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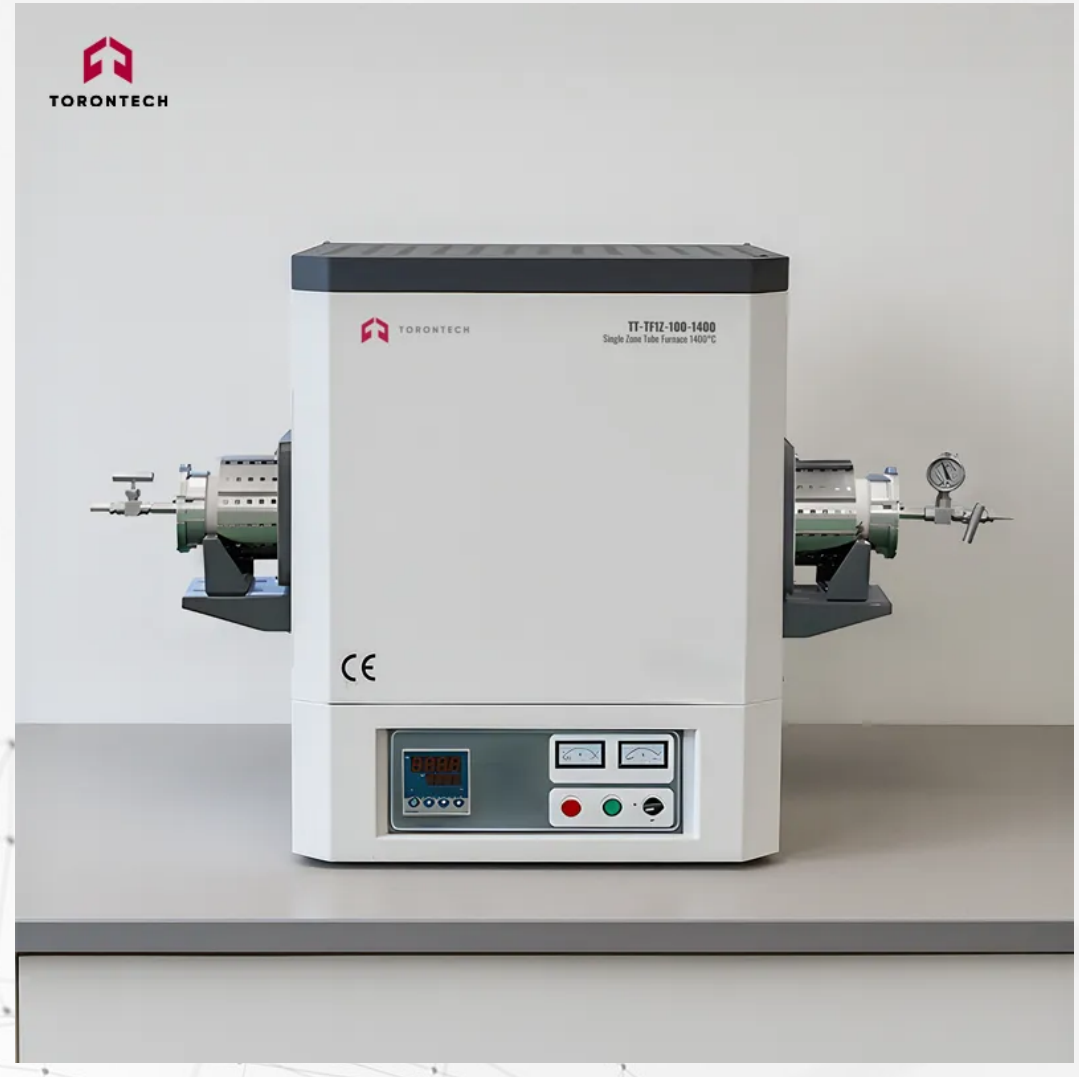


# SINGLE ZONE TUBE FURNACE 1400°C - TT-TF1Z-100-1400

Single Zone Tube Furnace 1400°C - TT-TF1Z-100-1400 is designed for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. It is widely used in universities, research institutions, manufacturing facilities, as well as in the petrochemical, aerospace, and related sectors.

## APPLICATIONS

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- **Advanced Ceramics & Structural Materials** – Provides precise sintering, annealing, and heat treatment for technical ceramics, refractories, and structural components. Ensures improved mechanical strength, dimensional stability, and oxidation resistance.

- **Nanomaterials & Composite Engineering** – Enables controlled thermal processing of nanoparticles, thin films, and hybrid composites. Ensures reproducibility and uniform heating essential for advanced material development in electronics and energy systems.

- **Semiconductor & Electronic Device Processing** – Supports diffusion, oxidation, and annealing of semiconductor substrates. Delivers stable temperature control and uniformity required for high-performance microelectronics and optoelectronic devices.

