

MUFFLE FURNACE TT- MF-12-1200 PRO



The Muffle Furnace TT-MF-12-1200 Pro is designed for high-temperature heat treatment processes such as sintering and heating of advanced materials, including metals, ceramics, nanomaterials, and semiconductors. It features a spacious chamber measuring 200 x 300 x 200 mm, with an outer dimension of 480 x 630 x 710 mm. The furnace operates at a continuous working temperature of 1100°C, with a maximum temperature of 1200°C, delivering reliable performance for advanced laboratory and industrial applications.

Powered by a 220V/4 kW system (with an optional 110V configuration available), the furnace utilizes high-quality HRE spiral resistance wire heating elements for efficient and uniform heating. Temperature precision is maintained at $\pm 1^{\circ}\text{C}$, monitored by a durable N-type thermocouple, ensuring consistent accuracy and long service life.

APPLICATIONS

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- **Advanced Ceramic Materials** - Supports high-temperature sintering and densification of ceramics, enhancing structural integrity, thermal stability, and mechanical performance. Ideal for industrial processing and academic research.

- **Nanomaterials Research** - Provides precise, uniform heating conditions for synthesizing nanostructures and composites. Enables R&D in functional nanomaterials for electronics, catalysis, and energy applications.
- **Semiconductor Materials** - Facilitates annealing, oxidation, and diffusion processes in semiconductor substrates. Delivers accurate temperature control essential for microelectronics and optoelectronics development.
- **Powder Metallurgy** - Enables sintering of metal powders into dense, uniform components. Widely applied in the production of complex shapes, advanced alloys, and specialized parts for research and industry.
- **Petrochemical & Chemical Laboratories** - Suitable for catalyst activation, thermal decomposition, and chemical stability studies requiring temperatures up to 1200°C. Ensures reproducible results for advanced chemical R&D.
- **Aerospace Materials Engineering** - Supports testing and treatment of high-performance alloys, ceramics, and composites used in aerospace applications. Ensures validation of thermal resistance and durability under demanding conditions.
- **Energy & Battery Research** - Provides reliable thermal treatment for electrode materials, solid electrolytes, and lithium-ion battery components. Enhances stability, conductivity, and performance of energy storage systems.
- **Universities & Research Institutes** - Designed for multidisciplinary applications in physics, chemistry, materials science, and engineering. Offers advanced programming, consistent performance, and robust safety features for academic use.
- **Industrial Quality Control & Certification** - Delivers precise high-temperature testing for product validation, compliance, and certification. Meets international quality standards including ISO, CE, SGS, and TÜV.

FEATURES

Furnace Shell

1. Constructed from Q235 low-carbon steel with an electrostatically coated surface that resists corrosion.
2. Reinforced metal frame design helps maintain a low external surface temperature.
3. Side-opening door with right-hand swing for easy access and operation.

Refractory Material

Features a multi-layer insulation system made of lightweight alumina ceramic fiber and high-quality insulating board. Free from asbestos, it offers low heat loss and energy efficiency.

Heating System

1. Equipped with high-quality HRE spiral resistance wire heating elements, securely embedded on the furnace walls. These elements heat through radiant transfer for efficient energy use and extended durability.
2. Three-sided heating (left, right, and bottom) ensures even temperature distribution.
3. A silicon carbide bottom plate protects the lower heating element, offering strong mechanical support, excellent thermal conductivity, and horizontal load capacity.

Temperature Control Panel

1. Uses PID and SSR control methods for precise temperature regulation.
2. Fitted with an international-standard N-type nickel-chromium-silicon thermocouple, with a temperature range of 0–1300°C and long operational life.
3. Integrated safety switch automatically cuts power when the furnace door is opened.

Program Controller

1. Advanced controller supports complex heating cycles.

2. User-friendly interface with flexible programming options.
3. Can store up to 30 segments for single-curve programming.
4. Features over-temperature and fault alarms with automatic safety shutdown.

TECHNICAL SPECIFICATIONS

Model	TT-MF-1-1000	TT-MF-3-1200	TT-MF-6-1200	TT-MF-8-1200	TT-MF-12-1200	TT-MF-18-1200	TT-MF-30-1200
Chamber size□ W xD xH□ mm	100 x100x100	150 x150x150	180x230x150	200x300x120	200 x300x200	250 x300x250	300 x500x200
Outer size□ W xD xH□ mm	250 x240x350	430x465x620	460x570x660	480 x630x630	480 x630x710	550x635x780	600 x870x735
Max temperature	1200℃						
Working temperature	1100℃						
Voltage	220V/1.2KW (110V is also available)	220V/2.5KW (110V is also available)	220V/3KW (110V is also available)	220V/3KW	220V/4KW (110V is also available)	220V/6KW (110V is also available)	380V/7.5KW
Heating element	HRE Alloy resistance wire						
Chamber material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration						
Temp.Precision	±1℃						
Termocouple	N 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	1-25℃/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
Furnace shell	High-quality cold-rolled steel plate CNC machine tool blanking processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder
Quality certificate	ISO9001 CE SGS TUV
Standard packing	1. Furnace body 1 set 2. Temperature controller 1 set 3. Power cord 3 meters 4. Thermocouple 1 set 5. Manual 1 copy 6. Crucible pliers 1 set 7. High temperature gloves 1 pair
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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