



高新技术企业/专精特新企业
专业的高温加热制造工厂 (-100~2600°C)

中国热处理行业协会理事单位
ISO45001:职业健康管理体系认证
ISO14001:环境管理体系认证
ISO9001:质量管理体系认证
欧盟CE产品认证



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Equipment Name: 1700°C Vacuum Atmosphere Box Furnace

The GWL-VSF series 1700°C vacuum atmosphere box furnace, as shown in the figure, integrates a temperature control system, vacuum furnace chamber, vacuum pump, gas path, pressure protection, gas flow control, positive and negative pressure display, and water circulation pump. The water circulation tank and furnace body are made of powder. The furnace lining is made of imported vacuum-formed high-purity alumina lightweight material.

It uses imported 1800-type silicon molybdenum rod heating elements. This specialized equipment is designed for laboratories in universities and research institutes, as well as industrial and mining enterprises, for the sintering, melting, analysis, and production of ceramics, metallurgy, electronics, glass, chemicals, machinery, refractory materials, new material development, special materials, building materials, metals, non-metals, and other chemical materials. The control panel is equipped with an intelligent temperature regulator, power switch, main heating start/stop button, voltage and ammeters, computer interface, water pump switch, vacuum pump switch, gas flow meter, positive and negative pressure gauges, electrical contact pressure gauge, and valves, allowing for real-time monitoring of the system's operating status. This product utilizes reliable integrated circuitry, providing a good working environment and strong anti-interference capabilities. The furnace shell temperature is $\leq 40^{\circ}\text{C}$ at its highest, significantly improving the working environment. Microcomputer program control with programmable curves enables fully automatic heating/cooling. Temperature control parameters and programs can be modified during operation, offering flexibility, convenience, and simple operation.

Temperature control accuracy: $\pm 1^{\circ}\text{C}$ with no overshoot; constant temperature accuracy: $\pm 1^{\circ}\text{C}$. Rapid heating rate, with a maximum heating rate $\geq 45^{\circ}\text{C}/\text{min}$. The furnace lining is made entirely of imported vacuum-formed high-purity alumina lightweight material, offering high operating temperature, low heat storage, resistance to rapid heating and cooling, no cracking, no slag shedding, and excellent insulation performance (energy saving effect is over 60% of that of traditional electric furnaces). The rational structure, with inner and outer double-layer furnace jackets and air cooling, significantly shortens the testing cycle.

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category parameter	1700 degrees
Model	GWL-1700VSF
power supply AC	380V
maximum operating temperature,	1750 degrees
long-term operating temperature	1700 degrees
control range, temperature	50 to 1700 degrees
sensing element,	Thermocouple type B, temperature range 0-1820 degrees Celsius
heating element mounting position,	Both sides (imported 1800 type silicon molybdenum rod heating elements)
temperature control accuracy,	±1 degree (integrated circuit control, no overshoot)
Furnace temperature uniformity	±1 degree (depending on the furnace size; larger furnaces can use multi-point control to achieve more precise control). Good furnace temperature uniformity)
heating rate	The heating rate is freely adjustable, with an adjustment range of up to 40 degrees Celsius per minute (40 degrees/min). The slowest heating rate is 1 degree per hour (1 degree/h).
Heating element	High-temperature imported 1800U type silicon molybdenum rod
heating element installation or replace	The sealed top cover of the vacuum atmosphere furnace is designed with a mechanical lifting mechanism, which allows for easy opening and closing of the sealed top cover. The top cover can be rotated after it is raised, saving a lot of manpower and time.
Furnace body	The furnace body is machined using CNC machine tools and undergoes polishing, grinding, pickling, phosphating, powder coating, and high-temperature treatment. Made through baking and other processes, featuring a two-tone color scheme, a novel and attractive appearance, and possessing antioxidant, acid and alkali resistant properties. Advantages include corrosion resistance, high temperature resistance, and easy cleaning.
The furnace body adopts an internationally advanced air-cooled double-layer structure, ensuring a good working environment.	
Furnace door opening method	The furnace door opens axially to the side at a distance of 180 degrees and can rotate 360 degrees, preventing high-temperature material handling. The inside of the oven door was so hot it burned my arm;
Water-	It is equipped with one 2P refrigeration unit.
cooled components,	Furnace opening, furnace door, and furnace top of the inner shell of the furnace.
circulating water radiator,	The use of multi-channel pure aluminum water circulation heat sinks greatly reduces the risk of excessively high water temperature.
vacuum pump, vacuum value,	Two-stage direct rotary vane vacuum pump
pressure	Pointer pressure gauge -0.1 MPa.
resistance,	The furnace lining steel plates are 6-20mm thick, double-sided welded, and can withstand a positive pressure of 0.1MPa.
gas circuit valves,	Imported stainless steel valves
pressure testing, gas	One pressure gauge with both positive and negative pressure indicators (a digital vacuum gauge is optional).
flow meter	Two float flow meters (a digital mass flow meter is optional for customers requiring higher accuracy).
Pressure protection	To prevent dangers caused by closed or blocked furnace exhaust ports, or excessive furnace pressure, a special design was developed. The principle behind this system is as follows: a signal is obtained from an electrical contact pressure gauge or pressure sensor to drive and control the system. The module closes the electromagnetic intake valve, activates the electromagnetic exhaust valve and alarm, releasing pressure from the exhaust port. An audible and visual alarm, triggered by a buzzer, is activated to protect the electric furnace and ensure its normal operation.

