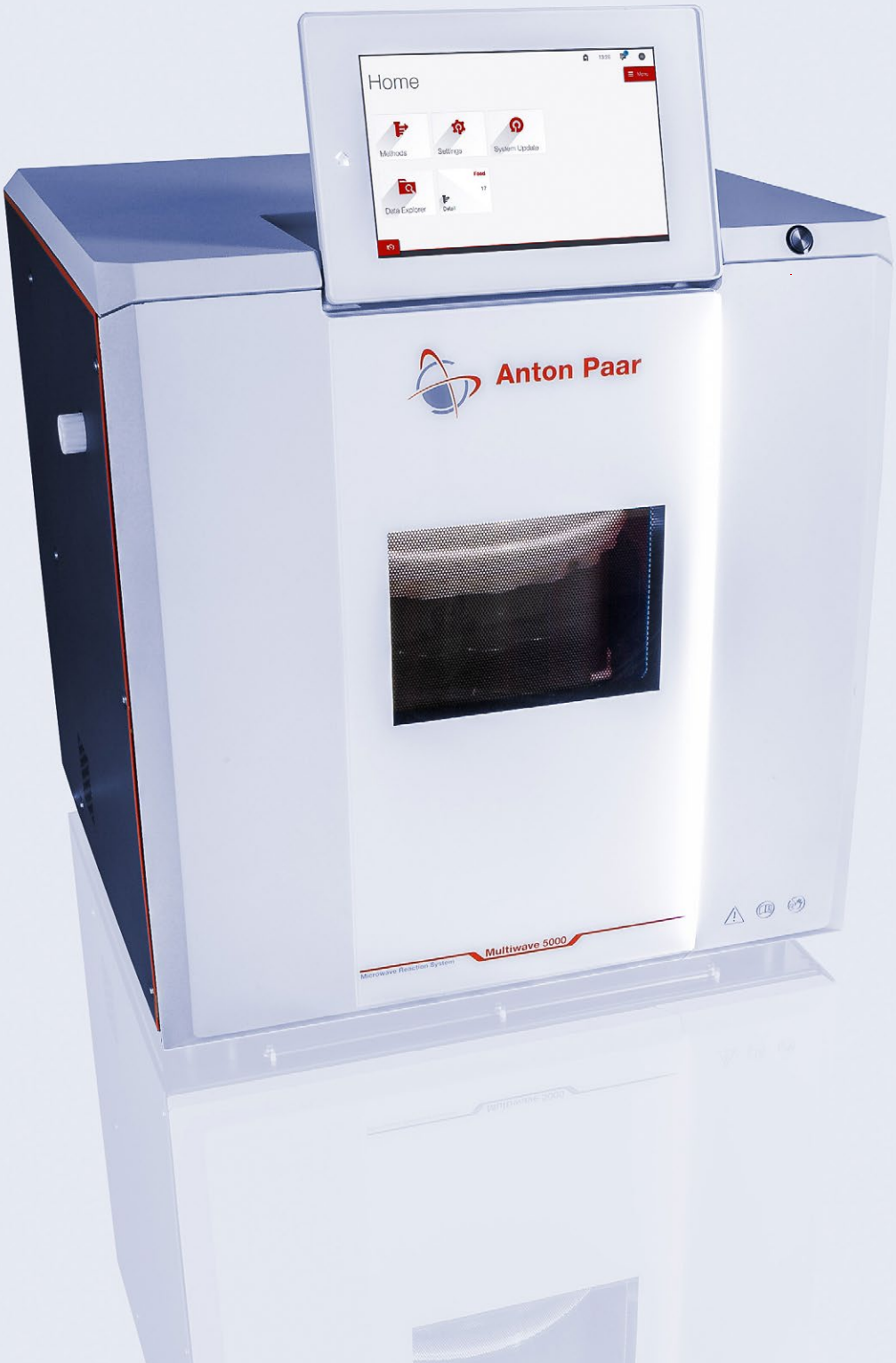
Anton Paar

Microwave reaction platform

Multiwave 5000



Prepare for **perfection**

PERFECT SAMPLE PREPARATION IS WHERE SUPERIOR TRACE ELEMENTAL ANALYSIS BEGINS.

You can use the best analytical equipment in the world, but without flawless sample preparation, your measurement values won't be reliable. That's where Anton Paar's Multiwave 5000 comes in. We've incorporated over 40 years of sample preparation expertise into the most ambitious, the most user-friendly microwave system ever built.

