



VACUUM ATMOSPHERE FURNACE - TT-VAF- 422-1300

The TT-VAF-422-1300 Vacuum Brazing Furnace is engineered for advanced high-temperature heat treatment under vacuum conditions, offering a maximum temperature of 1300°C with precise control at a continuous working temperature of 1200°C. With an inner chamber dimension of $\phi 390 \times 600$ mm, this furnace is ideally suited for a wide range of applications across universities, research laboratories, and industrial sectors. It supports critical processes in ceramics, metallurgy, electronics, glass, chemical processing, machinery, medical technology, advanced and specialty materials, construction materials, as well as metals and non-metals.

Equipped with a durable molybdenum lanthanum alloy heating element and an N-type thermocouple, the TT-VAF-422-1300 ensures reliable performance and long service life. Its intelligent control system provides exceptional temperature precision of $\pm 1^\circ\text{C}$, enabling uniform, reproducible results for demanding thermal processing tasks. Operating at 380V/50 kW, this vacuum brazing furnace delivers both high efficiency and stability, making it an excellent choice for research and industrial environments requiring contamination-free, high-temperature treatment.

APPLICATIONS

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- **Advanced Ceramics & Glass Processing** – Enables high-temperature brazing, sintering, and heat treatment of ceramics and glass under vacuum conditions. Ensures structural integrity, thermal stability, and contamination-free results for industrial and research applications.

- **Metallurgy & Powder Metallurgy** – Supports vacuum brazing and sintering of metals and alloys. Provides uniform, precise heating to achieve optimal density, mechanical strength, and microstructural properties in advanced metallic components.
- **Electronics & Semiconductor Materials** – Facilitates oxidation-free thermal processing, annealing, and brazing of sensitive electronic and semiconductor materials. Delivers controlled environments critical for microelectronics, photonics, and optoelectronic research.
- **Medical & Specialty Materials** – Provides high-temperature processing for medical devices, advanced composites, and specialty materials requiring clean, controlled conditions. Ensures reproducibility, contamination-free treatment, and material stability.
- **Chemical & Industrial Research** – Ideal for chemical reactions, thermal decomposition, and heat treatment of diverse industrial materials under vacuum or controlled atmospheres. Delivers accurate, repeatable results for research and process development.
- **Aerospace & Construction Materials** – Enables precision brazing and thermal treatment of high-performance alloys, composites, and construction materials. Ensures thermal stability, mechanical strength, and material validation for critical applications.
- **Universities & Research Institutes** – Designed for advanced research in physics, materials science, chemistry, and engineering. Features intelligent programmable control, vacuum functionality, and robust safety systems for complex experimental workflows.
- **Industrial Quality Control & Certification** – Provides high-temperature vacuum brazing and testing for compliance verification, product validation, and third-party certification. Conforms with ISO9001, CE, SGS, and TÜV standards,

offering reliable and reproducible performance for regulated industries.

FEATURES

- Features an advanced molybdenum alloy heating element and a metal heat insulation screen for a clean, contamination-free environment.
- Equipped with a high-precision PLC-based intelligent temperature and process control system for safe, efficient, and unattended operation.
- Horizontal structure allows for easy side-loading of samples.
- Double-layer, water-cooled, sealed chamber design enables operation under vacuum or a controlled atmosphere.
- Vacuum system includes a molecular pump and dual-stage rotary vane mechanical pump, achieving a cold ultimate vacuum of 6.67×10^{-4} Pa.
- Stainless steel chamber with flange-type compression sealing, tested using a helium mass spectrometer leak detector. High-vacuum valve with a pressure rise rate of ≤ 1 Pa.
- Heating elements are evenly arranged around the chamber for circular heating. Scientifically optimized thermal distribution ensures uniformity of ± 5 °C.
- Comes with an industrial-grade air-cooled chiller featuring closed-loop self-circulation for high cooling efficiency and low operating costs.

TECHNICAL SPECIFICATIONS

Model	TT-VAF-422-1300
Inner dimension	φ390×600mm
Working Dimension	200×400×200mm
Outer dimension	2000×1600×2050mm

Mac temperture	1300℃
Working Temperature	1200℃
Voltage	380V/50KW
Heating Element	Molybdenum lanthanum alloy
Thermal insulation material	Metal molybdenum heat insulation screen as the furnace chamber heat preservation and insulation material
Temperature control accuracy	±1℃
Measuring element	N-type thermocouple
Vacuum degree	Cold limit vacuum degree 6.67×10^{-4} pa
Temperature control instrumentation	7-inch intelligent microcomputer PID touch instrumentation, SCR regulator control, PID parameter self-tuning function; can be programmed 15 groups of 30 program segments, program heating, program insulation, program temperature reduction
Heating speed	1-20℃/min free adjustment
Furnace structure	Furnace temperature control integrated structure
Equipment protection	Modular control, over-temperature in the working process, broken even will issue sound and light alarm signals, and automatically complete the protection action.
Safety protection	The equipment is equipped with an open circuit breaker, such as the occurrence of short-circuit leakage will automatically pop-up, to protect the equipment and the operator's safety.
Shell	High-quality cold-rolled steel plate CNC machine tool processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder.
Quality Certification	ISO9001 CE SGS TUV
Standard configuration	1 furnace 2, power cord 3 meters 3, 1 thermocouple 4, 1 copy of the manual 5, 1 load table 6, 1 pair of high-temperature gloves 7, 1 molecular pump vacuum unit 8, 1 industrial chiller



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