



TORONTECH



VACUUM ATMOSPHERE FURNACES

Vacuum Atmosphere Furnaces - High-Temperature Processing in Controlled Environments

Our Vacuum Atmosphere Furnaces are advanced thermal processing systems designed for applications requiring a precisely controlled inert or vacuum environment. These furnaces are suitable for a wide range of high-temperature treatments, offering maximum temperatures up to 1700°C and flexible configuration options to meet the needs of both laboratory and industrial users.

Constructed with a high-purity alumina fiber lining and equipped with MoSi₂ or graphite heating elements, these furnaces are engineered for excellent temperature uniformity, low heat loss, and long operational life. Each system can be operated under vacuum, argon, nitrogen, or other custom gas atmospheres, making them ideal for materials sensitive to oxidation or contamination.

Key Features:

- Temperature Options: Max temperatures of 1200°C, 1400°C, 1600°C, or 1700°C
- Atmosphere Control: Operates in vacuum or inert/reducing gases (N₂, Ar, H₂, forming gas)
- Chamber Construction: High-grade insulation with low thermal mass and excellent energy efficiency
- Heating Elements: MoSi₂ or graphite elements for stable high-temperature performance
- Gas Flow & Vacuum Systems: Optional gas mixing systems, flowmeters, and vacuum pumps with digital control
- Control System: PID temperature controller with ramp/soak programming and safety interlocks
- User Interface: Easy-to-use touchscreen or digital controller options
- Door Types: Available in manual swing door and automatic lift door designs

Typical Applications

Vacuum atmosphere furnaces are used for processes requiring clean, oxygen-free, or low-pressure environments, including:

- Heat treatment of reactive metals and alloys
- Sintering of ceramics and metal powders
- Brazing and annealing in inert atmospheres
- Debinding and carbonization of composites
- Processing of rare earths and advanced materials
- Material R&D for aerospace, defense, and electronics
- Graphitization and thermal purification

Optional System Enhancements

- High-vacuum pump systems with cold trap
- Multi-gas inlet & programmable gas flow control
- Residual gas analyzer
- Vacuum gauges and automatic valves
- Data logging and SCADA-ready interface

Built for Precision, Designed for Safety

Every vacuum atmosphere furnace is engineered with a focus on thermal accuracy, gas tightness, and system reliability. Whether you're developing new materials or running production-level heat treatments, these furnaces deliver the performance you need in a compact, operator-friendly design.

Let us help you choose the right configuration based on your required temperature range, gas atmosphere, sample size, and process duration.



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