

# Microwave Digestion System

Sample Preparation System

## General Introduction

### Sample Preparation System for

-GC, HPLC, AAS, ICP, ICP-MS, GC-MS, AFS etc.

### High Efficiency

- 10 times faster than traditional hot plate.
- Saves 70% time and energy.

### Large Potential Market

- over 800 unit sold in past 3 years
- over 20% growth of market demand

### Documentation ( Certificates & IQ,OQ, PQ Validation)

- ISO, CE, RoHS certified
- IQ, OQ, PQ validation certified

## Main Application



### Food

Flour ▪ Rice ▪ Milk powder ▪ Oil ▪ Chocolates ▪ Caramel ▪ Juice



### Cosmetics

Soap ▪ Eye Cream ▪ Lipstick ▪ Nail Polish ▪ Shampoo



### Environment

River Sediment ▪ Sewage ▪ Oil Slick ▪ Soil



### Biological and Pharmaceutical

Human Hair ▪ Animal Liver ▪ Blood ▪ Urine ▪ Capsule ▪ Herb



### Geological metallurgy & industrial materials samples

Silicate ▪ Iron Ore ▪ Clay ▪ Textile Aye ▪ Paint ▪ Iron Slag

## Models



◆ **MWD-610-T6&T8**

-6/8 vessels

◆ **MWD-610-T6&T8**

-10/12 vessels

Optional vessel q'ty



◆ **MWD-650**

-12 vessels

-with outer protection frame

◆ **MWD-700**

-18 vessels

--with outer protection frame



◆ **MWD-800**

-40 vessels

-batch digestion

◆ **MWD-850**

-50 vessels

--batch digestion

## Features (MWD-610-T6/8/10/12)



### Robust Construction

System chamber is made of 316L stainless steel which increases durability and safety. The PFA coating on the chamber ensures strong acid and alkali proof.



### 8 inches Touch External Controller

The system uses a 8 inch external controller to operate which ensures easy operation.



### Auto shut-off

The system will be automatically shut down for following situations: (1) instrument fault (2) abnormal sound inside (3) no vessel inside (4) door open (5) over-temperature & over-pressure.



### Pressure & IR Sensor

Installed with 1 pressure sensors and 1 IR sensor to monitor pressure and temperature of all vessels.



### Real-time Monitoring

The system monitors temperature and pressure in real-time. All temperature and pressure graphs will show on the screen. And power, run status also show on the screen so that user can have a clear idea of all status.



### Options

User can choose the optional vessels quantity

## Features (MWD-650,700)



### Robust Construction

System chamber is made of 316L stainless steel which increases durability and safety. The PFA coating on the chamber ensures strong acid and alkali proof.



### 8 inches Touch External Controller

The system uses a 8 inch external controller to operate which ensures easy operation.



### Auto shut-off

The system will be automatically shut down for following situations: (1) instrument fault (2) abnormal sound inside (3) no vessel inside (4) door open (5) over-temperature & over-pressure.



### Pressure & IR Sensor

Installed with 3 pressure sensors and 1 IR sensor to monitor pressure and temperature of all vessels.



### Real-time Monitoring

The system monitors temperature and pressure in real-time. All temperature and pressure graphs will show on the screen. And power, run status also show on the screen so that user can have a clear idea of all status.



### Frame protection

All vessels are put into a protection frame and then put on the run platform for safety.

## Features (MWD-800,850)



### Robust Construction

System chamber is made of 316L stainless steel which increases durability and safety. The PFA coating on the chamber ensures strong acid and alkali proof.



### 8 inches Touch External Controller

The system uses a 8 inch external controller to operate which ensures easy operation.



### Auto shut-off

The system will be automatically shut down for following situations: (1) instrument fault (2) abnormal sound inside (3) no vessel inside (4) door open (5) over-temperature & over-pressure.



### Pressure & IR Sensor

Installed with 3 pressure sensors and 1 IR sensor to monitor pressure and temperature of all vessels.



### Real-time Monitoring

The system monitors temperature and pressure in real-time. All temperature and pressure graphs will show on the screen. And power, run status also show on the screen so that user can have a clear idea of the process.



### Batch Digestion

MWD-800 and MWD-850 with 40 and 50 vessels can do batch digestion which save a lot of time.

## Why us ?



### Contactless Special IR technology

- Germany-made high quality IR sensor makes temperature monitoring accurate and convenient.
- Contactless special IR technology which can measure sample solution temperature directly inside the vessel.
- IR sensor is mounted under the vessel cavity. When a vessel rotated past the sensor, temperature of inside solution is measured accurately. This ensures that the system will measure solution temperature of each vessel instead of the control vessel.
- Contactless IR technology ensures no cross-contamination and no consumable cost at all.

VS



### Contact Sensor

- Platinum Resistance Temperature Sensor will have a 2-5 seconds delay of real-time temperature measuring.
- All signal probes of using contact sensor will be **easy broken** which will have **big cost of consumables**. Also signal probes can only measure control vessel solution temperature instead of all vessel solution temperature.
- Normal IR technology can just measure vessel temperature instead of solution temperature which is not so accurate.
- Most contact sensor will be **difficult to set up** and to be replaced. And using contact sensor will be easy to get cross-contamination.



