



TORONTECH



MUFFLE FURNACE TT- MF-20-1800

TT-MF-20-1800 High Temperature Muffle Furnace is designed for heat treatment processes such as sintering ceramic materials, nanomaterials, semiconductor components, and powder metallurgy. It is widely used in universities, research institutions, industrial facilities, as well as in the petrochemical and aerospace sectors for advanced material processing.

APPLICATIONS

Muffle Furnace TT-MF-20-1800

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- **Advanced Materials Research & Development** – Provides high-temperature sintering, annealing, and heat treatment of ceramics, nanomaterials, semiconductors, and powder metallurgy. Dual-sided MoSi₂ heating elements ensure stable temperature uniformity up to 1800°C, delivering reproducible results for advanced material innovation and pilot-scale research.
- **Electronics & Semiconductor Manufacturing** – Enables precise processing of wafers, thin films, and electronic components under controlled high-temperature conditions. Equipped with a B-type platinum-rhodium thermocouple and PID-SCR control, it ensures accuracy, repeatability, and reliability for semiconductor fabrication and testing.

- **Chemical & Petrochemical Laboratories** – Facilitates catalyst activation, calcination, and thermal decomposition of polymers and specialty chemicals. Its 30-segment programmable controller allows complex thermal profiles, supporting both industrial research and small-batch quality control operations.
- **Academic & Institutional Research** – Widely used in universities and research institutes for studies in solid-state physics, materials science, and chemistry. Flexible programming options and precise temperature regulation make it suitable for advanced coursework, experimental research, and small-scale production trials.
- **Aerospace & Metallurgical Engineering** – Designed for high-performance heat treatment of alloys, ceramics, and composites used in aerospace and defense industries. Provides accurate, uniform heating for oxidation resistance testing, structural evaluations, and phase transformation studies.
- **Pharmaceutical & Biotechnology Research** – Used for calcination, ashing, and controlled decomposition of pharmaceutical intermediates and compounds. Ensures compliance with international laboratory standards while delivering accurate, reproducible thermal processing.
- **Environmental & Geological Testing Centers** – Ideal for sample preparation, mineral analysis, and soil or rock ashing studies. Ensures reliable and consistent high-temperature treatment for environmental monitoring and geoscience investigations.
- **Independent Certification & Testing Agencies** – Provides secure, audit-ready heat treatment with automatic fault alarms, safety interlocks, and internationally certified compliance (ISO, CE, SGS, TUV). Supports third-party certification, verification, and traceability in regulated industries.

FEATURES

Furnace Shell

1. The shell is constructed from Q235 low-carbon steel with an electrostatically coated surface for enhanced corrosion resistance.
2. Its robust double-layer metal frame minimizes external heat, keeping the furnace surface temperature low.
3. The side-opening door, hinged on the right, offers convenient access and smooth operation.

Refractory Material

1. Features a multi-layer insulation system made from lightweight alumina ceramic fiber and premium insulation board.
2. The design is asbestos-free, reduces heat loss, and improves energy efficiency.

Heating System

1. Equipped with high-quality MoSi₂ heating elements, securely mounted on both sides for efficient radiant heat distribution.
2. Dual-side heating ensures excellent temperature uniformity throughout the chamber.
3. Available in custom configurations with a maximum temperature of 1750°C or 1800°C, ideal for sintering ceramic materials.
4. Designed for energy savings and extended service life.

Temperature Control Panel

1. Utilizes PID and SCR control for accurate and stable temperature regulation.
2. Incorporates an international standard B-type platinum-rhodium thermocouple, offering a temperature range of 50–1800°C and long operational life.
3. Includes a safety switch that cuts power when the door is opened.

Program Controller

1. Advanced control system designed for complex thermal processes
2. User-friendly interface with flexible programming

3. Supports up to 30 programmable segments
4. Features over-temperature protection and fault alarms for enhanced safety

TECHNICAL SPECIFICATIONS

Model	TT-MF-1-1800	TT-MF-3-1800	TT-MF-8-1800	TT-MF-12-1800	TT-MF-20-1800	TT-MF-36-1800	TT-MF-45-1800
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	1800℃						
Working temperature	1700℃						
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°C/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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