

VACUUM ATMOSPHERE FURNACE - TT-VAF-36- 1700



TT-VAF-36-1700 is a 1700°C vacuum atmosphere furnace designed to operate under both vacuum and controlled atmosphere conditions. It is commonly used for heat treatment processes involving hard alloys, ceramics, and powder metallurgy materials. Additional applications include vacuum quenching, annealing, processing of high-speed steel and alloy abrasives, brazing of soft magnetic materials, and other thermal treatment tasks.

APPLICATIONS

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- **Hard Alloy Heat Treatment** – Provides precise, high-temperature processing for hard alloys, including sintering, annealing, and quenching. Ensures superior hardness, wear resistance, and structural stability for demanding applications.
- **Ceramics & Advanced Materials** – Delivers uniform high-temperature treatment of technical ceramics, composites, and specialty materials under vacuum or controlled atmospheres. Guarantees excellent thermal resistance and mechanical strength.

- **Powder Metallurgy** – Supports vacuum sintering and densification of metal powders into dense, homogeneous components. Minimizes oxidation and contamination while ensuring reproducibility and consistent material quality.
- **High-Speed Steel & Abrasive Tools** – Facilitates heat treatment, annealing, and quenching of high-speed steels and alloy abrasives. Enhances cutting performance, durability, and precision for machining applications.
- **Magnetic Materials & Brazing** – Provides controlled brazing and processing of soft magnetic materials under vacuum or protective gas. Maintains material purity and performance stability by preventing oxidation.
- **Semiconductor & Electronics Industry** – Enables precise thermal processing of semiconductor substrates and thin films. Supports diffusion, annealing, and oxidation critical to microelectronics and optoelectronics manufacturing.
- **Aerospace & Defense Engineering** – Ensures reliable high-temperature validation of advanced alloys, ceramics, and composites used in aerospace and defense. Guarantees thermal stability and mechanical integrity under extreme conditions.
- **Energy & Battery Research** – Supports advanced thermal processing of cathode/anode materials, solid electrolytes, and next-generation batteries. Improves consistency, cycle performance, and high-temperature reliability.
- **Universities & Research Institutes** – Designed for academic and industrial research in physics, chemistry, and materials science. Offers versatile programming, vacuum compatibility, and robust safety systems.
- **Industrial Quality Control & Certification** – Provides traceable, audit-ready results for high-temperature processing. Conforms with ISO, CE, SGS, and TÜV standards required for regulated industries.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel with an electrostatically resistant, anti-corrosive finish.
- Durable metal shell design ensures low external surface temperature.
- Side-opening door with a flanged sealing structure and manual screw compression for easy and safe operation.

Refractory Material

- Features a multi-layer insulation system made from lightweight alumina ceramic fiber and premium insulation boards. This design is asbestos-free, reduces heat loss, and enhances energy efficiency.

Heating System

- Uses high-quality HRE spiral resistance wire heating elements, securely embedded in the chamber walls for efficient and uniform heat distribution. Long service life and energy-efficient.
- Heating is applied on three sides—left, right, and bottom—for consistent temperature uniformity.
- Silicon carbide base plate protects the bottom heating element, offering high mechanical strength, excellent thermal conductivity, and stable horizontal load support.

Temperature Control Panel

- Features a PID controller with SSR/SCR control modes for accurate temperature regulation.
- Equipped with a standard N-type nickel-chromium-silicon thermocouple, with a range of 0–1300°C and extended service life.

Program Controller

- Designed to support complex thermal processing needs.
- User-friendly interface with flexible programming options.

- Supports up to 4 curves and 8 segments per curve for detailed process customization.
- Includes over-temperature and fault alarms with built-in automatic safety protections.

Vacuum Atmosphere Function

- Furnace chamber includes adjustable gas inlet and outlet ports for introducing protective gases.
- Compatible with various vacuum pumps, achieving vacuum levels between 500 Pa and 0.06 Pa, displayed via a digital vacuum gauge.
- Optional gas control unit available, offering 1 to 3 adjustable flow meters for precise control.

TECHNICAL SPECIFICATIONS

Model	TT- VAF-1-1700	TT- VAF-3-1700	TT- VAF-8-1700	TT- VAF-12-1700	TT- VAF-20-1700	TT- VAF-36-1700	TT- VAF-45-1700
Chamber Size □ W xD xH□ mm	100 x120x100	150 x150x150	200x200x200	200x300x200	250 x320x250	300x400x300	300 x500x300
Rated Temperature	1700℃						
Work Temperature	1600℃						
Voltage	220V/2KW (110V is also available)	220V/4KW (110V is also available)	220V/5KW (110V is also available)	220V/6KW (110V is also available)	220V/7KW (110V is also available)	380V/13KW	380V/18KW
Heating Element	U Type Silicon molybdenum rod						

Chamber Materials	Polycrystalline inorganic alumina ceramic fiber material made by wet vacuum filtration method
Temp control Accuracy	±1°C
Thermocouple	B Type Platinum Rhodium Thermocouple
Temperature Controller	Intelligent microcomputer PID temperature control instrument, SCR/SSR control, PID parameter self-tuning function .Programmable 30 program segments for program heating, program heat preservation, program cooling
Heating Rate	1-10°C/min can be adjustable
Furnace Structure	Furnace temperature control integrated structure
Equipment Protection	Modular control with sound and light alarm signal sending out for over temperature and thermocouple broken in the working process, and the protection action will be completed automatically
Safety Protection	The equipment is equipped with a circuit breaker, which will automatically pop open in case of short circuit leakage, which can protect the safety of equipment and operators
Furnace Shell	High-quality cold-rolled steel plate with CNC machine tool processing, then it will have the process of welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder
Quality Certificate	ISO9001 CE SGS TUV
Standard Device	1□ Furnace Main Body : 1 set 2□ Temperature Controller : 1 pc 3□ Power Line : 3 meters 4□ Thermocouple : 1 pc 5□ Operation manual □ 1 pc 6 Crucible Tong □ 1 pc 7□ High Temperature Gloves : 1 pair
Optional Accessories	1 .Optional with Rotary Vacuum Pump □ Vacuum Degree Level ≤500pa□ 2.Optional digital vacuum gauge □ 1.0×10 ⁵ -1.0×10 ⁻¹ pa□ 3.Optional with gas float meter □ Float flow range 1-10L/min□



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