Infitek

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MICROWAVE DIGESTION SYSTEM

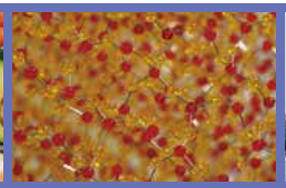
Microwave Digestion System

MDS-100-R8

Application Fields


Environmental samples


Food and feed analysis


Material testing


Petrochemicals


Plastics and polymers


Cosmetics


Metals and alloys


Geological samples

Description

- MDS-100-R8 is a sample pretreatment device that uses microwave energy to heat acids and samples in a closed container, rapidly and efficiently decomposing (digesting) solid or complex organic/inorganic samples into clear solutions under high temperature and high pressure conditions. Equipped with multiple active and passive safety protection functions, a specific mid-infrared non-contact temperature sensor that can penetrate TFM scans and monitors the true temperature of each sample solution in real time. The full tank pressure control technology ensures precise pressure relief for each reaction tank, ensuring the digestion of various samples in the most economical and efficient way to achieve the best results.

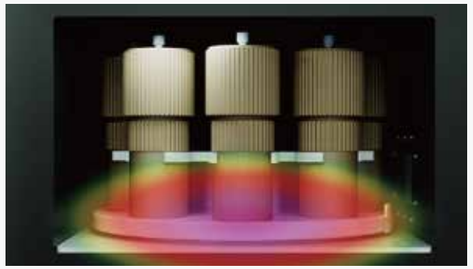
Specification

Model	MDS-100-R8
Vessel Quantity	8
Vessel Volume	100ml
Temperature Measurement Range	RT. ~ 400℃, accuracy: 0.1℃
Temperature Control Range	RT.~250℃
Pressure Control Range	0~5Mpa
Digestion Vessel	Made of high temperature resistant and corrosion resistant materials;
	Max. temperature resistance: ≥300℃;
	Max. pressure resistance: ≥15MPa;
Vessel Material	Inner: TFM, bottom thickness ≥18mm
	Outer: PEEK
Microwave Cavity	316L stainless steel furnace cavity, laser welded, with multi-layer PFA corrosion-resistant coating inside
Digestion Rotor	360° continuous rotation
Microwave Power and Frequency	Magnetron design, microwave output power ≤1000W, continuous, non-pulse mode microwave emission, 0-100% power fully automatically and continuously adjustable, microwave emission frequency: 2450 MHz
Working Environment	Ambient temperature: 5~40℃, humidity: 15~85%
Electricity	220~240 VAC, 50/60 Hz, 10A, 1500W

Features

- **Furnace door and door lock structure**
  High-strength safety explosion-proof door, side-opening door opening method and floating buffer design, can float and release part of the pressure when the pressure in the cavity is too high, taking into account both safety and ease of use.
- **Corrosion-resistant exhaust system**
  High-flow exhaust system efficiently dissipates excess heat from the exterior walls of digestion vessels during the digestion process, prolonging operational lifespan and enabling rapid post-digestion cooling.
- **Sample loading mode**
  Load or unload samples one by one without the need of moving the rotor.
- **Temperature control mode**
  Utilize mid-infrared non-contact temperature sensor capable of penetrating TFM material to scan and monitor the actual temperature of all sample solutions in real time and display the temperature change curve.
- **Pressure control mode**
  The fully sealed design prevents pressure release during digestion, ensuring safety. This enhances sample digestion capability, particularly for difficult-to-digest samples. Precise pressure control for each reaction vessel guarantees operational safety.
- **Active and passive safety protection**
  Features real-time full-sample temperature monitoring, over-temperature/over-current protection, abnormal noise detection, and a self-diagnostic fault alarm. Combined with high-temperature/-pressure resistant vessel materials and a high-volume centrifugal exhaust fan.
- **Smart control**
  Built-in touch screen control, various working parameters and status shown on screen in real time.
- **Method setting**
  100 digestion method parameters can be set, modified, and stored at any time, and each method can have up to 10 digestion stages.
- **Powerful function**
  Built-in automatic cooling mode and functions like multi-level user interface management, power correction, temperature calibration.

