

ERTEC**MAGNUM II**

Microwave agent of mineralization

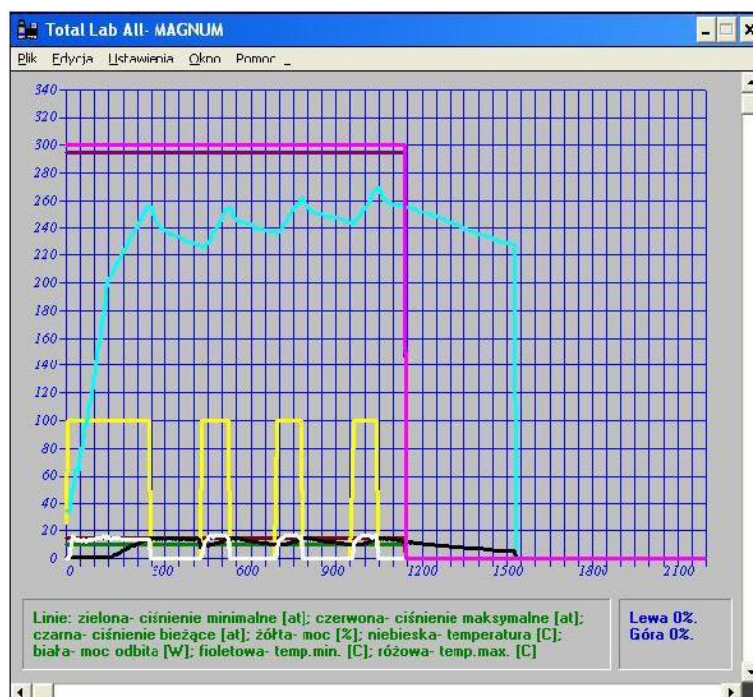
- Digestion system MAGNUM a good results of collaboration between the constructor Dr. E. Reszke and the scientist Prof. H. Matusiewicz
- More than 500 systems sold worldwide
- Strong and reliable stainless steel body, water cooled
- Safe operation under pressure or as an open system
- Very good coupling of microwave energy to different samples
- Reaction vessels from isostatically pressed PTFE (Berghof, De)
- Computer program controlling arbitrary samples and a self-educating software to generate efficient digestion prescriptions
- Triple pressure safety system
- Full automatic control of working conditions
- Typical digestion times less than 20 minutes!
- Weight of sample up to 3 g !
- Small amount of the reagents (typically 6ml)
- Inexpensive exploitation



CONSTRUCTION HITS AND TRICKS

A revolutionary generation of modular digestion instruments. The only closed system with microwave antennae placed off axis, where a thermocouple was applied instead. The MW energy from waveguide splits between two antennae and due to phase shift of $\pi/2$ they perform more effective coupling of MW immediately to the reagents inside the vessel closed with a cap and a safety membrane. Bending of disc springs and a displacement of the stick rod is changed into a pressure-proportional voltage $U(p)$. Thermocouple senses the real temperature levels immediately at the bottom of the vessel. The bayonet-type joint which connects the steel head with water cooled body is blocked during the runs. The fumes born inside the vessel are sucked off by a water type vacuum pump and then neutralized in the sink. Power installed is 700 Watts at frequency of 2450 MHz. Control of the operation by means of a microprocessor system with a PC- class computer. The governing console and magnetic stirrer are options. The system can be composed of several modules but one of them has the capacity of a classical 6 stand rotor in a specialized microwave oven. CE marking conformed.

Pressure, temperature, microwave power, and reflected microwave power are shown in real time in a graph or table and stored.



Examples of mineralization programmes

Sample	Weight of sample	Mineralization programme	Pressure (max-min)	Reagents
Vitamine pills	0.1g	15min/100%	45-42 at	2ml HF, 2ml H ₂ O ₂
Blood	0.5g	7min/100%	45-42 at	7ml HNO ₃
Beef liver	0.2g	8min/80%	45-42 at	3ml HNO ₃
Children hair	1.0g	Step 1) 1min/50%, 30sek/0% Step 2) 1min/60%, 30sek/0% Step 3) 2min/70%, 30sek/0% Step 4) 2min/80%	20-17 at 30-27 at 35-32 at 45-42 at	7ml HNO ₃ , 3ml H ₂ O
Horse hooves	0.2g	15min/100%	45-42 at	6ml HCl, 3ml H ₂ O ₂
Beef bones	0.2g	25min/100%	45-42 at	6ml HCl, 3ml H ₂ O ₂
Waste waters	50ml	15min/100%	45-42 at	7ml HNO ₃
Beef meat, raw	5.0g	Step 1) 2min/80% Step 2) 1min/60%, 30sek/0% Step 3) 2min/70%, 30sek/0% Step 4) 2min/80%	20-17 at 30-27 at 35-32 at 45-42 at	10ml HNO ₃
Salami	1.0g	6min/100%	45-42 at	6ml HNO ₃
Cheese	1.0g	10min/100%	45-42 at	6ml HNO ₃
Butter	1.0g	Step 1) 2min/60% Step 2) 2min/70% Step 3) 2min/80% Step 4) 5min/90%	20-17 at 30-27 at 35-32 at 45-42 at	6ml HNO ₃
Pork lard	1.0g	10min/100%	45-42 at	6ml HNO ₃
Fly	0.2g	5min/80%	45-42 at	1ml H ₂ O ₂

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Analytical standards and equipment

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