



CVD TUBE FURNACE - TT-CVDTF-60-1700

TT-CVDTF-60-1700 is a 1700°C tube furnace designed for Chemical Vapor Deposition (CVD), a process where chemical gases or vapors react on the surface of a substrate to create coatings or nanomaterials. This technique is widely used in the semiconductor industry to deposit various materials, including numerous insulating compounds, metals, and metal alloys.

APPLICATIONS

- **Semiconductor Manufacturing** – Enables ultra-high-temperature CVD deposition of insulating compounds, conductive metals, and alloys on semiconductor substrates. Provides excellent thermal stability and uniformity required for next-generation microelectronics and optoelectronics.
- **Nanomaterials Research** – Supports the controlled synthesis of graphene, carbon nanotubes, and other advanced nanostructures at temperatures up to 1700°C. Delivers reproducibility and precision for cutting-edge nanotechnology R&D.
- **Advanced Ceramics & Refractories** – Facilitates sintering, coating, and thermal processing of ceramics and high-melting-point materials. Enhances structural integrity, thermal resistance, and chemical durability for aerospace and industrial applications.
- **Thin Film Engineering** – Provides deposition of high-performance thin films with controlled morphology, purity, and thickness. Ideal for dielectric coatings, protective films, and functional multilayer structures in electronics and optics.
- **Energy & Battery Materials** – Enables thermal treatment and CVD coating of solid-state electrolytes, electrode materials, and protective films. Ensures stability, conductivity, and extended cycle life in lithium-ion and advanced energy storage systems.

- **Catalysis & Chemical Engineering** – Suitable for catalyst activation, functional film deposition, and thermal reaction studies under controlled vacuum or atmosphere. Delivers reproducible results for chemical and petrochemical R&D.
- **Aerospace & Defense Materials** – Processes high-performance alloys, ceramics, and protective coatings for aerospace and defense industries. Guarantees oxidation resistance, mechanical strength, and reliability under extreme conditions.
- **Universities & Research Institutes** – Provides versatile, high-temperature CVD capabilities for advanced academic studies in physics, chemistry, nanotechnology, and materials science. Combines safety, precision, and flexible programming for teaching and research laboratories.
- **Industrial Quality Control & Certification** – Ensures reliable high-temperature testing and validation for compliance verification and product certification. Conforms to ISO9001, CE, SGS, and TÜV standards for regulated industries worldwide.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel, featuring an electrostatic coating that offers excellent corrosion resistance.
- A durable double-layer metal frame is combined with a heat-insulating fan structure, keeping the outer surface temperature low.
- Designed for horizontal operation with a top-opening structure, it offers convenient access and user-friendly handling.

Refractory Material

- The furnace uses a multi-layer insulation system made of lightweight alumina ceramic fiber and a high-quality insulation board.
- It is asbestos-free, ensuring safe use while minimizing heat loss and reducing energy consumption.

Heating System

- High-quality MoSi₂ spiral resistance wires are securely embedded on the inner surface of the furnace, providing efficient, radiant heating.
- This energy-saving setup delivers long service life and consistent temperature distribution through circular resistance wire heating.

Temperature Control Panel

- Features PID and SSR control for accurate temperature regulation.
- Uses a standard B-type nickel-chromium-silicon thermocouple with a temperature range of 0–1600°C, offering reliability and extended lifespan.
- A safety switch automatically shuts off power when the furnace door is opened.

Program Controller

- Equipped with advanced controls suitable for complex thermal processes.
- Simple, intuitive interface with flexible programming options.
- Supports up to 30 programmable segments for single-curve profiles.
- Includes over-temperature and fault alarms, along with automatic safety features.

Vacuum & Atmosphere Capability

- Outfitted with a 304 stainless steel sealing flange for vacuum or atmosphere operation within the tube.
- Includes a high-quality quartz glass tube, with options for metal or corundum tubes depending on application needs.
- A high-performance dual-stage rotary vane vacuum pump provides vacuum levels down to 5 Pa.

- The system includes a digital vacuum gauge for real-time pressure monitoring and an optional air circuit control unit with 1-3 MFC (Mass Flow Controller) channels for automated gas flow control.

TECHNICAL SPECIFICATIONS

Item	TT-CVDTF-25-1700	TT-CVDTF-40-1700	TT-CVDTF-60-1700	TT-CVDTF-80-1700	TT-CVDTF-100-1700	TT-CVDTF-120-1700
Tube Size	Φ25 x 800mm	Φ40 x 1000mm	Φ60 x 1000mm	Φ80 x 1000mm	Φ100 x 1000mm	Φ120 x 1000mm
Max Temperature	1700°C					
Work Temperature	1600°C					
Heating Zone	300mm					
Voltage/Power	220V/3KW (110V is also available)	220V/3KW (110V is also available)	220V/4KW (110V is also available)	220V/5KW (110V is also available)	220V/5KW (110V is also available)	220V/5KW (110V is also available)
Heating Element	Molybdenum Disilicide(MoSi ₂)Heater					
Chamber Material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration					
Tube Material	Alumina Tube					
Temperature Accuracy	±1°C					
Thermocouple	B type thermocouple					
Temperature Controller	Intelligent microcomputer PID temperature control instrument, SCR/SSR control, PID parameter self-tuning function; programmable 30 program segments, program heating, program heat preservation, program cooling					
Heating Rate	1-25°C/min freely set					
Furnace Structure	Furnace temperature control integrated structure, furnace opening and closing; double-layer shell, air circulation and heat insulation					

Sealing Function	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 $\leq 5\text{pa}$ (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 Safety	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 Accessroies	1. Furnace Body 2. Temperature Controller 3. Power Cable 3 meters 4.Thermocouple 5.Manual 6. 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 $\leq 5\text{pa}$ 2. Optional digital vacuum gauge (1.0×10^5 - $1.0 \times 10^{-1}\text{pa}$) 3. Optional float flowmeter (range 60-600ml/min) 4. Optional with quartz boat



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