is five characters starting with the two letters FA. The last three characters are selected per the table below. The standard 110 Volt furnace is item code FAA00 and comes with the standard dual element thermocouple and without any analog output.

First Two Characters	Third Character Input Voltage	Fourth Character Extra Thermocouple	Fifth Character Analog Output from Controller
FA	A - 110 V	0 - No	0 - None/Standard Model
	2 - 220 V	1 - Yes	1 - Voltage 0 to 10 mV DC
			2 - Voltage 0 to 100 mV DC
			3 - Voltage 0 to 1V DC
			4 - Voltage 0 to 5V DC
			5 - Voltage 0 to 10V DC
			6 - Voltage 1 to 5V DC
			7 - Current 0 to 20 mA DC
			8 - Current 4 to 20 mA DC

Optional Analog Output for Remote Display and/or Recording

Seven different optional analog output signals are available from the temperature controller. The output, which varies as the process temperature changes, is supplied to a jack located at the rear of the furnace. A six foot long cord that plugs into the jack is supplied to conduct this output to an independent chart recorder, remote display or other instrument of your choice. Be certain to select the correct analog output as required by your device.

Optional Extra Thermocouple

The HOT SPOT 110 is supplied with a dual element Type B thermocouple. These two elements are contained in a single 4 hole alumina insulator inserted into the furnace chamber from the rear and placed slightly off center to the left. The optional extra thermocouple is a single element Type B thermocouple placed to the right of center. The optional extra thermocouple's leads are connected to a terminal block fixed to the back of the furnace and can be connected directly to an independent chart recorder.

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Accessories and Recommended Spare Parts

Description	Item Number
Heating Element	FAB03
Dense Alumina Setter Plate, 3.5" x 3.5" x 0.5"	FAF03
Alumina Insulation Setter Plate, 3.5" x 3.5" x 0.5"	FAF04
Zirconia Insulation Setter Plate, 3.5" x 3.5" x 0.5"	FAF05
Setter Package: one spatula and eight setter plates (two Dense alumina, three each of alumina and zirconia insulation)	FAF01
Setter Spatula	FAF02
High Temperature Trivet 12" x 12" x 1/2"	FAF06
Datalogger with power supply , cables and software. You must order your furnace with the optional 0 to 5 V output (FAA04). Compatible with MS Windows 95,98,2000 and NT.	FAF07
Autotransformer power supply with internal fuse can significantly increase the ramp rate in facilities with lower available voltage.	FAF08
Shelf System	FAF09
Calibration Rings (PTCR's) - Box of 15 rings	FAF10
Sintering Tray with Lid	GX010

Furnaces include a complimentary box of Precision Temperature Control Rings (PTCR). A PTCR is a highly accurate ceramic temperature indicator which records the true heat treatment received by the fired product. They can be used as either a furnace calibration check or as a record of an individual firing. For a calibration check, fire the ring to 1500 C (or other temperature of interest) ramping at 60 C/hour during the last 200 C of the ramp, and then holding at that temperature for one hour. Compare the measured size of the fired ring to the chart to determine the actual soak temperature. Large differences (>10 C) between measured ring and program temperature indicate need for service or adjustment. A new thermocouple being a likely solution. To use the ring as a firing record, simply place a ring in the furnace along with your work and record its size as a permanent record of the heat treatment actually made in that firing. A PTCR is only good for a single use.

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