Integrated Muffle Furnace

Description

Labant Integrated Muffle Furnace is a batch-operated electric furnace available in high-temperature and medium-temperature configurations. It is widely used in laboratories of industrial and mining enterprises, scientific research institutions, and educational facilities for the following applications:

Chemical analysis and physical property testing of materials;

Heat treatment of small steel components (e.g., quenching, annealing, tempering);

Metal sintering, melting, and elemental composition analysis.

This series of resistance furnaces is equipped with integrated temperature controllers and platinum-rhodium thermocouples, enabling real-time temperature measurement, clear digital indication, and automatic furnace temperature control. This ensures stable, accurate, and efficient thermal processing for various experimental and industrial needs.Application

Features

- **Robust Exterior & Insulation Design**

Furnace Shell: Constructed from thin steel plates, which are folded and welded into a rigid structure. The surface is treated with electrostatic spraying, providing excellent corrosion resistance, scratch resistance, and a sleek, professional appearance.

Inner Lining: For standard models, the inner furnace lining is a one-piece rectangular structure made of aluminum silicate refractory material—offering good high-temperature stability and thermal insulation. For high-temperature models (≤1300 ℃), the inner lining is formed by firing high-alumina bricks, further enhancing resistance to extreme heat and extending service life.

Insulation Layer: Located between the inner lining and outer shell, the insulation layer is composed of refractory fibers and expanded perlite products. This multi-layer insulation system minimizes heat loss, improves energy efficiency, and keeps the outer shell at a safe, low temperature during operation.

- **Efficient Heating Elements**

Heating elements are selected based on the furnace's maximum operating temperature to ensure uniform heating and long-term reliability:

For temperatures ≤1200 ℃: Nickel-chromium alloy resistance wires are used. These wires are threaded into dedicated grooves on the upper, lower, left, and right sides of the inner lining, ensuring even temperature distribution throughout the furnace chamber.

For temperatures ≤1300 ℃: Silicon carbide rods are adopted. When exposed in the furnace chamber, these rods provide dual heating effects (radiant heating + convective heating), enabling rapid temperature rise and stable heat output.

Sealed Structure: The inner furnace lining features a sealed design to prevent heat leakage and protect the heating elements from external contaminants, prolonging their service life.

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Features

● **Integrated Temperature Control System**

Temperature Sensing: A platinum-rhodium thermocouple is inserted through a dedicated hole at the rear of the furnace, enabling precise real-time temperature measurement of the furnace chamber.

Control Instrument: The furnace is integrated with a temperature controller (matching PID control instrument) that offers high temperature control accuracy and user-friendly operation. The controller and furnace body are pre-assembled, eliminating the need for additional wiring or installation.

● **Unique Advantages of Integrated Design**

Compared to split-type muffle furnaces, the integrated design offers the following key benefits:

Timed Heat Preservation Function: Exclusive to the integrated model—users can set a specific heat preservation duration, and the furnace will automatically maintain the target temperature for the set time, reducing manual monitoring and improving experimental efficiency.

Plug-and-Play Convenience: No on-site installation or wiring is required. The furnace can be used immediately after connecting to the matching power supply, saving time and avoiding installation errors.

Low-Noise Operation: Equipped with fixed relays (instead of AC contactors used in split-type models), the integrated furnace operates with significantly lower noise, creating a quieter laboratory environment.

Technical Specifications

Model	Inner Chamber Dimensions (L*W*H) (cm)	Max Temperature (℃)	Supply Voltage (V)	Rated Power (kW)	Overall Dimensions (L*W*H) (cm)	Weight (kg)
LMF-2A	20*12*8	1000	220	2.5	60*37*65	65
LMF-2B	20*12*8	1200	220	2.5	60*37*65	65
LMF-4A	30*20*12	1000	220	4	70*45*70	110
LMF-5B	30*20*12	1200	220	5	70*45*70	110
LMF-8A	40*25*16	1000	380	8	86*60*81	170
LMF-10B	40*25*16	1200	380	10	86*60*81	170
LMF-10A	50*30*20	1000	380	10	91*71*90	250
LMF-12B	50*30*20	1200	380	12	91*71*90	250
LMF-4C	25*15*10	1300	220	4	68*50*70	110
LMF-6C	25*15*10	1300	380	6	68*50*70	110
LMF-10C	40*20*16	1300	380	10	86*50*81	230