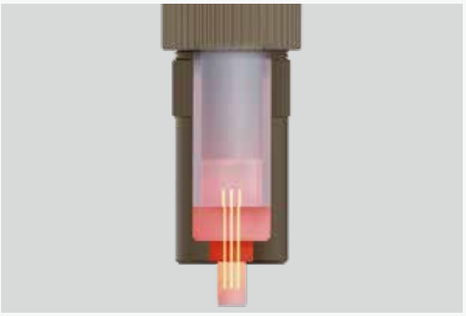
Microwave focusing technology
Accurate heating: Realize more precise and uniform heating effect, avoiding uneven heating phenomenon in microwave heating.



High efficiency and energy saving: improve heating efficiency, reduce energy waste, and thus save energy.

Safety and environmental protection: avoid the harm of microwave radiation to human body and environment, with better safety and environmental protection.

High-precision true temperature feedback
Mid-infrared temperature sensor, real-time scanning and monitoring of the actual temperature of all sample solutions.



Full vessel pressure control
The safety pressure-limiting design ensures the digestion vessel is completely sealed and leak-proof during normal operation. In case of over-pressure, it automatically relieves pressure, guaranteeing operational safety.

Microwave Digestion System

MDS-610-T6

Features

- Optional vessel quantity, up to 12 vessels to meet different digestion requirements.
- Vertical design for even distribution of microwave.
- Real-time monitoring for both temperature and pressure of each vessel.
- Contactless sensor monitoring with no burst disk design saves consumables cost and maintenance cost.
- Imported vessel material for both sample vessel and protection vessel highly ensures safety.
- 7 inch color Touch screen with user-friendly interface for easy operation.
- Imported CFRP outer shell material with high strength ensures impact resistance.
- Pre-installed general standard methods, users can also create, save, modify and delete the method.
- 316L industrial stainless steel cavity with multilayer teflon coating avoids acid corrosion, also improves cooling efficiency.

Application

It is newly designed and fully upgraded with higher performance and safer protection system.The smart design and good performance make it warmly welcomed by users.

Specification

Model	MDS-610-T6
Vessel Quantity	6
Vessel Volume	100mL
Temperature Monitoring System	Temperature monitoring: Contactless IR sensor
	Temperature control:Scanning control of each vessel
	Temperature control range: 50~400℃
	Temperature control accuracy:±0.1℃
	Display accuracy:±0.1℃
Pressure Monitoring System	Pressure monitoring: Contactless sensor
	Scan monitoring for each vessel
	Pressure control range: 0~6MPa
	Pressure accuracy:±0.01MPa
	Display Accuracy:±0.01Mpa
Sample Vessel Material	Imported TFM
Protection Vessel Material	Peek+glass fiber
Display	7 inch touch screen
Rotation Mode	360° Continuous rotating
Microwave Tank	316L Stainless steel tank with corrosion-proof coating
Microwave Power	0-1000W(Adjustable)
Microwave Leakage	<5mW/cm2
Air Exhaust	High power corrosion-proof air blower
Electricity	AC 220V±10%, 10A, 50/60Hz
Dimension(L*W*H)	490*560*630mm
N.W./G.W.	47kg/83kg(Main device+Accessories)
Shipping Dimension(L*W*H)	710*640*880mm(Main device),
	410*400*300mm(Accessories)

Heating Block (Optional)

Model	HB-Y1
Sample Number	12
Aperture and Hole Depth	φ39*65mm
Temperature Control Range	R.T.~250℃
Temperature Control Accuracy	±0.5℃
Temperature Setting Resolution	0.1℃
Heating Power	1600W
Electricity	AC220V±10%
Net Weight	13kg

Heating blocks is the optional accessory of microwave digestion system.

It is mainly used for pre-heating of some food, cosmetics and organic samples to check the intensity of sample reaction before digestion. It is also used for acid removing after digestion.

Microwave Digestion System

MDS-700-T18

Application

It has been widely used in food, textile, geology, metallurgy, plastics, coal, cosmetics, petrochemicals, biomedicine, environmental monitoring, sewage treatment and other fields.

Features

Special designed sample digestion vessel

The automatic vent and self-resealing structure ensures the digestion vessels can automatically release pressure and instantly reseal when a sudden over-pressure situation occurs.

Safety protection system

With high-strength double locked security door, the real-time temperature and pressure monitoring, automatic adjustment of over-pressure and over-temperature and abnormal sound monitoring, the device can run in a highly safe environment.

