Ash Content Tester
LMACT-A100

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1. Safety Measures

- Place the instrument on a flat ground or suitable workbench. (Do not use a wooden frame).
- Place the thermocouple in the reserved table and fill in the gap between the hole and the thermocouple with tampon.
- Use compensating lead wire to connect the thermocouple with the temperature control stand to ensure that the positive and negative terminals are not wrongly connected.
- The outer shell must be grounded well for safety.
- The instrument might be affected by dampness during storage and transportation checks before use.
- When using the instrument for the first time or reused after a long time the chamber must be dried procedure as follows:
  - Chamber drying temperature and time: Room temperature:200 °C After keeping the temperature for 4 hours open the door for 10 minutes. 200 °C-600 °C it cools down naturally.
- For the instrument's good life, do not exceed the rated temperature to avoid damaging the heating elements.
- Do not directly inject the liquid or melted metal into the chamber.
- Regularly remove the scrap iron and oxidates from the chamber to keep it clean.
- Check whether the connection of each part of the electric furnace and temperature control stand is in good condition regularly.
- The maximum relative humidity means monthly in the using area shall not exceed 90% and the minimum temperature in this month shall not exceed 25 °C.

2. Introduction

Ash Content Tester LMACT-A100 offers maximum temperature range of up to 1000°C for effective analysis. It features robust construction with an easy-to-read digital display. Equipped with an electric heating plate with adjustable 5 grades allowing for consistent control of heating level. Integrated with user-friendly interface that simplifies operations for laboratories. Our Tester is ideal for determining ash content in materials across industrial and research settings.

3. Features

- Digital temperature control display
- Cold-roll steel outer shell
- Fire-resistant and corrosion-proof design
- Durable construction for longevity

4. Specifications

Model No.	LMACT-A100
Muffle Furnace Controlled Temperature	775 ±25 ℃
Temperature Rising Time	≤ 50 min
Temperature Controller Maximum Temperature	1000℃
Electric Heating Plate Heating Power	5 grades adjustment
Electric Heating Plate Temperature	400℃
Electric Heating Plate Diameter	Φ 180 mm
Heating Element	Electric resistance wire
Chamber material	Firebrick
Temperature Controller Power Consumption	2000W
Muffle Furnace Power Consumption	4000W
Power Supply	AC220V, 50Hz
Working Chamber Dimension (L × W × H)	300×200×120mm

5. Applications

Ash Content Tester LMACT-A100 is ideal for analyzing ash content in coal, biomass, and other materials. It is widely employed in industrial quality control, research laboratories, and material testing.

6. Instrument Introduction

The temperature controller is a special temperature control unit of the instrument it is composed of a case, front panel, and back panel.

Case

- The thermocouple signal input system and furnace heating system are installed in case the operator does not open it casually.

Front Panel

- The ampere meter, temperature controller, and power switch are installed on the front panel.
  Ampere meter: It shows the working current of the Muffle furnace.
  Temperature control meter: It sets and shows the control temperature of the Muffle furnace.
  Power switch: Turn ON the switch the temperature controller will get power.
- Temperature control meter is shown in the figure below.

Figure-1

Back Panel

- The connection wire of the muffle furnace, the binding post of the thermocouple, power input wire are on the back panel the wiring temperature controller and the muffle furnace are shown in the figure Figure 2

Connecting wire of muffle furnace: The connecting wire of the temperature stand connects to the binding post on the bottom of the muffle furnace it controls the heater work of the muffle furnace.

Thermocouple: Connect the compensating lead wire of the thermocouple to the binding post of the thermocouple inside the temperature controller. Pay attention to the positive pole and the blue wire connects to the negative pole.

Power input wire: It connects to the power supply of AC 220V, 50 Hz and makes ground wire well grounded.

