TORONTECH

2-ZONE TUBE FURNACE 1700°C – TT-TF2Z-60-1700

2-Zone Tube Furnace 1700°C – TT-TF2Z-60-1700 is a high-performance dual-zone tube furnace designed for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. It is widely used in universities, research institutions, industrial facilities, as well as in the petrochemical and aerospace sectors.

APPLICATIONS

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- **Advanced Ceramics & High-Temperature Materials** – Provides precise dual-zone sintering and annealing for technical ceramics, refractory components, and structural materials. Ensures high thermal stability, improved mechanical strength, and uniform densification.

- **Nanomaterials & Composite Research** – Enables controlled heat treatment of nanoparticles, thin films, and functional composites. Dual-zone independent control ensures reproducibility and uniform heating for advanced material development in electronics, energy storage, and catalysis.

- **Semiconductor & Electronics Fabrication** – Facilitates high-temperature diffusion, oxidation, and annealing processes for semiconductor wafers and substrates. Delivers stable, reproducible thermal profiles critical for microelectronics and optoelectronic devices.

- **Powder Metallurgy & Alloy Processing** – Supports sintering, densification, and phase transformations of metallic powders and advanced alloys. Dual-zone configuration ensures uniform temperature distribution for consistent material properties.

- **Chemical & Petrochemical Applications** – Suitable for catalyst activation, thermal decomposition, and atmosphere-controlled chemical reactions. Provides precision and reproducibility for laboratory and industrial processes.

- **Aerospace & High-Performance Materials Engineering** – Enables high-temperature processing of aerospace alloys, composites, and protective coatings. Enhances oxidation resistance, fatigue life, and material reliability under extreme service conditions.

- **Energy & Battery Materials Research** – Supports sintering of solid-state electrolytes, electrodes, and other advanced battery materials. Dual-zone heating ensures uniform thermal treatment for improved electrochemical performance and stability.

- **Universities & Research Institutions** – Ideal for academic and research laboratories studying materials science, physics, chemistry, and engineering. Offers programmable control, flexible operation, and robust safety for educational and R&D use.

- **Industrial Quality Control & Compliance Testing** – Provides reproducible high-temperature processing for product validation, certification, and quality assurance. Complies with international standards including ISO9001, CE, SGS, and TÜV.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel, the shell features a corrosion-resistant, electrostatically treated surface. A solid double-layer metal frame is integrated with a heat-insulating fan system to maintain a low exterior temperature. Designed for horizontal operation, the top-opening structure ensures ease of use.

Refractory Material

- The furnace incorporates a multi-layer insulation system composed of lightweight alumina ceramic fiber and premium insulation board. It is asbestos-free and engineered to minimize heat loss and energy consumption.

Heating System

- Equipped with high-quality HRE heating elements, the system provides efficient, radiant heat within the chamber. Dual-side or ring-style heating ensures consistent temperature distribution. The two-zone design allows each zone to be controlled independently for improved thermal uniformity.

Temperature Control Panel

- Utilizes PID and SSR control for precise temperature management. Features a B-type nickel-chromium silicon thermocouple, supporting a range of 0–1800°C and offering extended durability. Includes a heating status indicator and over-temperature alarm.

Program Controller

- Designed for advanced thermal processes, the controller supports flexible programming with up to 30 segments. Offers straightforward operation along with over-temperature and fault detection for automatic safety protection.

Vacuum and Atmosphere Capability

- Fitted with a 304 stainless steel sealing flange, the system allows for either vacuum or controlled atmosphere conditions within the tube. A high-purity quartz working tube is standard, with options for metal or corundum tubes to accommodate various application needs.

TECHNICAL SPECIFICATIONS

Product Item	Heating Zone（mm）	Tube Size (mm)	Max Temperature	Work Temperature	Voltage	Power	Heating Element	Temperature Accuracy
TT-TF2Z-40-1200	300+300	Φ40×1200	1200℃	1100℃	220V (110V is also available)	3.6KW	HRE	±1℃
TT-TF2Z-60-1200	300+300	Φ60×1200	1200℃	1100℃	220V (110V is also available)	5.2KW	HRE	±1℃
TT-TF2Z-80-1200	300+300	Φ80×1200	1200℃	1100℃	220V (110V is also available)	5.2KW	HRE	±1℃
TT-TF2Z-100-1200	300+300	Φ100×1200	1200℃	1100℃	220V (110V is also available)	5.2KW	HRE	±1℃
TT-TF2Z-40-1400	300+300	Φ40×1200	1400℃	1350℃	220V (110V is also available)	4KW	SIC	±1℃
TT-TF2Z-60-1400	300+300	Φ60×1200	1400℃	1350℃	220V (110V is also available)	6KW	SIC	±1℃
TT-TF2Z-80-1400	300+300	Φ80×1200	1400℃	1350℃	380V	8KW	SIC	±1℃
TT-TF2Z-100-1400	300+300	Φ100×1200	1400℃	1350℃	380V	10KW	SIC	±1℃
TT-TF2Z-40-1700	300+300	Φ40×1200	1700℃	1600℃	220V (110V is also available)	6KW	MoSi2	±1℃

TT-TF2Z-60-1700	300+300	Φ60×1200	1700℃	1600℃	380V	8KW	MoSi2	±1℃
TT-TF2Z-80-1700	300+300	Φ80×1200	1700℃	1600℃	380V	10KW	MoSi2	±1℃
TT-TF2Z-100-1700	300+300	Φ100×1200	1700℃	1600℃	380V	12KW	MoSi2	±1℃

TORONTECH.com

TORONTECH

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

USA | Canada | EU | UAE | GCC | KSA | India | Africa | Latin America | Asia