Contact-less temperature and pressure monitoring system

The advanced contact-less IR sensor could measure the real-time temperature of sample solutions in each digestion vessel. Meanwhile, the contact-less pressure sensor could monitor the real-time pressure of each vessel.

Power adjustment

The variable frequency resonance or non-pulse(optional) continues rotating mode ensures high efficient and even microwave throughput. it can be set between 0~2000W/0~3000W according to user' s requirements.

Large storage capacity

It can edit and store 255 types of programs according to user' s requirements and each method program can set parameters (temperature, pressure, time, microwave power) according to their own requirements which provides convenient operation for users.

Specification

Model	MDS-700-T18
Vessel Quantity	18
Vessel Volume	100mL
Temperature Monitoring System	Temperature monitoring: Contactless IR sensor
	Temperature control:Scanning control of each vessel
	Temperature control range: 50~400℃;
	Temperature control accuracy:±0.3℃
Pressure Monitoring System	Contact-less pressure sensor
	Pressure control range:0~10MPa
	Pressure control accuracy:0.01MPa
Vessel Material	Inner: imported TFM
	Outer: imported PEEK+glass fiber
Display	7-inch touch screen
Rotation Mode	360° Continuous rotation
Microwave Power	0-2000W adjustable/ 0-3000W adjustable
Microwave Leak	<5mW/cm²
Microwave Frequency	2450MHz
Max. Working Pressure	6MPa
Max. Working Temperature	250℃
Inner Vessel Temperature Limit	300℃
Electricity	AC 220V, 16A, 50/60Hz
Dimension(L*W*H)	640*630*590mm
N.W./G.W.	75kg/148kg(Main device+Accessories)
Shipping Dimension(L*W*H)	800*800*810mm (Main device),
	620*590*560mm (Accessories)

Heating Block (Optional)

Model	HB-Y2
Sample Number	20
Aperture And Hole Depth	φ41*150mm
Temperature Control Range	R.T.~250℃
Temperature Control Accuracy	±0.5℃
Temperature Setting Resolution	0.1℃
Heating Power	2000W
Electricity	AC220V±10%
Net Weight	34kg

Heating blocks is the optional accessory of microwave digestion system.

It is mainly used for pre-heating of some food, cosmetics and organic samples to check the intensity of sample reaction before digestion. It is also used for acid removing after digestion.

Microwave Digestion System

MDS-800-T40

Application

It is widely used in food, textile, geology, metallurgy, coal, biology, cosmetics, petrochemical, environment, waste water treatment, battery manufacturing fields, etc.

Features

Special designed sample digestion vessel

The automatic vent and self-reseaing structure which won national patent ensures the digestion vessels can automatically release pressure and instantly reseal when a sudden over-pressure situation occurs.

Contact-ess temperature and pressure monitoring system

The advanced contact-less IR sensor could measure the real-time temperature of sample solutions in each digestion vessel. Meanwhile, the contact-less pressure sensor could monitor the real-time pressure of each vessel.

Each real-time temperature and pressure value is displayed during the whole digestion process, allowing a clear check of digestion conditions.

Large storage capacity

It can edit and store 255 types of programs according to user' s requirements and each method program can set parameters (temperature, pressure, time, microwave power) according to their own requirements which provides convenient operation for users.

Safety protection system

With high-strength double locked security door, the real-time temperature and pressure monitoring, automatic adjustment of over-pressure and over-temperature and abnormal sound monitoring, the device can run in a highly safe environment.

Power adjustment

The variable frequency resonance or non-pulse(optional) continues rotating mode ensures high efficient and even microwave throughput. It can be set between 0~3000W according to user' s requirements.