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Gas leak alarm	Based on the atmosphere, leakage is prevented; Function: When the gas leak alarm detects that the content of toxic or hazardous gases in the (indoor) air exceeds a certain value, the drive module shuts down the electric furnace, closes the gas supply, and opens the exhaust port and ventilation, thereby achieving a higher and safer working environment. (Optional for customers) The furnace lining for
Can open atmosphere	hydrogen, nitrogen, argon, carbon monoxide, oxygen, etc. , uses
Refractory materials	imported German MESCHUPP vacuum-formed high-purity alumina fiber lightweight board material. The easily bumped areas (furnace bottom) use high-purity lightweight hollow spherical alumina plates, which have high operating temperature, low heat storage, resistance to rapid heating and cooling, no cracking, no slag shedding, and good heat insulation performance (energy saving effect is more than 80% of that of old-fashioned electric furnaces).
thermal insulation materials	It employs four layers of insulation: alumina fiber cotton, alumina fiber board, and alumina polycrystalline fiber board, using imported materials. Its energy-saving effect is over 80% of that of traditional electric furnaces. It can operate continuously without shutting down,
Furnace shell temperature	maintaining an outer shell temperature below 45 degrees Celsius. An integrated
Protect	modular control unit ensures accurate control and features dual-loop control and protection, including protection against overshoot, over-adjustment, under-adjustment, thermocouple breakage, phase loss, overvoltage, overcurrent, overtemperature, current feedback, and soft start.
control	Employing closed-loop technology with thyristor module trigger control, phase-shift trigger control, or zero-crossing triggering, the output voltage, current, or power is continuously adjustable, exhibiting constant voltage, constant current, or constant power characteristics. The current loop is the inner loop, and the voltage loop is the outer loop. When a sudden load is applied or the load current exceeds the current limit, the output current of the voltage regulator is limited to the rated current range, ensuring normal operation of the output and the voltage regulator. Simultaneously, the voltage loop also participates in regulation, limiting the output current of the voltage regulator to the rated current range, maintaining constant output current and voltage with sufficient adjustment margin. This protects the heating elements from excessive current and voltage surges, achieving safe, reliable, and precise control.
The display parameters include	temperature, temperature segment number, segment time, remaining time, output power percentage, voltage, and current. Imported buttons have a lifespan
Button	exceeding 100,000 cycles and include LED indicators. An intelligent temperature controller is used, offering various adjustment
Temperature profile setting	methods such as standard PID, AI-based APID, or MPT. It features self-tuning and self-learning functions, excellent control characteristics with no overshoot or undershoot, and 30-segment programmable control. It can achieve arbitrary slope temperature rise and fall control, and has programmable/operable commands such as jump (loop), run, pause, and stop, allowing modification of the program at any time during program operation. It employs an AI-based adjustment algorithm with curve fitting capabilities, achieving smooth and even curve control. The 30-segment (customizable to 50 segments) programmable control function allows input settings: 30 (50) segments for one curve, 14 (28) segments for two curves, 9 (15) segments for three curves, and 5 (9) segments for five curves. Multiple curves can be input simultaneously
Multiple curve inputs	and can be arbitrarily called upon during use. The electric furnace is equipped with an RS485 communication interface, with a communication distance of up to 1700 meters. It can be controlled via computer to start, pause, stop, set and read heating curves, and configure parameters. It offers high reliability and ease of use, with a rich display on the computer screen showing measured values and other information.
Communication interface	

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	<p>The system includes setpoints, output values, time intervals, interval numbers, temperature rise curves, and power percentage curves. Temperature rise curves can be stored via computer, and these can be recalled and modified at will. Setpoints and commonly used parameters can be modified. Historical curves and reports can be filtered by time interval (1 second to 1 hour) and can be stored long-term. For details, see the computer control software. It includes two heating elements, two sets of rods, one furnace door heat insulation</p>
Random accessories	<p>plug (for electric furnaces above 1700 degrees Celsius), one crucible tong, and one pair of high-temperature gloves.</p>

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