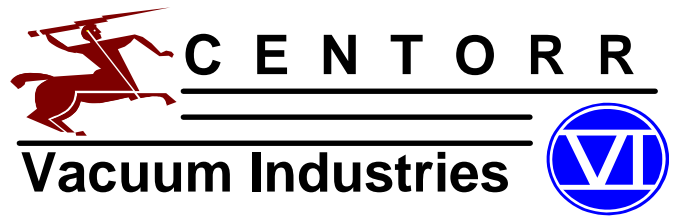


# PRODUCT Information



## HIGH TEMPERATURE VACUUM or CONTROLLED ATMOSPHERE GRAPHITE FURNACE

### SERIES 45 Top Loading Graphite

#### APPLICATIONS

Annealing  
Brazing  
Crystal Growth  
Ceramic Firing

Degassing  
Heat Treating  
Melting  
Sintering

#### MAIN FEATURES

Low initial cost  
Efficient, inexpensive to use  
Uncomplicated design, easy to operate.  
Clean, compact, vacuum-tight construction  
Use in vacuum, inert, nitrogen atmospheres  
Low thermal mass—rapid heating and cooling  
Accurate and uniform temperature control

#### HEAT ZONE SIZE

From 6" Dia. x 6" High to 36" Dia. x 36" High

#### TEMPERATURE

Up to: 1000°C (2012°F)  
1650°C (3000°F)  
2000°C (3632°F)  
2500°C (4532°F)  
2800°C (5072°F)  
3000°C (5432°F)

#### OPERATING PRESSURE

2 psig to 10-50 Microns



#### GENERAL

The Centorr Vacuum Industries Series 45 High Temperature Vacuum or Controlled Atmosphere, Top Loading, Cold Wall, Graphite Furnaces are simple and easy to operate.

A furnace system typically consists of the Basic Furnace Chamber Assembly, the Evacuation System, the Process Gas System, the Power Supply, the Temperature Control Instrumentation, and the Furnace Mounting Assembly.

These furnaces can be built having Heat Zone sizes of 6" ID x 6" High to 36" ID x 36" High; and capable of operating up to 3000°C (5432°F) in Argon. The Evacuation System is capable of attaining 10—50 microns. The Furnace Chamber may be backfilled to 2 PSIG

The Furnace is mounted on an open frame with the Evacuation System immediately behind (or to one side) for maximum efficiency. The Power Supply and Control Console are also located as close as possible to the Furnace Chamber. (In the case of small systems, the Power Supply is housed inside of the Control Console).

The unit is ready to operate as soon as power is connected to the main circuit breaker, and water inlet and drain connections are made.

The Furnace is completely assembled and thoroughly tested prior to shipping. A copy of test results will accompany shipment.



### **Basic Furnace Chamber Assembly**

The Basic Furnace consists of a double wall, all stainless steel (304L), water-jacketed chamber, inside of which is the Heat Zone. The Heat Zone is resistance heated. The Heating Element is made of Solid Graphite. Heat shielding is by Graphite Felt pressed into solid form. Heat Zone components are readily accessible for inspection or maintenance. A graphite hearth is provided for work support.

The entire inside of the furnace chamber is designed to conform to the best High Vacuum Practice. Particular attention is given to the choice of heat zone materials and to surface finishes. Ports are provided for Sighting, Thermocouples, Evacuation, Inert Gas inlet and exit, Gauges, etc. Centorr Vacuum Industries' proprietary Rotatable Sight Window with gas port is included as standard equipment.

Loading is done through the full opening Top Cover which is pneumatically raised and manually swung to one side. Clamps are provided for operation to slightly above ambient pressure.

### **Evacuation System**

For operation in the 10—50 Microns range of vacuum or for evacuation prior to backfilling with Inert Gas or Nitrogen, we include an Evacuation System. This includes a Mechanical Vacuum Pump, Vacuum Valve, and Manifold. Line Filter ahead of the vacuum pump, and Thermocouple type Vacuum Instrument are optionally available.

### **Process Gas System**

Process Gas System consists of Vacuum-tight Gas Inlet Valve and Relief Valve, Bourdon-type Pressure Vacuum Gauge, and Manifold.

### **Power Supply System**

Power Supply Systems consist of Silicon Controlled Rectifier Power Controller (Saturable Core Reactors also available) with Current Limit, Step-down Transformer, Circuit Breaker, Contractor, Control Transformer, Ammeter, Voltmeter, Push-buttons, Indicator Lights, Water Interlocks, all completely wired and packaged in an attractive floor standing cabinet.

Utility requirements are given in KVA at customer's Primary Voltage, Single or Three Phase, and 50 or 60 Hertz.

Centorr Vacuum Industries Manufactures a complete line of High Temperature Vacuum and Controlled Atmosphere Furnaces for the Research and Development Laboratory, the Materials Testing and Evaluation Laboratory, and for Production.



### **Temperature Control Instrumentation**

Centorr Vacuum Industries can supply from the simplest Manual Power Control to the most elaborate instrumentation. This can include Automatic closed loop control utilizing Thermocouples, Power Transducers, or Optical Pyrometers for sensing; and incorporating Indicator Controllers, Recorders, and Programmers. Various types of Micro-processor Programmers are now available and extremely popular.

### **Furnace Mounting Assembly**

The Furnace Chamber is mounted on an open support frame. Legs are provided with Leveling Pads. It is also possible to lag the support frame to the floor.



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