



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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#### Vacuum Atmosphere Furnace GWDL-2100VAF Technical Specifications



#### Vacuum Atmosphere Furnace GWDL-2100VAF Technical Data

The sintering furnace is used to meet the technical requirements for quality testing and evaluation of quartz sand. It melts high-purity quartz sand at high temperatures and observes the results after solidification.

Internal defects in quartz glass ingots, such as bubbles, transparent layers, and hydroxyl content, are identified. This process is crucial for evaluating the purity of quartz sand and the sintering process.

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Xingye 1st Road, Science and Technology Industrial Park , Jianxi District ,  
Luoyang City, Henan Province



**洛阳炬星电窑炉**  
LUOYANG TORCH STAR ELECTRIC KILN

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The effect is crucial. This method ensures that the final quartz sand product possesses excellent optical properties and mechanical strength, contributing to...

Optimize production processes and improve the quality of quartz glass to meet the stringent requirements of high-end applications.

The sintering furnace should have operational functions such as vacuuming, protective gas supply, and precise temperature control. These functions ensure a pure environment during the smelting process.

This prevents interference from external impurities; at the same time, the protective gas avoids adverse reactions such as oxidation, and precise temperature control ensures the stability of the sintering process.

This comprehensive approach ensures both consistency and controllability. By implementing these measures, the generation of internal defects in quartz glass can be effectively reduced, improving material consistency and reliability.

Sexuality, further meeting the needs of high-tech fields.

Technical parameters:

The GWDL-VAF series 2100°C vacuum atmosphere furnace, as shown in the figure, integrates a temperature control system, vacuum furnace chamber, vacuum pump, gas path, pressure protection, etc.

The gas flow control and positive/negative pressure display are integrated, while the water-cooled unit and furnace body are separate units. The furnace lining is made of multi-layer metal reflective screens.

It uses tungsten sheets as the heating element; it is specifically designed for laboratories in universities and research institutes, as well as industrial and mining enterprises, for heating ceramics, metallurgy, electronics, glass, and chemical products.

Specialized equipment developed for sintering, melting, analyzing, and producing mechanical, refractory, new material development, special material, building material, metal, non-metal and other chemical materials.

The control panel features a touchscreen and PLC intelligent control; intelligent temperature regulation, control of power supply, main heating operation, voltage, current, water pump, vacuum pump, gas flow, positive and negative pressure, electrical contact pressure gauge, and valves, allowing for real-time monitoring of the system's operating status. This product employs reliable integrated circuitry, offering a superior working environment and strong anti-interference capabilities. The furnace shell temperature remains ̳40̳ at its highest, significantly improving the working environment. Microcomputer program control allows for programmable curves.

Fully automatic heating/cooling; temperature control parameters and programs can be modified during operation, making it flexible, convenient, and easy to operate.

Temperature control accuracy: ±1̳. No overshoot. Constant temperature accuracy: ±1̳. Fast heating rate, with the fastest heating rate ̳20̳/min.

The furnace lining is entirely made of vacuum-formed high-purity alumina lightweight material, which offers high operating temperature, low heat storage, resistance to rapid heating and cooling, and excellent insulation performance. Its rational structure, with inner and outer double-layer furnace jackets and air-cooled heat dissipation, significantly shortens the testing cycle.

temperature	2100̳
project	
Model	GWDL-2100VAF
Common Temperature	At temperatures
High temperature working condition	above 1600 degrees Celsius (2100 degrees), the furnace pressure is maintained between 100-1000 Pa by controlling the argon gas flow rate to prevent overheating.  The body and the high-temperature reflective screen evaporated!
Voltage AC	380V
Design power	18KW