Specification

Model	MDS-800-T40
Vessel Quantity	40
Vessel Volume	50mL
Temperature Monitoring System	Temperature monitoring: Contactless IR sensor
	Temperature control:Scanning control of each vessel
	Temperature control range: 50~400℃;
	Temperature control accuracy:±0.3℃
Pressure Monitoring System	Contact-less pressure sensor
	Pressure control range:0~10MPa
	Pressure control accuracy:0.01MPa
Vessel Material	Inner: imported TFM
	Outer: imported PEEK+glass fiber
Display	7-inch touch screen
Rotation Mode	360° Continuous rotation
Microwave Power	0-3000W adjustable
Microwave Leak	<5mW/cm²
Microwave Frequency	2450MHz
Max. Working Pressure	6MPa
Max. Working Temperature	250℃
Inner Vessel Temperature Limit	300℃
Electricity	AC 220V, 16A, 50/60Hz
Dimension(L*W*H)	640*630*590mm
N.W./G.W.	78kg/155kg(Main device+Accessories)
Shipping Dimension(L*W*H)	800*800*810mm (Main device),
	620*590*560mm (Accessories)

Heating Block (Optional)

Model	HB-Y3
Sample Number	42
Aperture And Hole Depth	φ32*118mm
Temperature Control Range	R.T.~250℃
Temperature Control Accuracy	±0.5℃
Temperature Setting Resolution	0.1℃
Heating Power	2000W
Electricity	AC220V±10%
Net Weight	34kg

Heating blocks is the optional accessory of microwave digestion system.

It is mainly used for pre-heating of some food, cosmetics and organic samples to check the intensity of sample reaction before digestion. It is also used for acid removing after digestion.

Microwave Digestion System

MDS300

Description

- The Microwave Digestion Systems are used to prepare liquid and solid samples prior to analysis.

Pressure Control System

The pressure control system in the vessels allows for automatic release of over-pressure without interrupting the digestion process or interfering with the vessels.

Intelligent reaction vessel with auto-venting: Self-regulating over-pressure management technology ensures smooth reaction and safe vessel operation.

Simpler Handling, Safer Digestion

Economy: Occupy less space, higher energy efficiency, reduced operating cost

Performance: Digestion capability by 10 high pressure vessel or 16 high throughput vessel

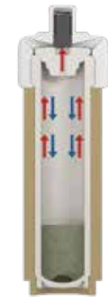
Efficiency: Rapid batch digestion and cooling (< 1 hour) for all sample types

Easiness: A simple 4-step procedure allows fast (<3 min) and safe assembly of 16 vessels

All-Around Digestion Safety Guarantee

- **Instant Pressure Management in All Vessels**

  The vent-and-seal technology ensures all vessels operate under safe and secure environment throughout the digestion.



Fully sealed

Venting in action

Complete Infrared-based Temperature Solution

Rtemp enhanced IR sensor revolutionizes temperature monitoring in microwave digestion.

Rtemp sensor' s excellent IR penetration of TFM wall allows temperature of the digestion solution being detected directly.

Conventional IR sensor measures the temperature of TFM wall only.

Oven Body

316L Stainless Steel oven body construct.

Seamless laser soldering.

5-layer premium Teflon coating.

Microwave Emitter

- **Microwave Focusing**

  Optimized single-magnetron heating.

  Creative microwave guiding technology to streamline the energy density and distribution.

  Delivers rapid, safe, and reproducible batch digestions.

Enhanced Safety Design

- **Buffered Safety Door Concept**

  Floating safety lock.

  Automatic depressurize and re-close.

  Secure microwave emission upon fully closed door.

Microwave in action

Microwave paused

The Art of Cooling

- **TwinAir Technology**

  Rapid dual airway cooling.

  Streamlined air passage.

  Automatic airflow rate control.

  Max. 10mins to safe temperature.

Hassle-free Operation Software

- **Intuitive Software Interface**

  Pre-loaded method library.

  Simple method setup, edit, retrieval.

  Fast track of three recent methods.

High Performance Rotor HP10 (Optional)

Greater temperature and pressure tolerance for tough sample matrices.

Digest 10 difficult samples in a single batch.

Powered by Rtemp super IR technology.

Contactless and real-time T/P control in full vessel set.

High Throughput Rotor GT400 (Optional)

Max. 16 samples in a single batch.

Powered by Rtemp super IR technology.

Contactless and real-time T/P control in full vessel set.

Rotor

Rotor	HP10	GT400
Number of Vessels	10	16
Vessel Material	TFM	TFM
Protective Sleeve Material	Reinforced PEEK	Reinforced PEEK
Vessel Volume	100 ml	60 ml
Max. Digestion Temp.	240 ℃	220 ℃
Max. Withstanding Temp.	330 ℃	330 ℃
Max. Withstanding Pressure	150 bar	120 bar

Safety System Insurance

- **Hardware initiation sequence**
  Check the general status of the hardware and readiness of key electronic components.
- **Smart hardware control**
  Shut down the process/microwave supply in case of events such as door opening, exothermic reaction, or magnetron failure.

