



TORONTECH



HYDROGEN REDUCTION TUBE FURNACE 1200°C - TT-HRTF-60-1200

The Hydrogen Reduction Tube Furnace 1200°C – TT-HRTF-60-1200 is designed for advanced hydrogen reduction applications, offering both safety and durability. It features a high-performance nickel-based superalloy processing tube, engineered to withstand continuous hydrogen gas flow without cracking or breaking. For maximum protection, the furnace is equipped with a 3M hydrogen detector that automatically shuts off both the hydrogen gas generator and the inlet valve if a leak is detected.

This model comes with a $\Phi 60 \times 1200$ mm quartz tube and a 440 mm heating zone. It supports continuous operation at 1100°C, with a maximum working temperature of 1200°C. The reactor tube is constructed from high-quality quartz, while heating is provided by reliable HRE alloy resistance wires for stable performance and long service life. Equipped with an N-type thermocouple for precise temperature measurement, the system operates on 380V/12 kW, making it suitable for demanding research and industrial hydrogen-based thermal processes.

APPLICATIONS

Hydrogen Reduction of Metals and Oxides – Designed for high-temperature hydrogen reduction, this furnace is ideal for refining and reducing metals, alloys, and oxides under a stable hydrogen environment. The nickel-based superalloy tube ensures durability against hydrogen embrittlement.

Powder Metallurgy – Suitable for sintering, reduction, and purification of metal powders, enabling the production of high-purity alloys and functional metal components with improved structural performance.

Nanomaterials & Catalysts – Enables hydrogen-assisted synthesis of nanomaterials, advanced catalysts, and functional compounds with controlled particle size and high reactivity, supporting research in material science and nanotechnology.

Energy & Battery Materials – Applied in hydrogen treatment of electrode and electrolyte materials for next-generation batteries, enhancing conductivity, cycle life, and chemical stability.

High-Performance Material Processing – Provides hydrogen reduction for ceramics, advanced coatings, and composites used in aerospace, defense, and industrial manufacturing.

Research & Academic Institutions – Widely used in laboratories and universities for experimental studies in hydrogen chemistry, advanced material processing, and thermal engineering. The programmable temperature control and atmosphere flexibility make it suitable for precise and repeatable experiments.

Quality Control & Industrial Testing – Applicable for hydrogen-based testing, certification, and validation of advanced materials in compliance with ISO9001, CE, SGS, and TÜV standards.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically coated, corrosion-resistant surface. A solid double-layer metal frame integrates with a heat-insulating fan structure to keep the exterior surface temperature low. The unit features a horizontal layout with a top-opening design for easy operation.

Refractory Material

- The furnace uses a multi-layer insulation system made of lightweight alumina ceramic fiber backed by high-grade insulation boards. It is asbestos-free, ensures minimal heat loss, and supports energy efficiency.

Heating System

- The furnace is equipped with high-quality HRE spiral resistance wire elements, securely mounted on the inner surface. These elements provide radiant heating throughout the chamber, offering high efficiency, reduced energy use, and extended lifespan.
- A ring-shaped resistance wire layout ensures uniform temperature distribution within the furnace.

Temperature Control Panel

- Features advanced control systems capable of handling complex thermal processes.
- Supports up to 30 programmable segments for fully automated temperature curve control.
- Includes over-temperature protection and fault alarms for enhanced safety.

Rotary System

- The furnace tube is powered by a gear-driven electric motor, enabling 360° rotation at speeds between 12-20 rpm to ensure even heating of materials.
- The body can be electrically tilted, with an adjustable angle for smoother material loading and discharge.
- Comes with a 304 stainless steel sealing flange to maintain a vacuum or controlled atmosphere inside the tube.
- Compatible with high-quality quartz, metal, or alumina ceramic tubes to suit various applications.

TECHNICAL SPECIFICATIONS

Model	TT-HRTF-60-1200Q	TT-HRTF-100-1200Q	TT-HRTF-150-1200Q	TT-HRTF-200-1200Q
Reactor Quartz Tube	Φ60×1200mm	Φ100×1200mm	Φ150×1500mm	Φ200×1500mm
Heating Zone Length	440mm	440mm	600mm	600mm
Max Temp	1200℃			
Continue Temp	1100℃			
Heating Element	High quality Alloy Resistance Wire □ HRE □			
Chamber Material	Polycrystalline inorganic alumina ceramic fiber materials			
Temp Precision	±1℃			

Thermocouple	B-type national standard platinum rhodium thermocouple
Temp 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	1-20°C/min free adjustment
Furnace Structure	Furnace temperature control integrated structure; double-layer shell, air circulation and heat insulation
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
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 manual6. One furnace hook 7. One pair of high temperature gloves 8. Two pipe plugs 9. One set of sealing flange



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