- It's fast – saving time, boosting throughput, and reducing costs, with up to 64 samples in a single run.
- It's flexible – easy configuration, straightforward operation.
- It's resilient – challenging samples, no problem; temperatures up to 300 °C for extended periods; operation limits up to 100 bar.
- It's intelligent, ingenious even – >500 pre-installed programs, guiding features, and a 'clever' door.
- It's intuitive – 10.1" high-resolution, durable touchscreen display; smartphone-like software; no explanation needed for daily operation.

IT'S THE LAB CHEMIST'S DREAM.

One instrument, every application

Premium digestion parameters – up to 300°C and 100 bar

Up to 64 samples in 1 run

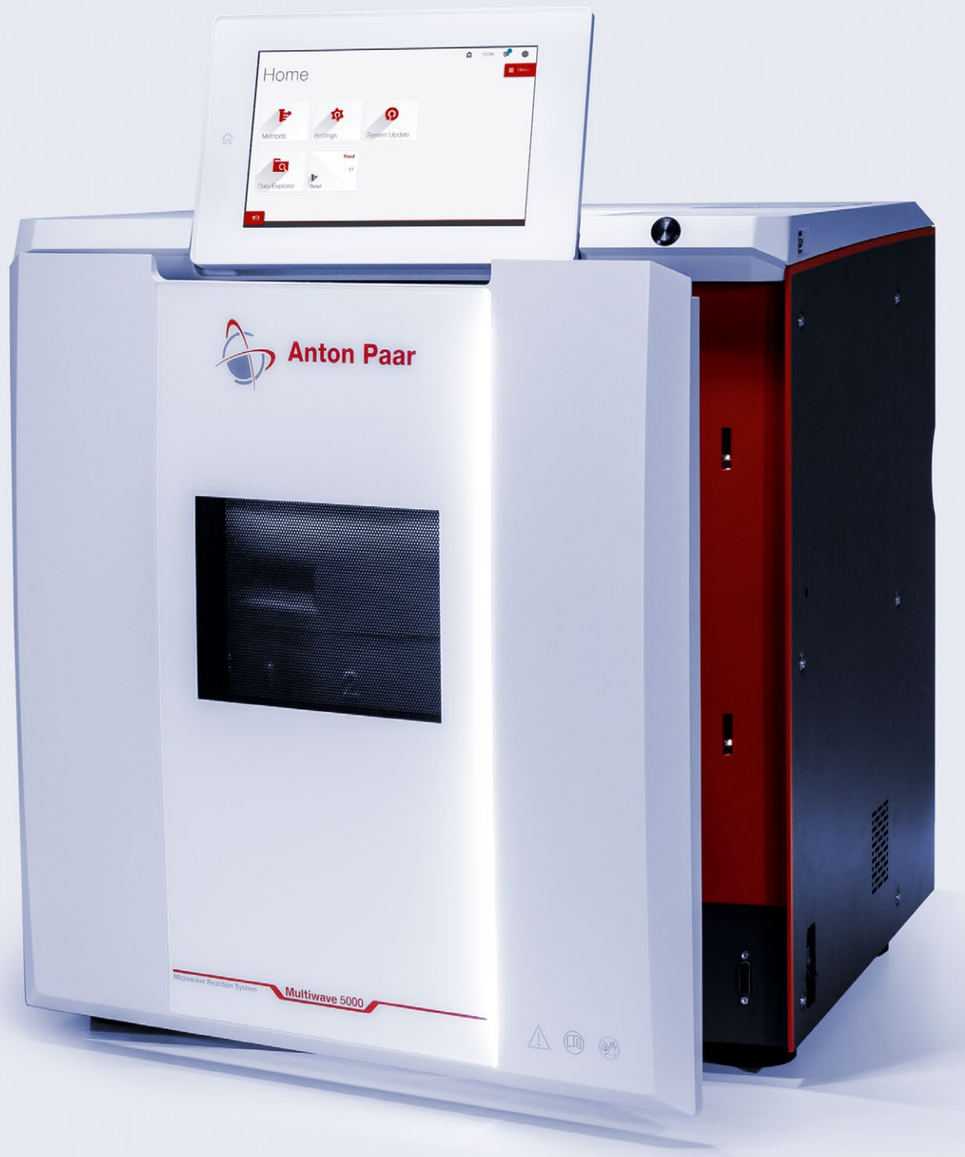
500+ pre-installed programs

Tool-free vessel handling

30+ subsidiaries and 50+ distribution partners

A SINGLE MICROWAVE REACTION PLATFORM FOR ALL YOUR NEEDS. Multiwave 5000 has it all covered: digestion of a broad range of samples (varying in difficulty or volume) | acid leaching | microwave solvent extraction | evaporation | microwave-induced oxygen combustion | sample drying | synthesis

A **microwave system** from analysts, for analysts



RELIABLE DIGESTION RESULTS THANKS TO ADVANCED VESSEL AND SENSOR TECHNOLOGY

Comprehensive reaction control is guaranteed thanks to temperature control for each position and various control strategies for the simultaneous digestion of different sample types. SmartVent detection identifies venting events via NOx gases, increasing protection against corrosion.

