TORONTECH

2-ZONE SPLIT TUBE FURNACE 1200°C – TT-TF2Z-150-1200

The 2-Zone Split Tube Furnace 1200°C – TT-TF2Z-150-1200 is engineered for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. Widely utilized in universities, research institutes, industrial facilities, and sectors such as petrochemicals and aerospace, this dual-zone furnace offers precise thermal control and uniform heating. It features a high-purity quartz tube with an outer diameter of Φ150 mm and two independently controlled heating zones, each 300 mm in length, allowing optimized temperature distribution.

The furnace operates continuously at temperatures up to 1200°C, with a maximum working temperature of 1100°C. Powered by 220 V/5.2 kW (110 V available), it incorporates high-quality HRE alloy resistance wire elements, an N-type thermocouple, and delivers temperature precision of ±1°C. This ensures reliable, reproducible results for advanced research and industrial applications, making it an ideal solution for laboratories and manufacturing environments requiring consistent high-temperature processing.

APPLICATIONS

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- **Metals & Powder Metallurgy** – Enables high-temperature sintering and thermal treatment of metal powders, producing dense, uniform components with precise control over microstructure, critical for advanced manufacturing and research.

- **Ceramics & Nanomaterials** – Provides independent dual-zone heating for consistent temperature distribution, supporting sintering, densification, and material property optimization of ceramics and nanostructures used in electronics, catalysis, and energy storage applications.

- **Semiconductor Materials** – Facilitates high-temperature annealing, diffusion, and oxidation processes for semiconductor wafers, ensuring reproducible thermal profiles critical for microelectronics and optoelectronics development.

- **Research & Academic Laboratories** – Ideal for universities and research institutes performing high-precision thermal experiments, including material synthesis, characterization, and advanced R&D in both metals and ceramics.

- **Industrial Facilities & Aerospace Applications** – Supports high-temperature processing in manufacturing environments requiring robust, reliable, and repeatable thermal treatment for components used in aerospace, petrochemical, and other demanding industries.

- **Vacuum & Controlled Atmosphere Applications** – Equipped with a 304 stainless steel sealing flange and high-purity quartz tube (optional metal or corundum), enabling operations under vacuum or inert/protective gas atmospheres such as nitrogen, argon, or hydrogen.

- **Precision & Safety** – Features PID and SSR/SCR control with an N-type thermocouple, ±1°C temperature accuracy, programmable 30-segment thermal curves, door safety switch, and over-temperature alarm, ensuring safe and reproducible high-temperature operation.

- **Versatile Model Options** – Available in a wide range of tube sizes (Φ40–Φ100 mm) and heating capacities (3.6 kW–12 kW), supporting continuous temperatures up to 1200–1700°C depending on the configuration, with dual 300 mm heating zones for optimal thermal uniformity.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically resistant, corrosion-resistant surface.
- A solid, double-layer metal frame integrates with an insulated fan structure to keep the furnace surface temperature low.
- Designed for horizontal use with a top-opening lid for easy operation.

Refractory Insulation

- Features a multi-layer insulation system made of lightweight alumina ceramic fiber and premium insulation board backing.
- Asbestos-free, with low heat loss and reduced energy consumption.

Heating System

- Built with high-performance HRE heating elements for efficient, radiant heat distribution within the chamber.
- The elements are arranged in a ring or on both sides to ensure even temperature distribution.
- Dual-zone configuration allows independent control of each zone for improved temperature uniformity and control.

Temperature Control Panel

- Uses PID control with solid-state relays (SSR) for accurate temperature management.

- Equipped with an internationally standardized N-type nickel-chromium-silicon thermocouple (0–1300°C) for durability and precise readings.
- A safety switch automatically shuts off power when the furnace door is opened.

Programmable Controller

- Supports PID with SSR or SCR control for fine temperature regulation.
- Features a durable, international-standard thermocouple.
- Includes 30 programmable segments, a heating status indicator, and an over-temperature alarm buzzer.

Vacuum and Atmosphere Compatibility

- Fitted with a 304 stainless steel sealing flange to enable vacuum or controlled atmosphere operation within the tube.
- Comes with a high-purity quartz tube by default; metal or corundum tubes are available to suit various applications.

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

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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