Reaction Vessel Design

- Completely tool-free vessel assembling.

  Individualized vessel ID.

  Hexagonal vessel bottom for easy vessel handling.

Specification

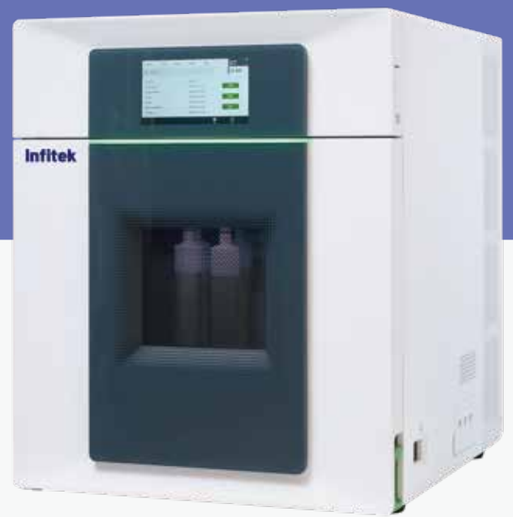
Model	MDS300
Microwave Chamber Volume	28L
Microwave Oven	Industrial grade resonance oven
Oven Body	316L Stainless Steel
Microwave Emitter	One magnetron
Microwave Power	1200W
Microwave Density	42.86W/dm^3
Microwave Control Mode	PID control
Microwave Frequency	2450MHz
Microwave Emission Mode	Unpulsed, ±1W
Microwave Control Mode	PID control
Touch Screen	7-inch high definition color LCD
Ambient Temperature	5~40 ℃
Ambient Humidity	15%~80% RH
Electricity	220~240V/50Hz, 16A
External Dimension (H*W*D)	615*452*499mm
Net Weight	35kg

Microwave Digestion System

MDS600

What makes your microwave digester a 'keeper' in the lab?

- Simplicity, convenience, and safety.
- Take on all sample types.
- Deliver economic value.



Guaranteed user friendliness

Pre-loaded digestion methods.

Intuitive software interface.

Convenient switch between rotors.

Multiple safety features in the hardware.

Guaranteed digestion performance

Complete solutions to samples of diverse background.

Precise dual temperature/pressure control.

Max. batch time (including cooling) NMT 60 min.

Guaranteed Return on Investment

Maximized sample throughput (160 per shift).

Reduced average acid consumption.

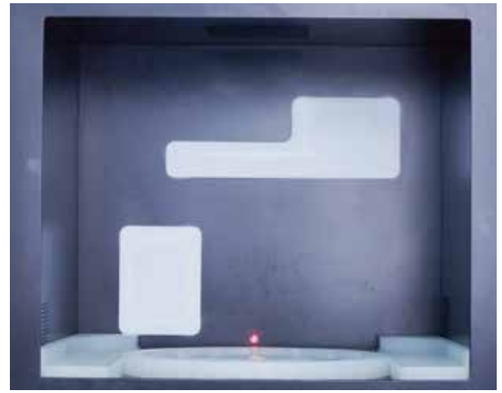
Minimized consumables and extended vessel lifetime.

Oven Body

316L Stainless Steel oven body construct.

Seamless laser soldering.

5-layer premium Teflon coating.



Microwave Emitter

- **Microwave Focusing**

  Optimized dual-magnetron positioning.

  Creative microwave guiding technology to streamline the energy density and distribution.

  Automatic microwave power adjustment to achieve target temperature.

  Delivers rapid, safe, and reproducible batch digestions for as many as 40 sample.

Enhanced Safety Design

- **Buffered Safety Door Concept**

  Floating safety lock.

  Automatic depressurize and re-close.

  Secure microwave emission upon fully closed door.

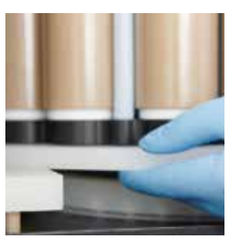
Microwave in action

Microwave paused

Vertical Rotor Release and Engagement

Rotor can be vertically raised or lowered by the motion of mechanically interlocked safety door.

