



TORONTECH



MUFFLE FURNACE TT- MF-12-1400

Muffle Furnace TT-MF-12-1400 is designed for high-temperature heat treatment processes, including sintering of advanced materials such as metals, ceramics, nanomaterials, and semiconductors.

APPLICATIONS

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- **Advanced Materials Science & Engineering** – Ideal for sintering and heat-treating ceramics, metals, composites, nanomaterials, and semiconductor components. Its dual-side SiC heating system ensures precise temperature uniformity for reproducible results in research and pilot-scale applications.
- **Semiconductor & Electronics Industry** – Supports wafer annealing, dielectric material sintering, and thermal oxidation studies. The integrated PID-SSR control system and S-type thermocouple deliver stable high-temperature processing required in semiconductor fabrication.

- **Chemical & Petrochemical Research** – Used for catalyst activation, thermal decomposition, and calcination of polymers and advanced chemical compounds. Programmable heating curves with up to 30 segments enable complex reaction pathways with high precision.
- **Academic & Educational Laboratories** – Extensively applied in universities and technical institutes for teaching and research in materials science, chemistry, and physics. Provides accuracy, flexibility, and safety features for experimental studies.
- **Aerospace & Metallurgical Applications** – Suitable for the development and testing of high-performance alloys, ceramics, and composite structures. Enables controlled high-temperature treatments, oxidation testing, and microstructural analysis for aerospace engineering.
- **Pharmaceutical & Biotechnology Research** – Applied for controlled ashing, calcination, and decomposition of pharmaceutical samples and intermediates. Ensures reliability, repeatability, and compliance with laboratory standards.
- **Environmental & Geoscience Laboratories** – Used in soil ashing, mineral analysis, and geological sample preparation. High accuracy and consistent heating ensure dependable results for geochemical and environmental studies.
- **Industrial Quality Control & Certification Centers** – Reliable for routine material testing, thermal process verification, and quality assurance. Built-in protection systems, alarms, and certifications (ISO, CE, SGS, TUV) ensure compliance with international safety and quality standards.

FEATURES

Furnace Shell

1. The shell is constructed from Q235 low-carbon steel with an electrostatic coating for corrosion resistance.
2. A durable double-layer metal frame helps maintain a low external surface temperature.
3. The side-opening door, hinged on the right, allows for easy access and operation.

Refractory Material

1. Features a multi-layer insulation system made from lightweight alumina ceramic fiber and high-quality insulation board.
2. Asbestos-free, this design minimizes heat loss and reduces energy consumption.

Heating System

1. High-quality silicon carbide (SiC) heating elements are securely positioned on both sides of the chamber for efficient, radiant heat distribution and enhanced temperature uniformity.
2. A protective SiC bottom plate shields the lower heating elements, offering high mechanical strength, excellent thermal conductivity, and horizontal load support.

Temperature Control Panel

1. Utilizes PID with solid-state relay (SSR) for precise temperature regulation.
2. Equipped with an internationally standardized S-type platinum-rhodium thermocouple, with a range of 0–1600°C and extended service life.
3. Includes a safety interlock switch that cuts power when the furnace door is opened.

Program Controller

1. Supports complex heating processes with intuitive, user-friendly operation
2. Allows flexible programming with up to 30 segments per heating curve
3. Provides over-temperature and system fault alarms for automatic safety protection

Model	TT-MF-1.7-1400	TT-MF-3-1400	TT-MF-8-1400	TT-MF-12-1400	TT-MF-18-1400	TT-MF-36-1400	TT-MF-45-1400
Chamber size □ W xD xH□ mm	120 x120x120	150 x150x150	200x200x200	200x300x200	250 x300x250	300x400x300	300 x500x300
Outer size□ W xD xH□ mm	460 x500x720	490x530x750	575x610x825	590 x680x835	610 x700x860	650x770x900	975 x930x1200
Max temperature	1400℃						
Working temperature	1350℃						
Voltage	220V/2.5KW (110V is also available)	220V/3KW (110V is also available)	220V/5KW (110V is also available)	220V/5KW (110V is also available)	220V/6KW (110V is also available)	380V/12KW	380V/14KW
Heating element	silicon carbide rod (SIC)						
Chamber material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration						
Temp.Precision	±1℃						
Termocouple	S Type termocouple						
Temperature controller	Intelligent microcomputer PID temperature control instrument, SSR control, PID parameter self-tuning function; programmable 30 program segments, program temperature rise, program heat preservation, program cooling						
Heating rate	1-30℃/min free adjustment						
Furnace structure	Furnace temperature control integrated structure						
Equipment 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
Quality certificate	ISO9001 CE SGS TUV
Optional	1. Optional exhaust chimney for evacuation of volatile substances 2. Optional corundum crucible, furnace floor, shed board and other kiln furniture 3. Optional material recorder for online recording of temperature curves



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