



3-ZONE TUBE FURNACE 1200°C - TT-TF3Z-130- 1200

The TT-TF3Z-130-1200 is designed for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, and powder metallurgy materials. It is widely used in universities, research institutions, manufacturing facilities, and industries such as petrochemical and aerospace, offering reliable performance for advanced material processing.

This furnace features a high-purity quartz tube with an outer diameter of $\Phi 130$ mm and three independent heating zones, each 300 mm in length, providing continuous operation up to 1100 °C and a maximum temperature of 1200 °C. Powered by 220 V/7.8 kW (110 V available), it uses 1500-type polycrystalline alumina ceramic fiber heating elements with an N-type thermocouple for precise temperature control and uniform heating.

APPLICATIONS

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

- **Semiconductor Materials** – Facilitates annealing, diffusion, and oxidation of semiconductor substrates at ultra-high temperatures. Ensures precise temperature control essential for microelectronics, optoelectronics, and photonics development.
- **Powder Metallurgy** – Supports high-temperature sintering of metal powders into dense, uniform components. Widely used for manufacturing complex shapes and advanced alloys in research and production environments.
- **Petrochemical & Chemical Laboratories** – Suitable for catalyst activation, thermal decomposition, and reaction mechanism studies requiring temperatures up to 1200°C. Delivers accurate, reproducible results for chemical R&D.
- **Aerospace Materials Engineering** – Enables processing and testing of high-performance alloys, ceramics, and composites used in aerospace applications. Ensures thermal stability and mechanical property validation under extreme conditions.
- **Energy & Battery Research** – Provides controlled high-temperature treatment for solid-state electrolytes, lithium-ion battery materials, and next-generation energy storage systems. Ensures stability and consistency in advanced energy materials research.
- **Universities & Research Institutes** – Ideal for studies in physics, chemistry, materials science, and engineering. Offers flexible programming, precise multi-zone temperature control, and robust safety features for academic laboratories.
- **Industrial Quality Control & Certification** – Delivers high-temperature testing for product validation, compliance verification, and certification. Designed to meet ISO, CE, SGS, and TÜV standards for regulated industries.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel, the shell features a corrosion-resistant, electrostatically applied finish. A durable double-layer metal frame integrates with a heat-insulating fan system, keeping the external surface temperature low.
- Designed for horizontal operation with a top-opening structure for easy access.

Refractory Material

- The furnace features a multi-layer insulation system made of lightweight alumina ceramic fiber and a premium insulation board backing. It is asbestos-free, offering low heat loss and reduced energy consumption.

Heating System

- Equipped with high-quality metal and ceramic heating elements that provide efficient radiant heating inside the chamber. The system ensures energy efficiency, extended lifespan, and excellent temperature uniformity through circular or dual-sided heating.
- Each of the three zones can be controlled independently, enhancing uniformity and precision.

Temperature Control Panel

- Features PID control with SSR/SCR for accurate temperature regulation.
- Uses a standard international thermocouple for long-lasting performance.
- Includes a heating indicator light and over-temperature alarm buzzer for added safety.

Program Controller

- Supports complex processes with intuitive controls and flexible programming.
- Offers 30 programmable segments for temperature profiling.

- Includes over-temperature and fault alarms with automatic safety shutdown features.

Vacuum and Atmosphere Capability

- Equipped with a 304 stainless steel sealing flange to enable vacuum or controlled atmosphere operation.
- Compatible with high-purity quartz, metal, or alumina tubes to meet various process requirements.

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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