

LABORATORY EQUIPMENT

# Microwave digestion

Increase productivity

# Speedwave Two

## Features



### 1. Routine tasks skilfully solved

Routine laboratories must be in a position to process the highest possible number of samples efficiently and in the shortest possible time. Along with well-working application, safety combined with very simple handling and minimal operating costs, play a superior role. Here, the Berghof Speedwave Two offers an intelligent equipment concept that provides the appropriate solution for the acid digestion of samples, principally in the areas of:

- environment
- agriculture
- medicine
- biology
- animal feed
- foodstuffs

### 2. Maximum safety

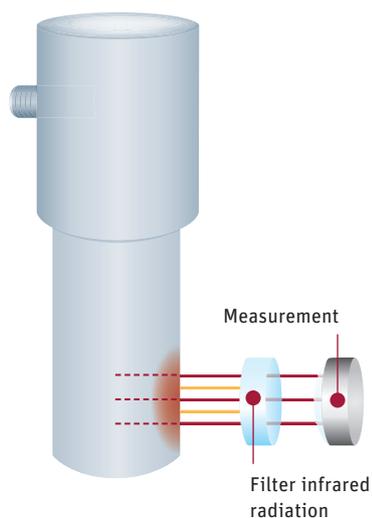
Because of the fast heating rate involved there is a risk of spontaneous reactions during microwave digestion. These reactions represent the greatest safety risk regarding digestions in closed systems. The innovative sensor technology of the Speedwave Two and its temperature-controlled active microwave regulation reduces this risk to a minimum.

- temperature monitoring of all samples in real time with DIRC
- effective excess pressure relief
- integrated gas collection system prevents emissions
- shut-down in critical operating states
- excess temperature cut-outs protect the oven chamber and magnetron

### 3. Ultra-simple control

With the 14 preinstalled applications a large number of requirements (EPA 3051, EPA 3052, EPA 3015, DIN EN 13346) are satisfied. At the start of the program only two commands are needed. The separate control unit has the benefit of offering considerable operating convenience and flexibility, while the software is clearly structured and intuitive. For documentation all temperature and performance data are stored and can be exported via a USB interface in accordance with common quality norms.

**The challenge** in modern routine analytics is to increase performance. A large number of samples have to be processed rapidly and cost-effectively. The Speedwave Two microwave digestion unit enables high quality digestions through the simplest operation. Users benefit from the highest degree of safety and low operating costs.



## speedwave®DIRC

### Active reaction control without reference vessels

The connection and use of reference vessels is a thing of the past – because Berghof have set a new course with the patented Speedwave DIRC thermometer. The thermal radiation in the mid infrared (IR) range in which TFM™ and quartz do not absorb the radiation is measured contact-free. Filtering out the infrared radiation coming from the surface of the pressure vessel ensures that this

process is very precise and reliable. This permits direct detection of the temperature of each individual sample in the pressure vessels in real time.

Control of the microwave output is dependent on the temperatures of all the samples. This regulation concept guarantees absolute safety, reproducible heating curves and, as a result, reproducible digestion results.



### Easy handling

The big plus regarding the Berghof Microwave digestion system is the fact that the digestion vessels are entirely manufactured of high-quality TFM™-PTFE. The vessels consist of few components and can be open and closed with few hand movements without the need for tools. When opening, the remaining pressure is controlled and safely released. Thanks to their dead volume-free construction the vessels can be easily cleaned. The material and concept behind the equipment are of considerable interest to the customer since Berghof also includes the vessels in the warranty for the equipment.

# Speedwave Two

## Technical specifications



Speedwave Two	
<b>Power supply</b>	230 V / 50 Hz / 1,350 W
<b>Magnetron performance</b>	1,000 W (DAP-60K:100 W per digestion vessel)
<b>Frequency</b>	2,450 MHz
<b>Weight / Dimensions</b>	Basic unit approx. 14 kg / 520 x 460 x 330 mm (w x d x h) Control unit: approx. 0.5 kg / 188 x 35 x 114 mm (w x d x h)
<b>Oven diameter</b>	Approx. 27 L / 350 x 340 x 215 mm (w x d x h)
<b>Noise level</b>	< 60 dB
<b>Control unit</b>	Coloured touchscreen, 7" TFT-LCD Panel, 800 x 400 Pixel
<b>Storage</b>	1 GB SD card
<b>Interfaces</b>	USB, RS-232, Ethernet
<b>Language</b>	German, English, French, Italian, Spanish
<b>Temperature measurement</b>	Patented DIRC thermometer, measurement range 50-260°C, 1°C precision at 200°C
<b>Vessel material</b>	Isostatically-molded TFM™-PTFE, quartz (DAQ-10)
<b>Vessel types</b>	DAP-60K: 60 mL capacity, 40 bar (580 psi), 10 vessels per sample turntable, DAQ 10: 10 mL, 75 bar (1,090 psi), 24 vessels per sample turntable
<b>Safety tests</b>	CE conformity, fulfils EN 335-25, DIN EN 61010-1, DIN EN 61326-1, DIN EN 61326-2
<b>Warranty</b>	12 months, including digestion vessels

### Berghof Products + Instruments GmbH

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