

# Microwave Extraction



Microwave-assisted  
Solvent Extraction

# The 4 “S” of Extraction: Speed, Simplicity, Savings and Safety

Solvent extraction is an essential sample preparation method for separating analytes prior to their identification by HPLC or GC analysis. It is also an intermediate step in the purification of a desired product.

Now you can significantly increase the efficiency of your extraction: Anton Paar’s modern microwave reactors Monowave 450 and the Multiwave PRO Extraction Package reduce sample preparation times from several hours down to minutes.

## **Speed: up to several hundred times faster than traditional methods**

Extractions take place in closed vessels at a temperature above the solvent’s boiling point. This dramatically reduces extraction times from hours to minutes.

## **Simplicity: 4 steps to start**

Regardless of whether you like to work sequentially or in parallel, only a few steps in the software are required to start experiments and to leave them running unattended.

## **Savings: up to 10 times less solvent consumption than with traditional methods**

You considerably reduce your solvent expenses by using closed vessels. This contributes to an eco-conscious process.

## **Safety: We care for you**

Both Monowave 450 and the Multiwave PRO Extraction Package are designed to meet the highest safety standards. The temperature and pressure are continuously controlled throughout the extraction process.

## **Multiwave PRO Extraction Package**

Cover larger extraction amounts in a parallel mode – have up to 16 samples processed in a single run.



## One technology – two solutions

Monowave 450 and the Multiwave PRO Extraction Package cover a wide variety of extraction processes and offer the best solutions for analytical and quality control laboratories, industry and academia. The software used by the instruments conforms with 21 CFR Part 11. Solids, liquids and viscous substances are rapidly extracted.

### Cutting-edge technology: Heating performance

Extractions are traditionally performed with polar and/or non-polar solvents, depending on the compounds obtained. With Monowave 450's maximized heating efficiency and high microwave field density and with the silicon carbide (SiC) heating elements of the Multiwave PRO Extraction Package – an exclusive technology from Anton Paar – you can efficiently heat up solvents which cannot absorb microwave irradiation.



### Monowave 450

The ideal microwave extraction system for small sample amounts and method development.

# Fast and Automated Extractions: Monowave 450

Instead of hours of refluxing at the sample's boiling point, the fully automated Monowave 450 system performs sequential experiments at elevated temperatures and significantly shortens your extraction and processing times.

## **Get your extra: Automation as you like it**

Monowave 450's autosampler provides reliable unattended sequential operation of up to 24 vials.

## **Your mixtures in full view**

With the integrated camera in Monowave 450, you can observe your extraction mixture on the touchscreen in real time and swiftly react to anything by varying the stirring speed, time or temperature.

## **Saving time and labor**

The utmost heating efficiency of up to 300 °C and the sealed-vessel technology enable chemical processes well above the boiling point of the solvent which drastically reduces extraction times. The excellent stirring ensures proper mixing and accelerates the extraction.

## **Optimized use of your resources**

The easily handled and reusable 30 mL Wide Neck vials and snap caps keep your running costs low. In addition, Monowave 450 requires only small volumes of solvent. Therefore, your extraction protocols prove cost-effective and eco-friendly.

## **Convenient operation**

Easily program your experiments via a touchscreen user interface. Reaction parameters are continuously controlled by a mandatory IR sensor and an integrated pressure sensor.





# High Throughput and Scale-up: Multiwave PRO Extraction Package

The Multiwave PRO Extraction Package is designed to perform high-throughput extractions and to process up to 60 mL of sample in each vessel. The system particularly stands out for its user-friendliness, easy vessel handling and facilitated experiment workup.

## **Get your amounts with parallel solvent extraction**

The Multiwave PRO Extraction Package facilitates high-throughput extractions. You can let the system process up to 16 samples in 100 mL vessels in one experiment.

## **Ready in a few steps**

Experiment preparation is simplified thanks to convenient extraction vessels equipped with an easy-to-handle screw cap. This special screw cap allows working temperatures up to 200 °C and pressures up to 18 bar.

## **Keeping it simple in solid extraction**

The Multiwave PRO Extraction Package is equipped with glass filter inserts. Solid material is directly separated from the solvent, thereby saving a workup step. Silicon carbide heating elements allow the heating of non-polar solvents.

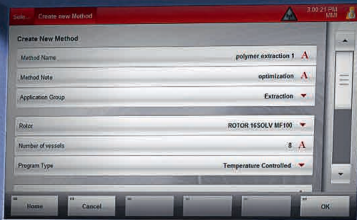
## **Get what you want**

An internal pressure and temperature sensor ensures constant experimental conditions and avoids degradation of the extracted compounds. The obtained data are wirelessly transmitted to the system.

## **Committed to safety**

The system is delivered with the Safety Module SOLV which counteracts the accumulation of solvent vapors in the reactor cavity. An actively closed, self-resealing safety door protects you in case of any eventuality.





Reaction System SOLV

Multiwave PRO