Rotor handling greatly facilitated.



Rotor raised when safety door is opened to a ≥90°

Rotor lowered when safety door is opened to a < 90°

Smart Status Indicator

Automatically adjusts the illuminance as the digestion status changes (standby - in progress - complete - standby)

Hardware Initiation Sequence

Checking the general status of the hardware and readiness of key electronic components

TwinAir Technology-The Art of Cooling

Rapid dual airway cooling.

Streamlined air passage.

Automatic airflow rate control.

Max. 10 min to safe temperature.

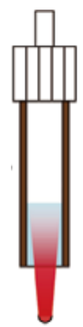
Corrosion-resistant integrated exhaust system enabling rapid cooling of vessels.

Infrared Temperature Control

- **Rtemp enhanced IR Temperature Sensor**
  Powerful and accurate temperature detection.

  Instant temperature profiling of digestion process.

  Operational convenience by contactless measurement.



Rtemp enhanced IR sensor to provide real-time and full characte of in-vessel temperature of the digestion process

Automatic Rotor Identification

Enabled by dual photoelectric sensors and high precision motor.

Vessels identified individually.

Intelligent method requisition based on rotor choices.

Precision of Pressure Control

- **Intelligent reaction vessel with auto-venting**
  Self-regulating over-pressure management technology.

  Ensures smooth reaction progress and safe vessel operation.

Fully sealed

Venting in action

Hassle-free Software Interface

Secured user access.

Simple method setup, edit, retrieval.

Fast track of three recent methods.

Easy Vessel Assembly

Effortless vessel assembling without tools.

Batch and vessel numbers inscribed on inner vessels.

Hexagonal bottom design to enable easy vessel handling.

Ultra High Performance Rotor UHP10 (Optional)

Unrivalled temperature and pressure tolerance in microwave digestion.

Tailored digestion solution ideal for the toughest sample types such as graphite, activated carbon, zircon, alumina, etc.

Guaranteed performance durability and reliability.

High Performance Rotor HP16 (Optional)

Greater temperature and pressure tolerance for tough sample matrices.

Max.16 samples in a single batch.

Powered by Rtemp IR technology.

Contactless and real-time T/P control in full vessel set.

High Throughput Rotor GT400 (Optional)

Max. 40 samples in a single batch.

Powered by Rtemp Mid-IR technology.

Contactless and real-time T/P control in full vessel set.

Rotor

Rotor	UHP10	HP16	GT400
Number of Vessels	10	16	40
Vessel Material	TFM	TFM	TFM
Protective Sleeve Material	Reinforced PEEK	Reinforced PEEK	Reinforced PEEK
Vessel Volume	100ml	100ml	60ml
Max. Digestion Temp.	260°C	240°C	220°C
Max. Withstanding Temp.	330 ℃	330 ℃	330 ℃
Max. Withstanding Pressure	150bar	150bar	120bar

Description

The Microwave Digestion Systems are used to prepare liquid and solid samples prior to analysis.

Pressure Control System

- The pressure control system in the vessels allows for automatic release of over-pressure without interrupting the digestion process or interfering with the vessels.

  Intelligent reaction vessel with auto-venting: Self-regulating over-pressure management technology ensures smooth reaction and safe vessel operation.

Safety System Insurance

- **Hardware initiation sequence**

  Check the general status of the hardware and readiness of key electronic components.

- **Smart hardware control**

  Shut down the process/microwave supply in case of events such as door opening, exothermic reaction, or magnetron failure.

  Automatically identifies the type of rotor in the vessels to prevent incorrect rotor operation.

Specification

Model	MDS600
Microwave Chamber Volume	56L
Microwave Oven	Industrial grade resonance oven
Oven Body	316L Stainless Steel
Microwave Emitter	Two magnetrons
Microwave Power	1800W
Microwave Frequency	2450MHz
Microwave Emission Mode	Unpulsed, ±1W
Microwave Control Mode	PID control
Touch Screen	7-inch high definition color LCD
Ambient Temperature	5~40 ℃
Ambient Humidity	15%~80% RH
Electricity	220~240V/50Hz, 16A
Total Power	3200W
External Dimension (H*W*D)	665*546*590mm
Net Weight	70kg