



3-ZONE SPLIT TUBE FURNACE 1200°C - TT- TF3Z-50-1200

The 3-Zone Split Tube Furnace 1200°C - TT-TF3Z-50-1200 is engineered for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. It is widely utilized in universities, research institutes, manufacturing facilities, and industries such as petrochemical and aerospace, offering reliable performance for precise thermal processing.

This furnace features a high-purity quartz tube with an outer diameter of $\Phi 50$ mm and three independently controlled heating zones, each 300 mm in length, allowing continuous operation up to 1100 °C and a maximum temperature of 1200 °C. Powered by 220 V/5.4 kW (110 V optional), it incorporates 1500-type polycrystalline alumina ceramic fiber heating elements with an N-type thermocouple, ensuring uniform heating and precise temperature control for advanced research and industrial applications.

APPLICATIONS

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- **Advanced Ceramic Materials** – Enables high-temperature sintering and densification of ceramics, ensuring structural integrity, thermal resistance, and mechanical strength for industrial and research applications.
- **Nanomaterials Research** – Provides precise, uniform thermal processing for nanostructures and advanced composites. Supports R&D in functional nanomaterials used in electronics, catalysis, and energy storage.

- **Semiconductor Materials** – Facilitates annealing, diffusion, and oxidation of semiconductor substrates at high temperatures. Ensures precise thermal control critical for microelectronics and optoelectronics development.
- **Powder Metallurgy** – Supports high-temperature sintering of metal powders into dense, uniform components. Widely used for manufacturing complex shapes and advanced alloys in both research and production.
- **Petrochemical & Chemical Laboratories** – Suitable for catalyst activation, thermal decomposition, and reaction mechanism studies requiring high-temperature stability. Delivers accurate, reproducible results for chemical R&D.
- **Aerospace Materials Engineering** – Enables testing and processing of high-performance alloys, ceramics, and composites for aerospace applications. Ensures thermal stability and mechanical performance under extreme conditions.
- **Energy & Battery Research** – Provides thermal treatment for solid-state electrolytes, lithium-ion battery materials, and next-generation energy storage systems. Ensures high-temperature stability and consistent performance for energy materials research.
- **Universities & Research Institutes** – Ideal for advanced studies in physics, chemistry, materials science, and engineering. Offers versatile programming, reliable performance, and robust safety for academic laboratories.
- **Industrial Quality Control & Certification** – Delivers ultra-high temperature testing for product validation, compliance verification, and certification. Conforms with ISO, CE, SGS, and TÜV standards for regulated industries.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel, the furnace shell features an electrostatically coated, corrosion-resistant surface. Its solid double-layer frame is integrated with a heat-insulating fan structure, ensuring a low exterior surface temperature.
- The horizontal configuration with a top-opening design offers ease of operation.

Refractory Material

- The furnace features a multi-layer insulation system made from lightweight alumina ceramic fiber and high-grade insulation board. It is asbestos-free, minimizing heat loss and reducing energy consumption.

Heating System

- Equipped with premium metal and ceramic heating elements, the system delivers free-radiation heating within the chamber for enhanced efficiency and energy savings.
- Heating is applied in a circular or dual-sided arrangement to ensure excellent temperature uniformity.
- Each of the three heating zones can be independently controlled for precise thermal management.

Temperature Control Panel

- PID control with SSR/SCR output for accurate temperature regulation
- Long-lasting thermocouple built to international standards
- Includes heating status indicator and over-temperature alarm buzzer

Program Controller

- Designed to support complex thermal processes:
- User-friendly interface with flexible programming
- Supports up to 30 programmable segments
- Over-temperature and fault alarms with automatic safety features

Vacuum/Atmosphere Function

- Features a 304 stainless steel sealing flange for creating vacuum or controlled atmospheres within the tube.
- Compatible with high-quality quartz glass tubes, as well as metal or alumina tubes to suit a range of operational needs.

TECHNICAL SPECIFICATIONS

Model Item	Heating Zone mm	Tube Size (mm)	Max Temperature	Work Temperature	Voltage	Power	Heating Element	Temperature Accuracy
TT-TF3Z-40-1200	300+300+300	Φ40×1500	1200℃	1100℃	220V (110V is also available)	5.4KW	HRE	±1℃
TT-TF3Z-60-1200	300+300+300	Φ60×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃
TT-TF3Z-80-1200	300+300+300	Φ80×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃
TT-TF3Z-100-1200	300+300+300	Φ100×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃
TT-TF3Z-40-1400	200+200+200	Φ40×1200	1400℃	1350℃	220V (110V is also available)	5KW	SIC	±1℃
TT-TF3Z-60-1400	200+200+200	Φ60×1200	1400℃	1350℃	380V	8KW	SIC	±1℃
TT-TF3Z-80-1400	200+200+200	Φ80×1200	1400℃	1350℃	380V	9KW	SIC	±1℃
TT-TF3Z-100-1400	200+200+200	Φ100×1200	1400℃	1350℃	380V	12KW	SIC	±1℃

TT-TF3Z-40-1700	200+200+200	Φ40×1200	1700℃	1600℃	380V	6KW	MoSi2	±1℃
TT-TF3Z-60-1700	200+200+200	Φ60×1200	1700℃	1600℃	380V	9KW	MoSi2	±1℃
TT-TF3Z-80-1700	200+200+200	Φ80×1200	1700℃	1600℃	380V	12KW	MoSi2	±1℃
TT-TF3Z-100-1700	200+200+200	Φ100×1200	1700℃	1600℃	380V	12KW	MoSi2	±1℃



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