TIME-SAVERS: HANDS-FREE DOOR OPENER AND OPTIMIZED COOLING

With the unique hands-free door opener, all you need to do is push gently against the door. You can do it with your elbow – no need to set the vessels or rotor aside. The integrated forced-air cooling system cools the vessels within minutes after heating cycles due to its unique air gap design. The optimized cooling ensures short process times and an increased lifetime for key components.

KNOWLEDGE HUB: ALL THE INFORMATION YOU NEED – VIA THE INSTRUMENT INTERFACE

Instruction manuals, a large method library, and the application guide are just a few clicks away. Integrated video manuals make training easy. Information and software updates are free and communicated through push notifications.

MAXIMUM SAFETY IN ALL SITUATIONS

When you're working at elevated temperatures and pressures, safety is essential. To protect users and equipment, Multiwave 5000 is equipped with active and passive safety features: self-checks, software interlocks, and a re-sealing safety door. Each instrument is tested individually.

Multiwave 5000 is the only sample preparation microwave platform that comes with ETL and GS ("approved safety") certificates from independent testing institutes.

SMARTSCREEN: SIMPLE START

Configure the home screen according to your needs: Define shortcuts for often-used programs, menu links, or video manuals on your home screen and make Multiwave 5000 truly yours.

SMARTLIGHT: VISUALIZE THE STATUS OF YOUR INSTRUMENT

The color and mode of SmartLight reflect whether an experiment is in progress, finished, or on standby. No need to dash over from your desk to check if the run is finished – just cast a glance from afar.

SMARTLINK: MULTIWAVE 5000 CONNECTIVITY MEANS EFFICIENT TIME MANAGEMENT

SmartLink connects Multiwave 5000 to your PC, notebook, tablet, or mobile phone, so you can monitor and operate experiments remotely. Automated notifications keep you informed, whether you're in the lab or on the go.

PHARMA INDUSTRY STANDARDS COMPLIANCE

Multiwave 5000 complies with national and international standards such as pharmacopeia, GMP, GAMP 5, and 21 CFR Part 11. With the pharma-specific qualification package, Multiwave 5000 can be quickly integrated into your workflow.

Digestions **simplified**

SMARTVENT TECHNOLOGY

The use of SmartVent technology is a reliable way to deal with overpressure, an unwanted side effect of digestion reactions. Thanks to the controlled release of reaction gases, it enables the attainment of maximum digestion temperatures independent of the applied sample amounts.

Anton Paar's SmartVent technology rotors are robust, lightweight, and accommodate more samples on a smaller footprint. Made for fast, safe, tool-free operation, our SmartVent technology vessels provide a new level of performance and convenience for the sample preparation laboratory. Their practical design impacts all steps of operation: from sample weighing and reagent addition to closing, opening, and cleaning.

THE KEY TO SUCCESSFUL DIGESTIONS

- Reliable opening and closing mechanism without loss of analytes
- Digestion of a large variety of samples
- Up to 50 % higher sample quantities
- Samples with different reactivity in a single run
- Only 3 parts to handle, no tools required
- Closing and opening twice as fast as other vessels
- Rotors can be loaded inside and outside of the oven
- Cooling fins and guided airflow enable fast cooling
- Optimized surface and compact design for less adsorption and easier cleaning
- Long service life
- Low-cost consumables

← HVT ROTORS: A PROVEN SUCCESS FOR ACID DIGESTION OF ROUTINE SAMPLES

- Available in various volumes: 50 mL, 56 mL, and 80 mL.
- Throughput of up to 41 samples in a single run
- Ideal for digestion of various kinds of routine samples at moderate temperatures, including food and biological samples, waste water and sludge, soil and sediments, agricultural samples, and cosmetic and pharmaceutical samples.

← SVT ROTOR: THE BEST NOW EVEN BETTER

- Advanced version of the HVT vessel
- Premium operating parameters (temperatures up to 250 °C) for complete digestions in minimal time
- Highest throughput for any high-performance rotor on the market: up to 20 samples in a single run.
- Ideal for digestion of demanding samples, such as ceramics, alloys, polymers, cosmetics, geological materials, petrochemicals, or chemicals.