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Furnace chamber dimensions (mm)	Depth x Width x Height: 300 x 160 x 160 (Effective thermal field)
Temperature control	±1℃ (integrated circuit control, no overshoot)
accuracy range is	50 to 2100 degrees
Temperature field uniformity measurement	±2℃ (depending on the size of the heating chamber)
element and measurement range inside the furnace	Thermocouple type C, temperature range -2300 degrees Celsius
heating rate	The heating rate is freely adjustable, with an adjustment range of up to 20 degrees Celsius per minute (20 degrees/min non-linear). The slowest heating rate is 1 degree per hour (1 degree/h).
Heating element	High-purity tungsten metal strips are used (nitrogen gas must not be introduced above 800 degrees Celsius).
Heating element installation location	Evenly distributed around the furnace
Furnace body	The furnace body is machined using CNC machine tools and undergoes polishing, grinding, pickling, phosphating, powder coating, and high-temperature baking. Made from high-quality materials, it has a novel and beautiful appearance, and possesses properties such as oxidation resistance, acid and alkali resistance, corrosion resistance, high temperature resistance, and easy cleaning. Advantages of reason, etc.
Furnace body structure	The electric furnace body adopts a 304 stainless steel water-cooled double-layer structure, ensuring a good working environment.
Furnace door opening method	The furnace door opens from the side.
Furnace body outer shell	For long-term use without shutting down the furnace, the outer casing temperature should be less than 45 degrees Celsius.
temperature	3P refrigeration unit (with compressor)
water cooling water cooling part	The outer shell around
vacuum pump	A two-stage direct rotary vane vacuum pump + Roots pump is used.
Vacuum	0.1-1000Pa (pressure controllable).
pressure	The furnace lining steel plates are 6-20mm thick, double-sided welded, and can withstand a positive pressure of 0.1MPa.
resistance air circuit	Imported stainless steel valves
valve pressure testing	One digital pressure gauge with both positive and negative pressure indications.
Gas flow meter	An argon mass flow meter is used to precisely control the gas flow rate.
exhaust port	One electrically controlled exhaust port is used for air venting.
Pressure protection	This system was specially manufactured to prevent danger caused by closed or blocked furnace exhaust ports or excessive furnace pressure. System principle: A signal is obtained from an electrical contact pressure gauge or pressure sensor, which drives the control module to shut off the electromagnetic circuit. The intake valve activates the solenoid exhaust valve and alarm, releasing pressure from the exhaust port. An audible and visual alarm buzzer sounds. Alarm. This protects the normal operation of the electric furnace.
Can open atmosphere	Argon
Thermal insulation	The furnace interior is constructed with 10 layers of reflective screens: 3 layers of tungsten, 2 layers of molybdenum, 2 layers of 310S, and 3 layers of 304 stainless steel.

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Protect	<p>1. It adopts an integrated modular control unit, ensuring accurate control precision, and is designed with dual-loop control and dual-loop protection, possessing...</p> <p>It includes protections against overshoot, over-adjustment, under-adjustment, thermocouple failure, phase loss, overvoltage, overcurrent, overtemperature, current feedback, and soft start. 2. It is equipped with a 5kW generator as a backup emergency power source to prevent power outages due to high temperatures, and includes an automatic control circuit.</p>
control	<p>It employs closed-loop technology with thyristor module trigger control and phase-shift trigger control, allowing for continuous adjustment of output voltage, current, or power, and exhibiting constant voltage, constant current, or constant power characteristics; the current loop is the inner loop, and the voltage loop is...</p> <p>The outer loop limits the voltage regulator's output current to the rated current when a sudden load is applied or the load current exceeds the current limit.</p> <p>Within the current range, ensure the output and voltage regulator operate normally; simultaneously, the voltage loop also participates in regulation, ensuring the voltage regulator...</p> <p>The output current is limited to the rated current range, and the output current is maintained with sufficient adjustment margin.</p> <p>And maintain a constant voltage; thereby protecting the heating element from excessive current and voltage surges, achieving a safe and reliable control effect and control precision. Temperature, temperature range number,</p>
Display parameters	<p>time period, remaining time, output power percentage, voltage, current, pressure,</p> <p>Gas flow rate, vacuum level, etc.</p>
Temperature profile setting	Intelligent temperature controller with touch screen
Multiple curve inputs	<p>The system features 50-segment temperature programmable control, utilizing a Siemens PLC for real-time control, enabling control of any temperature segment.</p> <p>Temperature, vacuum level, gas flow rate, etc. are set automatically.</p>
Warranty coverage and period	The electric furnace comes with a one-year free warranty, but the heating element is not covered by the warranty (it will be replaced free of charge if it fails naturally within three months).
Random spare parts	Two fuses, one crucible tong, one pair of high-temperature gloves, one electric furnace,
Packing list	<p>one instruction manual, one certificate of conformity, and an acceptance report.</p> <p>One factory inspection report and one sales delivery note.</p>
Shipping Information	<p>1. The electric furnace is packaged in two layers: it is wrapped in sponge paper and then wrapped with plastic film, with an iron frame as the base for fixation.</p> <p>2. Free domestic door-to-door delivery (free delivery within city limits)</p> <p>3. We will be responsible for any damage that occurs during the transportation of the electric furnace.</p> <p>4. Logistics methods: Road, rail, ship (foreign trade export), air freight (foreign trade export), distance...</p> <p>For nearby locations, our company will arrange dedicated vehicles for transportation (packaging is wooden pallets and cardboard boxes).</p>



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