## Why us ?



### Patented dual self-regulating venting and reseal pressure technology

- When pressure excesses, the vessel will release automatically by four vents on the sealing cap and venting ring to realize dual self-regulating venting. After venting, the vessel will reseal again.
  - The system will continue working after releasing excess pressure.
  - There will be no sample or element loss which also saves reagent.
  - There is no need to stop the system, clean up the vessels and then start the system again.
- 

VS



### Burst Disk technology

- When pressure excesses, the burst disk that is equipped with the vessel will be damaged to protect which needs a manual stop for the system.
- Sample and elements will be lost when a burst occurs.
- User has to clean the vessel and system chamber and replace the burst disk again.
- PFA material for the inner vessel can only stand up to 210°C.
- Kevlar material (aerospace material) cannot be cooled by a water bath, and also this material absorbs water which makes drying difficult.

## Why us ?



### Special material Vessels

- Modified TFM vessels with highest density and thermally resistant features.
- Peek and glass fiber outer vessels can be easily cooled down by water bath.
- Outer protection vessel made of Peek and glass fiber provides high-strength omnidirectional protection.

VS



### Other Vessels

- PFA vessels can only stand up to 210°C and it will soften at higher temperature.
- Kevlar material (aerospace material) outer vessels absorbs liquids very easily which takes time to dry it. Also this material cannot be cooled down by water or waterbath.
- Most brands do not have outer vessel protection on the top so it cannot reduce impact when accident happens which will cause easy distortion of both vessel platform and chamber.



## Why us ?



VS



### Contactless Pressuring Monitoring

- Fiber- Optical Contactless Sensor , no cross-contamination
- each vessel pressure monitoring

### 360°continuous rotating

- extend motor lifetime
- even distribution of microwave

### Contact Pressuring Monitoring

- Contact sensor,risk of cross-contamination
- only control vessel pressure monitoring

### 360°return rotating

- big damage to motor
- uneven distribution of microwave

# Specifications

Model	MWD-610-T6/8/10/12		Outer vessel pressure limit	150Bar
Pressure Control	6/8/10/12		Temp control Range	50~400° C
Temp Control	6/8/10/12		Max working temp	250° C
Vessel Volume	100ml		Temp control accuracy	±0.5 ° C
Pressure Monitoring	Contactless		Inner vessel temp limit	300° C
Temp Monitoring	Contactless		Microwave power	0-1000 W adjustable
Vessel Material	Inner :imported TFM Outer :imported PEEK+glass fiber		Microwave Frequency	2450MHz
Display	7" inches touch screen		Rotation Mode	360 continuous rotation
			Microwave leak	<5mw/cm <sup>2</sup>
Pressure control range	0-100Bar	0-100Bar	Power	AC220V,10A,50/60HZ
Max working pressure	60Bar	50Bar	Dimension	490mm*560mm*630mm
Pressure control accuracy	±0.1Bar	±0.1Bar	weight	47kg

# Specifications

Model	MWD-700	MWD-650	Outer vessel pressure limit	200Bar
Pressure Control	18vessels	12 vessels	Temp control Range	50~400° C
Temp Control	18vessels	12 vessels	Max working temp	250° C
Vessel Volume	100ml		Temp control accuracy	±0.3 ° C
Pressure Testing	Contactless		Inner vessel temp limit	300° C
Temp Testing	Contactless		Microwave power	0-3000 W adjustable 0-2000 W adjustable
Vessel Material	Inner :imported TFM Outer :imported PEEK+glass fiber		Microwave Frequency	2450MHz
Display	8" inches touch screen external		Rotation Mode	360 continuous rotation
			Microwave leak	<5mw/cm <sup>2</sup>
Pressure control range	0-100Bar		Power	AC220V,16A,50/60HZ
Max working pressure	60Bar		Dimension	640mm*630mm*590mm
Pressure control accuracy	±0.1Bar		weight	75Kg/70Kg

# Specifications

Model	MWD-850	MWD-800	Outer vessel pressure limit	200Bar
Pressure Control	50vessels	40 vessels	Temp control Range	50~400° C
Temp Control	50vessels scan temp control	40 vessels scan temp control	Max working temp	250° C
Vessel Volume	50ml		Temp control accuracy	±0.3 ° C
Pressure Testing	Contactless		Inner vessel temp limit	300° C
Temp Testing	Contactless		Microwave power	0-3000 W adjustable
Vessel Material	Inner :imported TFM Outer :imported PEEK+glass fiber		Microwave Frequency	2450MHz
Display	8" inches touch screen external		Rotation Mode	360 continuous rotation
			Microwave leak	<5mw/cm <sup>2</sup>
Pressure control range	0-100Bar		Power	AC220V,16A,50/60HZ
Max working pressure	60Bar		Dimension	640mm*630mm*590mm
Pressure control accuracy	±0.1Bar		weight	88Kg/78Kg

## Optional Accessory (Heating Blocks)

SPH series are heating equipment that do pre-heating of some organic samples as well as acid releasing after microwave. It is better to do pre-heating for some food, cosmetics and organic samples before digestion.

- Coated with PFA which is strong acid and alkali proof to extend accessory lifetime.
- Auto temperature control and alarm for over-temperature



Model	SPH-1	SPH-2	SPH-3
Sample Number	12	20	56
Applicable models	MWD-500/520/600	MWD-650/700	MWD-800/850
Aperture and hole depth	Φ39*65mm	Φ41*150mm	Φ32*118mm
Temperature control range	RM Temperature~250°C		
Temperature control accuracy	±0.5°C	±0.5°C	±0.5°C
Temperature setting resolution	0.1°C		
Heating power	1600W	2000W	2000W
Power	AC220V±10%		
Weight	13kg	34kg	40kg