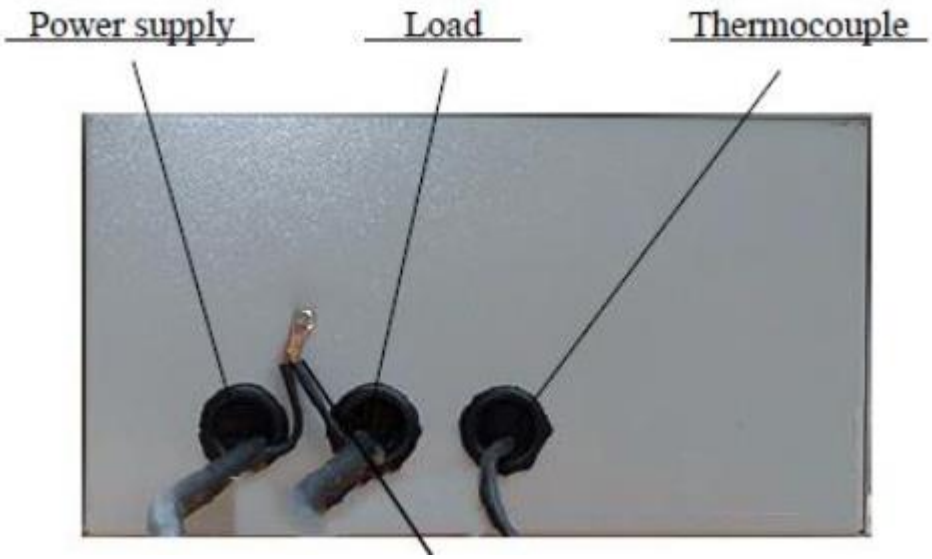

Figure-2

7. Operations

7.1 Preparation

- Read the manual carefully before using it.
- Prepare all test apparatus and material as per ASTM D482.
- Check the power supply to make sure it meets the requirements of the instrument.
- Check the outer shell of the muffle furnace to make sure it is fine grounded the power supply wire should have a fine grounding end.

7.2 Procedure

- Weigh a crucible nearest to 0.01g and weigh the sample as per the same accuracy the quantity of sample you weigh should be enough to form 20g ash but the sample should not be more than 100g if there is too much sample and you need to burn them in twice you can weigh a sample in a suitable sample container and take the difference between initial weight and final weigh as the weight of the sample.
- Fold a quantitative filter paper and roll it into a cone cut the top of the cone which is 5-10 mm from the tip of the cone and put it into the crucible containing the sample and filter paper on a hot plate and heat the crucible slowly do not let the sample splash out of crucible evaporate water in the sample slowly until the filter paper can be ignited.
- For viscous or waxy samples heat them on a hot plate as they are burning do not let the sample splash or overflow from the crucible.
- Move the crucible with carbonized residue into the furnace case after combustion keep it in the furnace for 1.5-2 hours until all carbonized residues change into ash.

Note:

Take care to avoid sample explosion if possible you can move the crucible into the furnace case at a lower temperature at first and then raise its temperature to 775±25 °C

- Take the crucible out of the furnace case and cool it in the air for 3 minutes then cool it to ambient temperature in a dryer.
- Weight it nearest to 0.0001g then move it to the furnace case again to burn it for 20 to 30 min repeat the procedure until the difference between successive sample weights is not more than 0.005g.

- **Calculation**

  X(%)= ×100
  Where:
  X=Ash content in the sample (%)
  G1 =Weight of ash (g)
  G=Weight of sample (g)

8. Maintenance

- The power supply wire should have a grounding end and the outer shell of the instrument should be fine grounded.
- When the furnace case is used for the first time, or it has not been for a long time dry it at first.
- Method: Heat it to 200°C for 1 hour and then keep it at this temperature for 4 hours open the door of the furnace for 10 minutes and then heat it to 600°C in 1 hour keep it at 600°C for 4 hours cool it in the air.
- The highest temperature used should not be higher than the rated temperature of the furnace case to avoid any damage to the furnace chamber and the heating device it is forbidden to add any liquid into the furnace chamber or melt metal in the chamber if there is any scrap iron or oxidation in the furnace chamber clear it immediately.
- Check the furnace case regularly to ascertain whether the electric controlling parts work normally.
- If the furnace case is used for a long time it is recommended to pre-set the controlling temperature as 80% of the rated temperature. The instrument should not run at the highest rated temperature for more than 2 hours or it will affect the lifespan of the instrument.

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