TORONTECH

VERTICAL 3-ZONE TUBE FURNACE 1200°C – TT-VTF3Z-80-1200

Vertical 3-Zone Tube Furnace 1200°C – TT-VTF3Z-80-1200 is designed for high-temperature heat treatment, sintering, and material processing. It supports a wide range of advanced materials, including metals, ceramics, nanomaterials, semiconductors, and powder metallurgy. This furnace is widely used in universities, research institutions, manufacturing facilities, petrochemical operations, and the aerospace sector.

APPLICATIONS

Vertical 3-Zone Tube Furnace 1200°C – TT-VTF3Z-80-1200

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- **Advanced Ceramic Materials** – Provides precise multi-zone sintering and densification of technical ceramics. Ensures excellent thermal resistance, mechanical durability, and uniform microstructures for both industrial and research-grade applications.
- **Nanomaterials & Functional Composites** – Enables uniform heating and controlled processing of nanomaterials, catalysts, and advanced composites. Independent zone control minimizes thermal gradients, ensuring consistent particle size and stability.
- **Semiconductor & Electronics Processing** – Facilitates oxidation, diffusion, and annealing of semiconductor substrates. Vacuum and atmosphere options ensure contamination-free processing critical for microelectronics and optoelectronics development.

- **Powder Metallurgy & Advanced Metals** – Supports high-temperature sintering, reduction, and heat treatment of metallic powders and alloys. The vertical 3-zone configuration guarantees homogeneity and superior densification results.

- **Petrochemical & Catalyst Research** – Suitable for catalyst activation, calcination, and reaction studies under controlled atmosphere or vacuum. Ensures reproducibility and reliability for R&D and pilot testing in chemical industries.

- **Aerospace & Defense Materials** – Provides precise thermal processing of superalloys, ceramics, and high-performance composites. Ensures stability, durability, and strength validation for aerospace-grade materials under extreme conditions.

- **Energy & Battery Innovation** – Delivers controlled calcination and sintering of solid electrolytes, cathode/anode powders, and advanced energy materials. Ensures high reproducibility for lithium-ion and next-generation battery research.

- **Universities & Research Institutes** – Ideal for advanced academic studies in materials science, chemistry, physics, and engineering. Offers versatile multi-zone programming, vacuum/atmosphere compatibility, and robust safety features.

- **Industrial Quality Control & Pilot Production** – Supports thermal testing, validation, and small-scale continuous production. Certified to ISO, CE, SGS, and TÜV standards, ensuring compliance for regulated industries worldwide.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel and features a corrosion-resistant, electrostatic-protective surface.
- A durable, double-layer metal frame is paired with an insulated fan structure, helping maintain a low external temperature.
- Designed for vertical operation, the furnace includes a side-opening lid for convenient access.

Refractory Material

- The multi-layer insulation system consists of lightweight alumina ceramic fiber and a high-performance insulation board backing. It is asbestos-free, ensuring low heat loss and reduced energy consumption.

Heating System

- Equipped with premium metal and ceramic heating elements, the furnace delivers efficient, radiant heat throughout the chamber.
- The elements are arranged in a ring or dual-side layout for consistent temperature distribution.
- Each zone can be controlled independently to enhance temperature uniformity.

Temperature Control Panel

- Features PID control with SSR/SCR modules for precise temperature regulation.
- Uses a high-grade thermocouple with extended service life.
- Includes a heating indicator light and over-temperature alarm buzzer for safety.

Program Controller

- User-friendly advanced controller supports complex processes.
- Allows flexible operation and programming with up to 30 customizable segments.
- Built-in over-temperature and fault alarms ensure automatic safety protection.

Vacuum/Atmosphere Function

- Fitted with a 304 stainless steel sealing flange for creating vacuum or controlled atmosphere conditions inside the tube.
- Compatible with alumina, metal, or quartz tubes to accommodate various application needs.

TECHNICAL SPECIFICATIONS

Item No	Heating Zone（mm）	Tube Size (mm)	Max Temperature	Work Temperature	Voltage	Power	Heating Element	Temperature Accuracy
TT-VTF3Z-40-1200	300	Φ40×900	1200℃	1100℃	220V (110V is also availavle)	1.8KW	HRE	±1℃
TT-VTF3Z-60-1200	300	Φ60×900	1200℃	1100℃	220V (110V is also availavle)	2.6KW	HRE	±1℃
TT-VTF3Z-80-1200	300	Φ80×900	1200℃	1100℃	220V (110V is also availavle)	2.6KW	HRE	±1℃
TT-VTF3Z-100-1200	300	Φ100×900	1200℃	1100℃	220V (110V is also availavle)	2.6KW	HRE	±1℃
TT-VTF3Z-40-1400	300	Φ40×900	1400℃	1350℃	220V (110V is also availavle)	2KW	SIC	±1℃
TT-VTF3Z-60-1400	300	Φ60×900	1400℃	1350℃	220V (110V is also availavle)	3KW	SIC	±1℃
TT-VTF3Z-80-1400	300	Φ80×900	1400℃	1350℃	220V (110V is also availavle)	4KW	SIC	±1℃
TT-VTF3Z-100-1400	300	Φ100×900	1400℃	1350℃	220V (110V is also availavle)	5KW	SIC	±1℃
TT-VTF3Z-40-1700	300	Φ40×900	1700℃	1600℃	220V (110V is also availavle)	3KW	MoSi2	±1℃

TT-VTF3Z-60-1700	300	Φ60×900	1700℃	1600℃	220V (110V is also availavle)	4KW	MoSi2	±1℃
TT-VTF3Z-80-1700	300	Φ80×900	1700℃	1600℃	220V (110V is also availavle)	5KW	MoSi2	±1℃
TT-VTF3Z-100-1700	300	Φ100×900	1700℃	1600℃	220V (110V is also availavle)	5KW	MoSi2	±1℃

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