1 CHOOSE YOUR METHOD

2 LOAD THE ROTOR

3 START THE RUN – EVEN REMOTELY

YOUR SAMPLES MIGHT BE COMPLEX – MULTIWAVE 5000 IS NOT.

Sealed Vessels

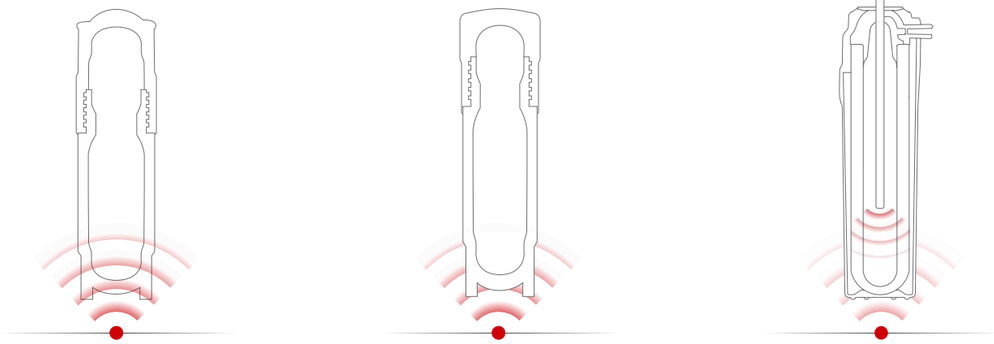
MICROSAMPLE ROTOR 64MG5 ↑

Requiring less than 20 mg of sample and approx. 1 mL of acid, the 64-position rotor is unique for digestion of large numbers of microsamples, such as those for biological materials.

↑ **HIGH-END ROTOR 8N**

For samples that are either very reactive or require extreme temperatures and pressures for complete digestion, Anton Paar offers a unique, proven solution: Rotor 8N with PTFE-TFM or quartz vessels. Made for simultaneous and wireless pressure and pressure increase rate measurement as well as temperature control of every vessel, it withstands temperatures up to 300 °C for extended periods of time at operation limits up to 80 bar. If spontaneous reactions occur, the microwave power is reduced immediately and, if required, the cooling airflow is intensified.

Ingenious sensor technology



UNRIVALED: SMARTTEMP

CONTACTLESS MEASUREMENT OF INTERNAL TEMPERATURE FOR SVT AND HVT VESSELS.

The SmartTemp sensor measures the internal temperature of each vessel directly and in real-time. Combining the fast temperature feedback of an internal temperature probe with the convenience of an infrared sensor, reaction control is easier and safer than ever – essential for hard-to-digest or exothermic samples and high temperatures.

UNIQUE MULTI-REFERENCE: IR SENSOR

INTERNAL TEMPERATURE CONTROL FOR HVT VESSELS.

The standard Multiwave 5000 sensor allows precise control of digestion processes in each vessel. The digestion runs can be controlled based on different temperature models and control strategies. The hottest sample, the coldest sample, or the average temperature of all samples can be used as references, a feature offered only by Anton Paar.

TEMPERATURE CONTROL IN SEALED VESSELS (ROTOR 8 AND ROTOR 16)

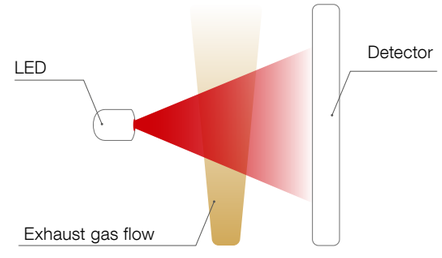
An infrared sensor measures the temperature at the base of each reaction vessel for a safe and reliable digestion process. Internal probes for temperature measurement in a reference vessel are also available.

	ROTOR 24HVT50/80	ROTOR 41HVT56	ROTOR 20SVT50	ROTOR 8 NXF/NXQ	ROTOR 64MG5
Number of vessels	24	41	20	8	64
Volume	50 mL / 80 mL	56 mL	50 mL	100 mL / 80 mL	5 mL
Material	PTFE-TFM	PTFE-TFM	PTFE-TFM	PTFE-TFM / Quartz	Glass
HF resistance	Yes	Yes	Yes	Yes (PTFE-TFM) / No (Quartz)	No
Temperature control	Internal T in all positions / SmartTemp		SmartTemp	IR in all positions	IR in 16 positions
Pressure control	SmartVent technology / SmartVent detection			p in all vessels	PTFE seal
Applications	Routine samples: biological and environmental samples, EPA procedures, food, cosmetic, and pharmaceutical samples		Harder to digest samples: including polymers, ceramics, petroleum products, and alloys	Most difficult samples	Microsamples up to 20 mg

Multiwave 5000 is backwards compatible, it can accommodate Rotors 16MF and 16HF and accessories of older Multiwave models.

