



TORONTECH

6 ZONE TUBE FURNACE 1200°C - TT-MZTF6Z- 100-1200



6 Zone Tube Furnace 1200°C – TT-MZTF6Z-100-1200 features a heating system, temperature control unit, work tube, and sealing components. It operates under either vacuum or controlled atmosphere conditions to support a wide range of CVD processes. The multiple heating zones provide a highly uniform temperature field and can also be used for thermal gradient experiments on materials. It is commonly used for the sintering and heat treatment of graphene, lithium battery cathode and anode materials, semiconductors, and applications in the new energy and advanced materials sectors.

APPLICATIONS

- **Energy & Materials Research** – Provides precise thermal processing for advanced materials including graphene, lithium-ion battery cathodes and anodes, semiconductors, and other high-performance materials. Supports R&D in energy storage, electronics, and nanomaterials industries.
- **Chemical Vapor Deposition (CVD) & Thin-Film Processing** – Enables controlled thermal treatment under vacuum or atmospheric conditions. Multi-zone heating allows uniform temperature distribution and supports thermal gradient experiments for coating, deposition, and material modification studies.
- **Sintering & Heat Treatment** – Delivers high-temperature processing for powders, ceramics, and metal composites. Independent control of multiple heating zones ensures uniform densification, consistent microstructure, and improved mechanical properties for production and R&D applications.
- **Industrial & High-Volume Production** – Designed for continuous operation at temperatures up to 1200°C. The robust furnace supports large-diameter tubes and high power input, making it ideal for industrial-scale sintering, annealing, and thermal processing applications.

- **Semiconductor & Electronics Materials** – Facilitates annealing, oxidation, and diffusion processes for electronic components. The multi-zone design ensures precise thermal uniformity, critical for semiconductor fabrication and microelectronics applications.
- **University & Research Labs** – Offers advanced temperature programming with 30 programmable segments for automated curves. Safe, reliable, and energy-efficient, it supports experimental studies and academic research requiring high-temperature precision.
- **Quality Control & Certification Testing** – Enables reproducible thermal testing for product validation, compliance verification, and certification. Conforms with international standards and provides reliable performance for regulated industries.
- **Customizable Thermal Processing** – Supports tube diameters from $\Phi 40$ mm to $\Phi 200$ mm, with heating power ranging from 10 kW to 30 kW. Multiple heating zones with independent controls provide flexibility for varied material and process requirements.

FEATURES

Furnace Shell

The shell is constructed from Q235 low-carbon steel with an electrostatic and corrosion-resistant coating. Its solid double-layer metal frame is paired with an insulated fan structure, helping to maintain a low surface temperature. The furnace features a vertical configuration with a side-opening cover, making operation simple and accessible.

Refractory Material

The multi-layer insulation system includes lightweight alumina ceramic fiber and a high-grade insulation board. It is

asbestos-free, offering low heat loss and reduced energy usage.

Heating System

The furnace uses high-quality HRE spiral resistance wire heating elements, securely embedded on the inner surface. These elements provide efficient, radiation-based heating within the chamber, contributing to energy savings and extended durability. A ring-shaped configuration of resistance wire ensures even temperature distribution. The furnace includes multiple heating zones, each of which can be controlled independently.

Temperature Control Panel

Equipped with an advanced controller designed to handle complex processes. It features 30 programmable segments for automated temperature curve control. Safety functions include over-temperature alarms, fault detection, and automatic protection.

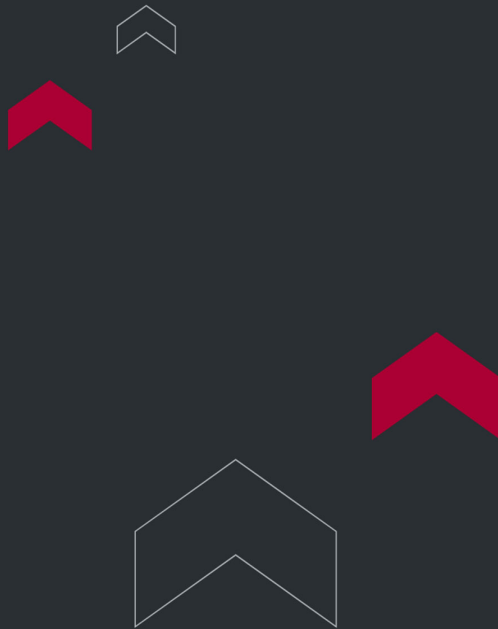
Vacuum and Atmosphere Capability

Fitted with a 304 stainless steel sealing flange, the furnace can operate under vacuum or controlled atmosphere conditions. The work tube is available in high-purity alumina, metal, or quartz glass to support various applications.

TECHNICAL SPECIFICATIONS

Model	Heating zone□ mm□	Tube size (mm)	Max temp	Voltage	Power	Heating element	Temp accuracy
TT-MZTF6Z-40-1200	1200	Φ40×1800	1200℃	380V	10KW	HRE	±1℃
TT-MZTF6Z-60-1200	1200	Φ60×1800	1200℃	380V	15KW	HRE	±1℃
TT-MZTF6Z-80-1200	1200	Φ80×1800	1200℃	380V	16KW	HRE	±1℃
TT-MZTF6Z-100-1200	1200	Φ100×1800	1200℃	380V	18KW	HRE	±1℃
TT-MZTF6Z-120-1200	1200	Φ120×1800	1200℃	380V	22KW	HRE	±1℃
TT-MZTF6Z-150-1200	1200	Φ150×1800	1200℃	380V	25KW	HRE	±1℃

TT-MZTF6Z-200-1200	1200	Φ200×1800	1200℃	380V	30KW	HRE	±1℃
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