

# MUFFLE FURNACE (VERTICAL) TT-MF-36- 1400



Muffle Furnace (Vertical) TT-MF-36-1400 is designed for high-temperature heat treatment processes such as sintering advanced materials, including metals, ceramics, nanomaterials, and semiconductors.

## APPLICATIONS

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- **Advanced Ceramic Materials** - Enables precise high-temperature sintering and densification of ceramics, ensuring superior mechanical strength, structural stability, and thermal resistance. Suitable for both industrial-scale processing and academic research.
- **Nanomaterials Research** - Provides uniform, controlled heating for nanostructures and composite materials. Supports R&D in functional nanomaterials applied to electronics, catalysis, photonics, and next-generation energy systems.
- **Semiconductor Materials** - Facilitates thermal oxidation, diffusion, and annealing processes for semiconductor substrates. Ensures exceptional temperature precision, critical for the development of microelectronics and optoelectronic devices.

- **Powder Metallurgy** - Supports the sintering of metallic powders into dense, durable components. Widely used in manufacturing advanced alloys, complex geometries, and structural parts for industrial and research applications.
- **Petrochemical & Chemical Laboratories** - Suitable for catalyst activation, thermal decomposition, and material stability testing at elevated temperatures. Delivers reliable, reproducible results essential for chemical and petrochemical R&D.
- **Aerospace Materials Engineering** - Enables high-temperature testing of advanced composites, ceramic matrices, and aerospace-grade alloys. Ensures validation of thermal resistance and mechanical performance under extreme operating conditions.
- **Energy & Battery Research** - Provides controlled thermal treatment for solid electrolytes, electrode materials, and lithium-ion battery components. Enhances performance and stability in energy storage and renewable energy applications.
- **Universities & Research Institutes** - Designed for multidisciplinary studies in physics, chemistry, materials science, and engineering. Offers versatile programming functions, robust safety systems, and high reliability for academic laboratories.
- **Industrial Quality Control & Certification** - Delivers high-precision thermal testing for product validation, compliance verification, and certification processes. Conforms to international standards including ISO, CE, SGS, and TÜV.

## FEATURES

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## **Furnace Shell**

1. The shell is constructed from Q235 low-carbon steel with an electrostatically coated surface for corrosion resistance.
2. Its robust double-layer metal frame helps maintain a low external surface temperature.
3. The side-opening door swings to the right, allowing for easy operation.

## **Refractory Material**

1. The furnace features a multi-layer insulation system made from lightweight alumina ceramic fiber and high-quality insulation board.
2. It is asbestos-free, minimizes heat loss, and enhances energy efficiency.

## **Heating System**

1. High-quality silicon carbide (SiC) heating elements are securely installed on both sides of the chamber, providing efficient, energy-saving performance through radiant heat.
2. Dual-sided heating ensures uniform temperature distribution.
3. A silicon carbide bottom plate protects the lower heating elements, offering high mechanical strength, excellent thermal conductivity, and stable horizontal load support.

## **Temperature Control Panel**

1. Utilizes PID and SSR control for precise temperature regulation.
2. Equipped with an internationally standardized S-type platinum-rhodium thermocouple, measuring up to 1600°C with long-term durability.
3. A safety switch automatically cuts power when the door is opened.

## **Program Controller**

1. Advanced controller supports complex thermal processing needs
2. User-friendly interface with flexible programming
3. Allows up to 30 programmable segments per curve

4. Over-temperature and fault alarms ensure automatic safety protection

## TECHNICAL SPECIFICATIONS

| 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<br>□ W xD xH□ mm | 120 x120x120                                                                                                                                                                                                          | 150 x150x150                      | 200x200x200                       | 200x300x200                       | 250 x300x250                      | 300x400x300   | 300 x500x300  |
| Outer size□<br>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                                                                                                                                                                                             |                                   |                                   |                                   |                                   |               |               |

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|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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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