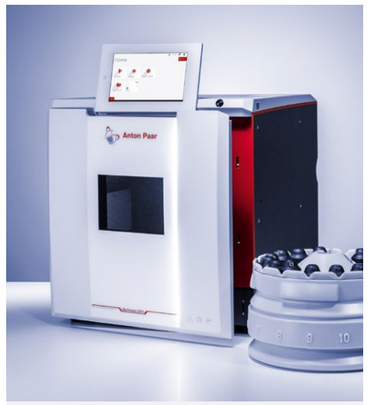
SMARTVENT DETECTION

SmartVent detection indirectly controls the pressure and identifies venting events in vessels by registering NOx gases in the exhaust air. This function is part of the comprehensive safety concept of Multiwave 5000 and increases the protection against corrosion.



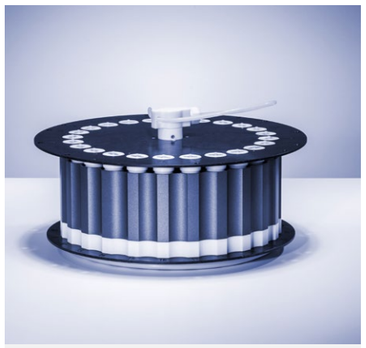
Special solutions beyond microwave acid digestion

Some samples require special treatment. Multiwave 5000 provides many options for other sample preparation methods in addition to acid digestion. They all benefit from microwave heating technology. All of them are faster, safer, cleaner, and more cost-efficient than their classic, conventionally-heated counterparts.



MICROWAVE-ASSISTED EXTRACTION

Microwave-assisted extraction is the perfect alternative to conventional extraction methods, such as Soxhlet or ASE, as reaction times are reduced from hours to only a few minutes and less solvent is used. Microwave-assisted extraction is thus a cost-effective way to improve the performance and throughput of your HPLC-based or GC-based analysis routines. Multiwave 5000 is suitable for extractions of PCBs, PAHs, and hydrocarbons from environmental and food samples, derivatization reactions prior to analysis, and polymer extractions. It is compliant with US-EPA and ASTM methods.



MICROWAVE-ASSISTED EVAPORATION

The 24EVAP accessory is a supplement to Rotor 24HVT50, Rotor 24HVT80, and Rotor 41HVT56.
It simplifies and facilitates the evaporation of acids and concentration of aqueous sample solutions. Since the same vessel can be used for digestion as well as for prior or subsequent evaporation, there is no need to transfer digestion solutions. For a variety of samples, automatic endpoint determination makes reducing your sample volume convenient and reliable. The external scrubber neutralizes the acid vapors with a washing efficiency of more than 95 %.

MICROWAVE-INDUCED OXYGEN COMBUSTION (MIC)

This unique, clean, and quick method is suitable for all combustible solids (wood, paper, coal, food, or polymers). Analytes are trapped in a low-concentration absorption solution which can be measured without dilution.

MICROWAVE-ASSISTED PROTEIN HYDROLYSIS

Multiwave 5000 enables the protein hydrolysis of milligrams to grams in less than 1 hour with precise temperature control during the reaction. It is possible to apply inert gas.

MICROWAVE DRYING

Rotor 1DRY efficiently dries samples 4 times faster than conventional methods, and provides samples without carbonization or contamination. Humidity and unwanted odors are removed via the exhaust system.

INSERT VIALS

To accelerate the sample preparation workflow further and eliminate time-consuming cleaning steps, disposable borosilicate glass inserts are available for HVT and SVT vessels. For ultratrace metal analysis, quartz inserts are available as well.

“

We are confident in the high quality of our instruments. That’s why we provide **full warranty for three years**.

”

All new instruments* include repair for 3 years.
You avoid unforeseen costs and can always rely on your instrument.
Alongside the warranty we offer a wide range of additional services and maintenance options.

*Due to the technology they use, some instruments require maintenance according to a maintenance schedule. Complying with the maintenance schedule is a prerequisite for the 3-year warranty.

Service and support directly from the manufacturer
Our comprehensive service provides you with the best individual coverage for your investment.
You benefit from:

- Maximum uptime
- The shortest response time
- Certified service engineers
- A global service network

Anton Paar
Certified Service

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