



TORONTECH



MUFFLE FURNACE TT- MF-20-1700

TT-MF-20-1700 High-Temperature Muffle Furnace is designed for heat treatment processes such as sintering ceramic materials, nanomaterials, semiconductor materials, powder metallurgy, and other advanced materials. It is widely used in universities, research institutions, manufacturing facilities, the petrochemical sector, and the aerospace industry.

APPLICATIONS

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- **Advanced Materials Engineering** – Delivers high-temperature processing for ceramics, nanomaterials, semiconductors, and powder metallurgy. Ensures precision-controlled sintering, annealing, and thermal modification for advanced R&D.
- **Metallurgical Testing & Alloy Development** – Supports heat treatment, oxidation resistance evaluation, and phase transformation analysis. Provides reproducible and traceable results essential for metallurgical laboratories.
- **Ceramics & Glass Processing** – Ideal for ceramic sintering, glaze evaluation, and controlled glass heating. Maintains structural integrity and defect-free outcomes under stable high-temperature conditions.

- **Semiconductor & Electronics Manufacturing** – Enables thermal oxidation, annealing, and diffusion processes for wafers and electronic materials. Guarantees uniform heating and precise control aligned with industry benchmarks.
- **Chemical & Catalysis Research** – Suitable for catalyst activation, pyrolysis, and complex high-temperature chemical reactions. Programmable thermal curves provide flexibility for multi-stage research processes.
- **Energy & Battery Material Research** – Facilitates thermal processing of cathode and anode materials for lithium-ion, solid-state, and next-generation batteries. Delivers consistent heating profiles critical for energy materials development.
- **Aerospace & Defense Materials Testing** – Provides high-performance sintering and heat treatment for superalloys, composites, and advanced ceramics. Ensures reliability and compliance with aerospace-grade quality standards.
- **Academic & Institutional Laboratories** – Widely used in universities and research institutes for chemistry, physics, and materials science. Offers user-friendly programming, robust safety features, and reliable high-temperature operation.
- **Industrial Quality Control & Certification** – Ensures consistent thermal testing for product certification, inspection, and regulated industry compliance. Meets ISO9001, CE, SGS, and TÜV quality standards.

FEATURES

Furnace Shell

1. Crafted from Q235 low-carbon steel, the shell features an electrostatically resistant, corrosion-resistant surface.
2. Its robust double-layer metal frame minimizes exterior temperature for safer handling.
3. The side-opening door swings to the right for easy access and operation.

Refractory Material

The furnace includes a multi-layer insulation system composed of lightweight alumina ceramic fiber and premium insulation boards. It is free from asbestos, ensuring low heat loss and reduced energy use.

Heating System

1. Equipped with high-quality MoSi₂ heating elements, securely positioned on both sides of the chamber.
2. This dual-sided setup ensures even heat distribution, enhances efficiency, and supports long-term performance.
3. Custom models are available with maximum temperatures of 1750°C and 1800°C, ideal for sintering ceramic materials.

Temperature Control Panel

1. Features PID and SCR control for accurate temperature management.
2. Utilizes an international-standard B-type platinum-rhodium thermocouple, offering a temperature range of 50-1800°C and extended service life.
3. A built-in safety switch cuts power when the furnace door is opened.

Program Controller

1. Advanced controller supports complex heating processes
2. User-friendly interface with flexible programming
3. Stores up to 32 programmable segments
4. Includes over-temperature and fault alarms for automatic protection

TECHNICAL SPECIFICATIONS

Model	TT-MF-1-1700	TT-MF-3-1700	TT-MF-8-1700	TT-MF-12-1700	TT-MF-20-1700	TT-MF-36-1700	TT-MF-45-1700
Chamber size □ W xD xH□ mm	100 x120x100	150 x150x150	200x200x200	200x300x200	250 x320x250	300x400x300	300 x500x300
Outer size □ W xD xH□ mm	383 x432x660	510x560x870	600x620x920	600x693x920	610 x730x970	700x840x1500	700x940x1500
Max temperature	1700℃						
Working temperature	1600℃						
Voltage	220V/2KW (110V is also available)	220V/4KW (110V is also available)	220V/5KW (110V is also available)	220V/6KW (110V is also available)	220V/7KW (110V is also available)	380V/15KW	380V/18KW
Heating element	MoSi2 rod						
Chamber material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration						
Temp.Precision	±1℃						
Termocouple	B Type termocouple						
Temperature controller	Intelligent microcomputer PID temperature control instrument, SCR/SSR control, PID parameter self-tuning function; programmable 32 time periods, program heating, program heat preservation, program cooling						
Heating rate	1-15℃/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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