- **Powder Metallurgy & Alloy Development** – Facilitates sintering, densification, and phase transformation of metallic powders and specialty alloys. Widely used in research and industrial development of high-strength, lightweight materials.

- **Chemical & Petrochemical Applications** – Suitable for catalyst preparation, decomposition studies, and controlled atmosphere experiments. Provides accuracy and stability critical for laboratory and industrial chemical processes.

- **Aerospace Materials Research** – Provides high-temperature heat treatment for advanced alloys, coatings, and composite systems used in aerospace engineering. Enhances thermal resistance, fatigue life, and overall performance under extreme conditions.

- **Energy Storage & Battery Research** – Supports sintering of solid-state electrolytes, electrodes, and next-generation battery materials. Ensures improved conductivity, stability, and cycling performance for lithium-ion and solid-state systems.

- **Universities & Research Institutions** – Widely applied in academic laboratories for materials science, physics, chemistry, and engineering programs. Combines user-friendly design with advanced safety and programming features for educational and research use.

- **Industrial Quality Control & Standard Compliance** – Delivers reliable, repeatable high-temperature testing for product verification and certification. Meets ISO9001, CE, SGS, and TÜV standards, ensuring trust in regulated industries.

## FEATURES

### Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically resistant, corrosion-resistant finish.
- A durable double-layer metal frame is paired with a heat-insulating fan structure to keep the exterior surface temperature low.
- Designed for horizontal use with a top-opening structure for easy operation.

### Refractory Material

- Features a multi-layer insulation system made of lightweight alumina ceramic fiber and high-performance insulation board.
- Asbestos-free design ensures low heat loss and reduced energy consumption.

### Heating System

- Equipped with premium HRE heating elements that deliver efficient, radiant heat throughout the chamber.
- Ring or dual-side heating provides excellent temperature uniformity.
- Dual-zone configuration allows each zone to be controlled independently for improved heat distribution.

### Temperature Control Panel

- Uses PID and SSR control for accurate temperature regulation.
- Built with a high-quality N-type nickel-chromium-silicon thermocouple, offering a temperature range of 0–1300°C and extended durability.
- Includes a safety switch that powers off the system when the door is opened.

### Program Controller

- Supports PID control with SSR/SCR for precision.

- Features a reliable, long-life international standard thermocouple.
- Programmable with up to 30 segments for automated temperature control.
- Includes a heating indicator and an over-temperature alarm buzzer.

**Vacuum and Atmosphere Capability**

- Comes with a 304 stainless steel sealing flange to support vacuum or gas atmosphere applications inside the tube.
- Supplied with a high-quality quartz glass work tube. Optional metal or corundum tubes are available for varying operational requirements.

## TECHNICAL SPECIFICATIONS

| Model | TT-TF1Z-40-1400 | TT-TF1Z-60-1400 | TT-TF1Z-80-1400 | TT-TF1Z-100-1400 |
|---|---|---|---|---|
| Tube size | Φ40 x 900mm | Φ60 x 900mm | Φ80 x 900mm | Φ100 x 900mm |
| Max  Temperature | 1400℃ | | | |
| Working temperature | 1300℃ | | | |
| Heating zone size | 300mm | | | |
| Voltage | 220V/2KW (110V is also available) | 220V/3KW (110V is also available) | 220V/4KW (110V is also available) | 220V/5KW (110V is also available) |
| Heating element | Silicon carbide rod (SIC) | | | |
| Furnace material | Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration | | | |
| Furnace tube material | High purity corundum tube | | | |
| Temperature control accuracy | ±1℃ | | | |

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|---|---|
| Temperature measuring element | S-type national standard platinum rhodium thermocouple |
| Temperature control instrument | 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 |
| Furnace structure | Furnace temperature control integrated structure; double-layer shell, air circulation and heat insulation |
| Sealing performance | Both ends of the furnace tube are equipped with stainless steel metal flanges, matched with high-temperature PTFE gaskets, which can work under vacuum with a vacuum degree of ≤5pa (rotary vane vacuum pump) |
| atmosphere performance | There are air inlets and outlets at both ends of the flange. The pressure gauge is installed on the metal flange. The precision needle valve can adjust the air intake and output, and can be fed with protective gases such as nitrogen, argon, and hydrogen. |
| 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 |
| shell | High-quality cold-rolled steel plate CNC machine tool blanking processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder |
| Quality Certification | ISO9001 CE SGS TUV |
| The standard configuration | 1. 1 furnace body 2. 1 temperature controller 3. Power cord 3 meters 4. 1 thermocouple 5. 1 manual<br>6. One furnace hook 7. One pair of high temperature gloves 8. Two pipe plugs 9. One set of sealing flange |
| Optional accessories | 1. Optional rotary vane vacuum pump (vacuum degree ≤ 5pa) 2. Optional digital vacuum gauge ((1.0×105-1.0×10-1pa)) 3. Optional float flowmeter (range 60-600ml/min) 4 , optional corundum boat |

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