



TORONTECH



MUFFLE FURNACE TT- MF-12-1700

Muffle Furnace TT-MF-12-1700 is designed for high-temperature heat treatment processes such as sintering ceramic materials, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. It is widely used in universities, research institutes, manufacturing facilities, as well as in the petrochemical and aerospace sectors.

APPLICATIONS

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- **Advanced Ceramic Manufacturing** - Provides ultra-high temperature sintering and densification for advanced ceramics. Ensures excellent structural integrity, thermal stability, and reproducibility for both research and production.
- **Nanomaterials Development** - Enables precise and uniform thermal treatment of nanostructures and composites. Supports research in functional nanomaterials for energy, catalysis, and high-performance electronics.
- **Semiconductor Industry** - Facilitates high-temperature annealing, diffusion, and oxidation of semiconductor materials. Guarantees accuracy and stability essential for microelectronics and optoelectronics processing.

- **Powder Metallurgy** - Supports sintering of metallic powders into dense, durable, and complex-shaped components. Ideal for alloy development and advanced metal part fabrication.
- **Petrochemical & Chemical Research** - Suitable for catalyst activation, pyrolysis, and decomposition studies requiring stable ultra-high temperatures. Provides programmable thermal cycles for repeatable results.
- **Aerospace Materials Engineering** - Enables high-temperature processing of aerospace-grade alloys, ceramics, and composites. Delivers controlled thermal environments for validation under extreme operational conditions.
- **Energy & Battery Materials Research** - Facilitates precise thermal treatment of cathodes, anodes, and electrolytes in lithium-ion, solid-state, and advanced battery systems. Ensures material consistency and reproducibility.
- **Academic & Research Institutions** - Widely applied in universities and research centers for advanced studies in chemistry, physics, materials science, and engineering. Combines safety, programmability, and high reliability.
- **Industrial Quality Control & Certification** - Provides reproducible high-temperature testing for product verification, certification, and compliance. Fully aligned with ISO, CE, SGS, and TÜV standards.

FEATURES

Furnace Shell

1. Constructed from Q235 low-carbon steel with an electrostatic, corrosion-resistant coating.
2. Reinforced with a durable double-layer metal frame to keep the exterior temperature low.

- 3. Features a right-hinged side-opening door for easy access and operation.

Refractory Material

- 1. Multi-layer insulation includes lightweight alumina ceramic fiber and premium insulation boards.
- 2. Asbestos-free, designed for minimal heat loss and reduced energy consumption.

Heating System

- 1. Equipped with high-quality MoSi₂ heating elements, securely mounted on both sides of the chamber.
- 2. Provides efficient, uniform free-radiant heating with excellent energy performance and extended lifespan.
- 3. Dual-side heating ensures even temperature distribution.
- 4. Customizable models available with maximum temperatures of 1750°C or 1800°C, suitable for ceramic sintering.

Temperature Control Panel

- 1. Utilizes PID and SCR control for accurate temperature regulation.
- 2. Includes a B-type platinum-rhodium thermocouple (50–1800 °C) with long-lasting performance.
- 3. Furnace door features an automatic shutoff safety switch when opened.

Program Controller

- 1. Advanced controller supports complex thermal processes.
- 2. User-friendly interface with flexible programming.
- 3. Stores up to 30 programmable segments.
- 4. Built-in over-temperature and fault alarms with automatic safety protocols.

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
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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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