



TORONTECH

VERTICAL TUBE FURNACE 1200°C - TT- VTF-60-1200



Vertical Tube Furnace 1200°C – TT-VTF-60-1200 designed for high-temperature heat treatment up to 1200°C. It is suitable for sintering and processing advanced materials such as metals, ceramics, nanomaterials, semiconductors, and powder metallurgy. Commonly used in universities, research labs, manufacturing facilities, petrochemical operations, and the aerospace sector, this furnace supports a wide range of material development and processing applications.

APPLICATIONS

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- **Advanced Ceramic Materials** – Supports sintering, densification, and crystallization of ceramics at high temperatures. Ensures superior thermal resistance, structural integrity, and consistent microstructures for research and industrial applications.
- **Nanomaterials & Functional Composites** – Provides precise heating and processing of nanostructures, catalysts, and advanced composites. Independent temperature zone control minimizes gradients, delivering uniform particle properties and reproducible results.

- **Semiconductor & Electronics Processing** – Facilitates annealing, diffusion, and oxidation of semiconductor substrates under vacuum or controlled atmosphere. Ensures contamination-free, precise thermal treatment critical for microelectronics and optoelectronics.
- **Powder Metallurgy & Advanced Metals** – Enables sintering and reduction of metallic powders into dense, high-performance components. Delivers uniform heating and stability essential for prototype development and alloy research.
- **Petrochemical & Catalyst Research** – Suitable for catalyst activation, calcination, and decomposition studies under controlled environments. Provides repeatable thermal conditions for petrochemical and chemical R&D.
- **Aerospace & Defense Materials** – Provides precision heat treatment of refractory metals, ceramics, and advanced composites. Ensures structural reliability and thermal stability for aerospace-grade components operating under extreme conditions.
- **Energy & Battery Materials** – Delivers calcination and sintering of solid electrolytes, cathodes, and anode materials. Guarantees high-temperature consistency needed for lithium-ion and next-generation battery development.
- **Universities & Research Institutes** – Ideal for advanced research in materials science, chemistry, and engineering. Offers flexible programming, atmosphere adaptability, and safety features for laboratory environments.
- **Industrial Quality Control & Pilot Production** – Supports validation, compliance testing, and small-scale production. Meets ISO, CE, SGS, and TÜV certification standards for regulated industrial applications.

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically coated surface that resists corrosion.
- A solid double-layer metal frame combined with an insulated fan structure helps maintain a low external surface temperature.
- Designed for vertical operation, the furnace features a side-opening lid for convenient access and safe handling.

Refractory Materials

- The furnace chamber features a multi-layer insulation system made from lightweight alumina ceramic fiber and premium insulation board.
- It is free from asbestos, offers excellent thermal insulation, and ensures low heat loss and reduced energy consumption.

Heating System

- Equipped with durable metal and ceramic heating elements, the system provides efficient radiant heating within the chamber.
- The elements are positioned in a circular or dual-side configuration to deliver consistent temperature distribution.
- Each temperature zone is independently controlled for improved thermal uniformity and performance.

Temperature Control Panel

- Features PID control with SSR or SCR modules for precise temperature regulation.
- Includes a high-quality, long-life thermocouple that meets international standards.
- Additional features include a heating status indicator and over-temperature alarm buzzer for added safety.

Program Controller

- Designed to support complex thermal processes with ease.
- The interface is user-friendly, allowing flexible programming.
- Capable of handling up to 30 programmable segments.

- Includes automatic fault detection, over-temperature alarms, and safety shut-off mechanisms.

Vacuum and Atmosphere Function

- Fitted with a 304 stainless steel sealing flange, allowing vacuum or controlled atmosphere conditions within the tube.
- Compatible with alumina, metal, or quartz glass tubes, depending on the application requirements.

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 or 440*	Φ100×1000	1200℃	1100℃	220V (110V is also available)	1.8KW	HRE	±1℃
TT-VTF-60-1200			1200℃	1100℃	220V (110V is also available)	2.6KW	HRE	±1℃
TT-VTF-80-1200			1200℃	1100℃	220V (110V is also available)	2.6KW	HRE	±1℃
TT-VTF-100-1200			1200℃	1100℃	220V (110V is also available)	2.6KW	HRE	±1℃
TT-VTF-40-1400			1400℃	1350℃	220V (110V is also available)	2KW	SIC	±1℃
TT-VTF-60-1400			1400℃	1350℃	220V (110V is also available)	3KW	SIC	±1℃
TT-VTF-80-1400			1400℃	1350℃	220V (110V is also available)	4KW	SIC	±1℃

TT-VTF-100-1400	1400°C	1350°C	220V (110V is also available)	5KW	SIC	±1°C
TT-VTF-40-1700	1700°C	1600°C	220V (110V is also available)	3KW	MoSi2	±1°C
TT-VTF-60-1700	1700°C	1600°C	220V (110V is also available)	4KW	MoSi2	±1°C
TT-VTF-80-1700	1700°C	1600°C	220V (110V is also available)	5KW	MoSi2	±1°C
TT-VTF-100-1700	1700°C	1600°C	220V (110V is also available)	5KW	MoSi2	±1°C

*please specify upon ordering



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