



TUBE FURNACES

Tube Furnaces

Torontech's Tube Furnaces, part of the advanced ToronTherm™ Series, are high-performance thermal processing systems designed for precision heating in laboratory and industrial applications. Built with cutting-edge insulation, superior temperature uniformity, and user-friendly control interfaces, our tube furnaces deliver exceptional results for a wide range of scientific and materials research needs.

Key Features:

1. Temperature Ranges: Available models up to 1000°C, 1200°C, 1400°C, 1700°C, and 1800°C
2. Horizontal or Vertical Configurations
3. Single or Multi-Zone Heating
4. Options for Vacuum or Controlled Atmosphere Environments
5. High-precision temperature control systems
6. Quartz, Alumina, or Silicon Carbide Tube Materials

Whether your application requires oxidizing, reducing, or inert atmospheres, our tube furnaces provide consistent and controlled thermal environments.

Applications of Tube Furnaces

Tube furnaces are essential tools in both academic and industrial settings, widely used for:

1. Material Synthesis and Thermal Treatment
Calcination, sintering, and annealing of powders, ceramics, and advanced materials.

- 2. Heat Treatment of Metals and Alloys
For microstructural development, stress relief, and phase transformation.
- 3. Chemical Vapor Deposition (CVD) and Gas Reaction Studies
Under vacuum or specific gas flow environments.
- 4. Crystal Growth and Nanomaterials Research
In advanced materials labs and R&D facilities.
- 5. Thermal Decomposition and Ashing
For environmental analysis and chemical characterization.
- 6. Glass Processing and Softening
In specialty glass labs and manufacturing.
- 7. Academic Research and Experimentation
Widely used in universities and national research laboratories.

Torontech combines global manufacturing expertise with a commitment to quality and innovation. Our ToronTherm™ Tube Furnaces are trusted by professionals in materials science, chemistry, metallurgy, and beyond, delivering durability, performance, and value.

Whether you're conducting high-temperature experiments, developing new materials, or running repeatable production processes, Torontech has a tube furnace solution designed to meet your exact requirements.

Compare Tube Furnace Types

Side-by-side overview of ToronTherm™ tube furnace categories to help you select the right configuration.

Zone-Based and Standard Configurations

Feature	Single Zone	2 Zone	3 Zone	Multi Zone	Large Diameter
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Best for	General thermal processing and routine lab heating	Better temperature uniformity across a longer heated length	More advanced uniformity and longer working zones	Multi-zone profile control for advanced research workflows	Processing larger samples or higher throughput tube setups
Heating zones	Single zone	Two zones	Three zones	Multiple zones	Varies by model (typically zone-based systems)
Primary decision driver	Simplicity and standard operation	Need improved uniformity vs a single zone	Need more refined uniformity and control	Need complex temperature profiles or long uniform zones	Need a larger tube diameter for bigger parts or batches
Typical applications	Calcination, annealing, sintering, thermal treatment	Material processing requiring improved uniform zones	Research workflows needing longer uniform heating	Advanced materials research, profile control, repeatable processes	Larger sample processing, batch work, scale-up experiments
Selection tip	Choose if your workflow is straightforward and standard	Choose if you need more uniform heating over a longer length	Choose if you need more control and uniformity than 2-zone systems	Choose if your method needs multi-zone programming and control	Choose if tube diameter is the limiting factor in setup

Application-Specific Tube Furnaces

Feature	Rotary Tube Furnaces	Vertical Tube Furnaces	CVD Tube Furnaces	Hydrogen Reduction
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Best for	Powders or granular materials needing rotation for uniform processing	Vertical loading, gravity-assisted setups, and specific process needs	CVD and gas reaction studies in controlled atmospheres	Reduction processes requiring hydrogen-compatible configurations
Configuration	Rotating tube setup	Vertical tube orientation	Tube furnace optimized for CVD workflows	Tube furnace optimized for reduction workflows
Primary decision driver	Need improved mixing/heat exposure through rotation	Need vertical process design or loading method	Need controlled gas flow and CVD process compatibility	Need hydrogen reduction workflow and safety-focused setup
Typical applications	Material synthesis, thermal treatment of powders, processing uniformity	Crystal growth setups, specialized process rigs, vertical experiments	Thin film deposition, nanomaterials growth, gas reaction studies	Hydrogen reduction, metallurgy, catalyst preparation, advanced materials
Selection tip	Choose when rotation improves uniformity for your sample type	Choose when your rig or sample benefits from vertical orientation	Choose when CVD is your core method requirement	Choose when hydrogen reduction is central to your process



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