



TORONTECH



3 ZONES ROTARY TILTING TUBE FURNACE 1200°C -TT-RTF-280- 1200

The 3 Zones Rotary Tilting Tube Furnace 1200°C - TT-RTF-280-1200 is engineered for advanced material processing, featuring an integrated heating system, automatic rotation, automated feeding and discharge functions, and a tilt-adjustable furnace body. Its furnace tube rotates a full 360° with adjustable speed to ensure uniform heating, while the feeding speed can be fine-tuned in real time for precise material control. The body tilts up to 15° for easier loading and unloading, while a material collection unit at the tube's outlet supports continuous small-scale production, making it ideal for product development, pilot-scale testing, and research applications.

This model is equipped with a large $\Phi 280 \times 1500$ quartz tube and three independent heating zones with a total length of 900 mm, ensuring stable and uniform thermal performance. It supports continuous operation at 1100°C and reaches a maximum temperature of 1200°C. Powered by 220V/13 kW (with a 110V option available), the furnace uses high-quality HRE alloy resistance wire heating elements combined with an N-type thermocouple for precise temperature control, efficiency, and long-term durability in both laboratory and industrial environments.

APPLICATIONS

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- **Advanced Ceramic Materials** – Enables precise sintering and densification of ceramics at high temperatures, ensuring superior structural integrity, thermal stability, and mechanical strength for both industrial and academic research applications.

- **Nanomaterials Research** – Provides controlled and uniform thermal processing for nanostructures and composite materials. Supports advanced R&D in functional nanomaterials applied to electronics, catalysis, and energy storage.
- **Semiconductor Materials** – Facilitates annealing, diffusion, and oxidation of semiconductor substrates at elevated temperatures. Ensures precise temperature control essential for microelectronics and optoelectronics development.
- **Powder Metallurgy** – Supports the high-temperature sintering of metal powders into dense and uniform components. Widely applied in the development of advanced alloys and complex geometries for research and production.
- **Chemical & Petrochemical Laboratories** – Suitable for catalyst activation, thermal decomposition, and reaction mechanism studies requiring up to 1200°C. Provides consistent and reproducible results for chemical research and pilot-scale testing.
- **Aerospace Materials Engineering** – Enables processing and validation of advanced alloys, composites, and ceramics used in aerospace applications. Ensures thermal stability and mechanical strength under extreme operating conditions.
- **Energy & Battery Research** – Delivers thermal treatment for lithium-ion battery materials, solid-state electrolytes, and next-generation energy storage systems. Ensures stable high-temperature performance critical to energy R&D.
- **Universities & Research Institutes** – An excellent tool for advanced studies in materials science, chemistry, and engineering. Offers flexible programming, reliable operation, and robust safety features for academic laboratories.
- **Industrial Quality Control & Certification** – Provides reliable high-temperature testing for product validation and compliance verification. Conforms with ISO9001, CE, SGS, and TÜV standards, making it suitable for regulated industries.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with a corrosion-resistant, electrostatically coated surface. A durable double-layer metal frame is integrated with a heat-insulating fan structure to maintain a low external temperature. Designed for horizontal use, the top-opening structure allows for easy operation.

Refractory Material

- The furnace features a multi-layer insulation system made from lightweight alumina ceramic fiber and high-performance insulation board. Free of asbestos, this design minimizes heat loss and reduces energy consumption.

Heating System

- High-quality HRE spiral resistance wire elements are securely embedded along the interior, providing radiant heating that is efficient and reliable, with a long operational life.
- Ring-shaped resistance wire layout ensures even heat distribution throughout the chamber.

Temperature Control Panel

- Advanced control units support a range of complex thermal processes.
- Programmable with up to 30 segments for automated temperature curve control.
- Built-in over-temperature and fault detection with automatic safety shutoff.

Rotary and Automatic Feeding System

- The furnace tube uses a gear-driven electric motor to rotate 360°, with adjustable speeds between 12 and 20 rpm, ensuring uniform heating of the material. The furnace body tilts via electric actuation, allowing smooth material flow in and out. An automatic screw feeder provides adjustable feed rates, and a collection unit at the outlet supports continuous processing.

TECHNICAL SPECIFICATIONS

Item	TT-RTF-60-1200PRO	TT-RTF-100-1200PRO	TT-RTF-150-1200PRO	TT-RTF-200-1200PRO
Tube Size	Φ60×1200mm	Φ100×1200mm	Φ150×1500mm	Φ200×1800mm
Heating Zone	440mm	440mm	600mm	800mm
Max Temperature	1200℃			
Work Tempearture	1100℃			
Heating Element	HRE high temperature alloy resistance wire			
Chamber Material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration			
Temperature accuracy	±1℃			
Thermocouple	N type thermocouple			
Temperature Controller	Intelligent microcomputer PID temperature control instrument, SSR voltage regulation control, PID parameter self-tuning function; programmable 32 program segments, program temperature rise, program heat preservation, program cooling			
Heating Rate	1-20℃/min freely adjustment			
Furnace Strcuture	Furnace temperature control integrated structure			
Protection	Modular control, sound and light alarm signal will be sent out for over temperature and broken coupler in the working process, and the protection action will be completed automatically			
Safety Protection	The equipment is equipped with a circuit breaker, which will automatically pop open in case of short circuit leakage, which can protect the safety of equipment and operators			
Furnace Shell	High-quality cold-rolled steel plate CNC machine tool blanking processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder			

Cerfiticate	ISO9001 CE SGS TUV
Standard Accessories	1□ Furnace Body 1 set 2□ Power cable 3 meter 3□ Thermocouple 1 pc 4□ Manual 1 pc 5□ Furnace Hook 1 pair 6□ High Temperature 1 pair
OEM	According to the output requirements of the actual material of the user, the customization of special specifications of the product can be realized



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