

Supplier Of R&d And ProductionOf Sample Pre-treatment Instruments

# Microwave digestion instrument-technical white paper

**About Us:-**We are a scientific instrument research and development and manufacturing company established in China, mainly focusing on the research and development, production and sales of heavy metal pretreatment equipment. The products mainly include high-purity graphite electric heating plate of classical wet method, improved and upgraded high-purity graphite dissociator and new and efficient fully automatic microwave decomposition system.



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## **1. Brand: Tianezk**

## **2. Model number: TM-24a**

## **3. Control system**

▲ 3.1 Microwave frequency: 2450 MHz, non-pulse continuous automatic frequency conversion control, 0-100% power automatic continuous adjustable.

3.2 Industrial magnetron: maximum microwave output power 2200W.

▲ 3.3 Temperature control system: using wireless penetrating infrared temperature sensor, rather than wired connection, temperature measurement range 0-350°C, display accuracy  $\pm 0.1^\circ\text{C}$ .

3.4 Pressure control system: the safe and efficient special pressure sensor can monitor the pressure in all digestion tanks in real time. The pressure measurement range is 0-15 Mpa, and the pressure control accuracy is  $\pm 0.01$  Mpa.

3.5 Multi-function operation mode, which can be expanded to microwave extraction, microwave synthesis, etc.

3.6 The digestion tank identification system shall automatically adjust the microwave output power according to the number of digestion samples, the type of digestion tank and the current temperature, so as to reduce the temperature fluctuation and improve the uniformity of sample digestion.

3.7 The abnormal tank temperature and pressure instrument can automatically alarm and stop working.

## **4. Safety of furnace door and furnace cavity**

4.1 Six-storey steel structure safety furnace door adopts buffer floating design to ensure safety during the experiment.

4.2 Mechanical locks and electronic locks are used to coordinate and ensure that the furnace door cannot be opened during operation. When the furnace door is opened abnormally, the instrument will automatically cut off the microwave and stop working.

4.3 The furnace cavity is made of 316L industrial grade stainless steel, and the furnace cavity is sprayed with up to 6 layers of PFA anticorrosion coating, and the furnace cavity is guaranteed for life.

## **5. Operating system**

5.1 Microcomputer control technology, which can realize the historical data view.

5.2 Capacitive LCD touch screen, real-time display includes: temperature, pressure, heating time, constant temperature time, microwave power, reaction process.

5.3 Instrument built-in method library, can directly select the call digestion scheme, can store 200 methods.

5.4 Eliminate the independent rotary table structure of the rotor, and the rotary table rotates synchronously in the same direction without rotating back and forth. There is no pause in the rotation process to ensure the uniformity of microwave heating.

## **6. Air exhaust system and cooling system**

▲ 6.1 The roof installation of super centrifugal fan, in line with the principle of heat flow upward movement, quickly discharge the high temperature gas in the cavity, and effectively discharge the exhaust gas due to the overflow tank.

▲ 6.2 The furnace chamber is equipped with two sets of turbine fans. When the operation is completed, the cooling fan is automatically started to quickly cool down the digestion tank components and effectively improve the cooling efficiency.

## **7. Remove the tank assembly**

7.1 High strength UPE corrosion resistant turntable rack, which can be equipped with 1- 24 digestion tanks at the same time.

7.2 The volume of the digestion tank can reach 100ml, which meets the requirements of bulk sampling, and can be extended in various digestion modes.

▲ 7.3 digestion external tank: high strength PEEK hybrid fiber material or aerospace fiber conforms to the material optional, temperature resistance of 600°C, pressure resistance of 20 Mpa.

▲ 7.4 Internal digestion tank: using imported TFM material, temperature resistance of 310°C, withstand pressure of 6MPa, maximum working temperature of 250°C, maximum working pressure of 6MPa.

7.5 Self-relief pressure digestion tank, overpressure automatic pressure relief, no vulnerable consumables in the process of use, effectively reduce the use cost.

## **8. Acid whisker**

8.1 Supporting a 24-hole special electric heating acid driver, high purity graphite material, acid and alkali corrosion resistance.

8.2 Temperature control: room temperature-250°C, used for acid processing after sample digestion.

8.3 The time temperature can be set, and the whole machine has multiple protection such as overvoltage, overcurrent and overheating.

## **9. Configuration list**

9.1 One host of microwave digestion machine

9.2 One set of wireless temperature sensing system

9.3 One set of special pressure sensing system

9.4 24 sets of inner and outer tanks (including tank cover, inner plug, tank and outer tank) (matching the number of rotary tables)

9.5 One set of the sample rack of the digestion tank

9.6 With 1 acid driver

9.7 Kit 1 set

9.8 1 exhaust air pipe

9.9 1 set of electronic torsion device