



TORONTECH

VERTICAL VACUUM ATMOSPHERE TUBE FURNACE 1700°C - TT- VTF-40-1700



Vertical Vacuum Atmosphere Tube Furnace 1700°C – TT-VTF-40-1700 designed for high-temperature heat treatment up to 1700°C. It supports the sintering and processing of advanced materials such as metals, ceramics, nanomaterials, semiconductors, and powder metallurgy. Common applications include research labs, universities, manufacturing facilities, petrochemical operations, and the aerospace sector.

APPLICATIONS

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- **Advanced Ceramic Materials** – Enables ultra-high temperature sintering and densification of ceramics. Ensures exceptional thermal resistance, mechanical strength, and stability required for industrial and research-grade applications.
- **Nanomaterials & Functional Composites** – Provides uniform high-temperature treatment for nanostructures, catalysts, and advanced composites. Vacuum and atmosphere control prevent contamination, ensuring precise particle size distribution and consistent performance.
- **Semiconductor & Electronics Processing** – Supports annealing, diffusion, and oxidation of semiconductor wafers and substrates up to 1700°C. Controlled atmosphere capability ensures purity and reproducibility critical for microelectronics and optoelectronics innovation.

- **Powder Metallurgy & Advanced Metals** – Facilitates sintering, reduction, and thermal processing of metallic powders, alloys, and superalloys. Vertical vacuum design ensures uniform heating, high density, and defect-free material properties.
- **Petrochemical & Catalyst Development** – Suitable for catalyst activation, regeneration, and thermal decomposition studies. Atmosphere-controlled environments enable accurate reaction studies and reproducible results for R&D and pilot-scale testing.
- **Aerospace & Defense Materials** – Provides precision heat treatment of refractory metals, high-performance ceramics, and aerospace composites. Ensures thermal stability and structural validation of mission-critical materials under extreme operating conditions.
- **Energy & Battery Materials** – Delivers advanced calcination and sintering of solid-state electrolytes, electrode powders, and next-generation energy storage materials. Ensures consistent performance and high thermal stability in lithium-ion and beyond-lithium systems.
- **Universities & Research Institutes** – Ideal for advanced academic and industrial research in physics, chemistry, materials science, and engineering. Offers flexible multi-segment programming, vacuum/atmosphere adaptability, and reliable safety features.
- **Industrial Quality Control & Certification** – Enables ultra-high temperature validation and compliance testing. Conforms to ISO, CE, SGS, and TÜV standards, supporting product certification and regulated industry requirements.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically resistant, corrosion-resistant finish. A robust double-layer metal frame is integrated with a heat-insulating fan structure to maintain a low external surface temperature.
- Designed for vertical operation, the furnace features a side-opening lid for easy access and usability.

Refractory Material

- The multi-layer insulation system is made of lightweight alumina ceramic fiber and high-performance insulation board. It is asbestos-free, offers excellent thermal insulation, minimizes heat loss, and reduces energy consumption.

Heating System

- The furnace uses high-quality metal and ceramic heating elements that radiate heat uniformly within the chamber, promoting energy efficiency and a long service life. Heating is applied in a circular or dual-sided configuration to ensure even temperature distribution. Each zone can be controlled individually for better uniformity.

Temperature Control Panel

- The PID controller with SSR/SCR switching provides accurate temperature regulation. It includes an industrial-grade thermocouple with extended durability, a heating indicator light, and an over-temperature alarm buzzer for added safety.

Program Controller

- Equipped with an advanced controller to handle complex processes, the interface is user-friendly with flexible programming capabilities. It supports up to 30 programmable segments and includes alarms for over-temperature and system faults, along with automatic safety protocols.

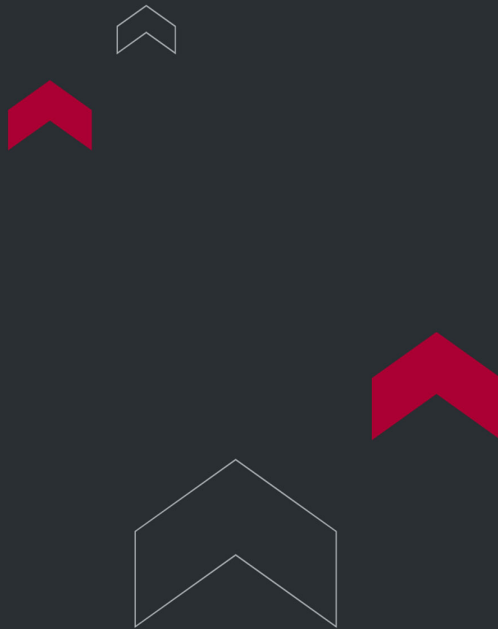
Vacuum Atmosphere Function

- Features a 304 stainless steel sealing flange to allow for vacuum or atmosphere control within the furnace tube.
Compatible with alumina, metal, or quartz glass working tubes to suit a variety of operating environments.

TECHNICAL SPECIFICATIONS

Item No	Heating Zone mm	Tube Size (mm)	Max Temperature	Work Temperature	Voltage	Power	Heating Element	Temperature Accuracy
TT-VTF-40-1200	300	Φ40×900	1200°C	1100°C	220V (110V is also available)	1.8KW	HRE	±1°C
TT-VTF-60-1200	300	Φ60×900	1200°C	1100°C	220V (110V is also available)	2.6KW	HRE	±1°C
TT-VTF-80-1200	300	Φ80×900	1200°C	1100°C	220V (110V is also available)	2.6KW	HRE	±1°C
TT-VTF-100-1200	300	Φ100×900	1200°C	1100°C	220V (110V is also available)	2.6KW	HRE	±1°C
TT-VTF-40-1400	300	Φ40×900	1400°C	1350°C	220V (110V is also available)	2KW	SIC	±1°C
TT-VTF-60-1400	300	Φ60×900	1400°C	1350°C	220V (110V is also available)	3KW	SIC	±1°C
TT-VTF-80-1400	300	Φ80×900	1400°C	1350°C	220V (110V is also available)	4KW	SIC	±1°C
TT-VTF-100-1400	300	Φ100×900	1400°C	1350°C	220V (110V is also available)	5KW	SIC	±1°C
TT-VTF-40-1700	300	Φ40×900	1700°C	1600°C	220V (110V is also available)	3KW	MoSi2	±1°C

TT-VTF-60-1700	300	Φ60×900	1700℃	1600℃	220V (110V is also available)	4KW	MoSi2	±1℃
TT-VTF-80-1700	300	Φ80×900	1700℃	1600℃	220V (110V is also available)	5KW	MoSi2	±1℃
TT-VTF-100-1700	300	Φ100×900	1700℃	1600℃	220V (110V is also available)	5KW	MoSi2	±1℃



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 🇨🇦

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 🇺🇸

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 🇦🇪

Phone: +971 488 19252
Email: me@torontech.com

