

# ultraWAVE RACK GUIDE



**MILESTONE**  
HELPING  
CHEMISTS

The ultraWAVE rack guide includes a wide variety of rack sizes, including 4, 5, 8, 15, 19, 22, 26 positions and combinations of different vials in the same rack. Vials are available in PTFE, quartz or disposable glass to match the specific needs of the laboratory. Choosing the optimal vial material depends on factors such as sample type, sample amount to be digested, acid chemistry, elements of interest and desired limit of quantification. The table below provides guidelines on choosing the vial size and material which will be best suited for your application.



VIALS MATERIAL	MATERIAL PROPERTIES AND FEATURES	BENEFITS
High purity PTFE	High purity material No inherent material contaminants Suitable for applications requiring HF	Optimal for trace element determination Suitable for any acid mixture Great for digestion of geological material and inorganic samples Low blanks
High purity Quartz	Easy to clean No inherent material contaminants (except for silicon) Low porosity	Great for trace metals analysis in food, pharmaceuticals and other organic samples Low memory effect High durability and long lifetime
Disposable Glass	Disposable Suitable for the analysis of all elements. . Inherent material contaminants may include: B, Na, Mg, Al, K, Ca, which could prevent low detection capability	Inexpensive Great for routine analysis Suitable for the large majority of heavy metals No cleaning step Higher throughput

## HIGH PURITY PTFE AND QUARTZ VIALS

### TYPICAL APPLICATIONS



Agriculture



Biological



Environmental



Food & Feed



Geochemistry



Metals



Petrochemical



Pharmaceutical



Polymers



Research

## DISPOSABLE GLASS VIALS

### TYPICAL APPLICATIONS



Agriculture



Beverage



Environmental



Food & Feed



Officials












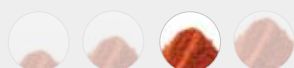




Petrochemical


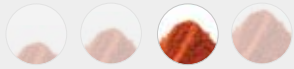







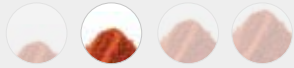





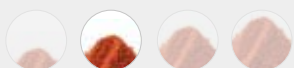
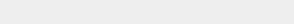





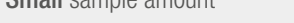



# EFFICIENT AND COST-EFFECTIVE SAMPLE PREPARATION

Choosing the number of positions is influenced by the type of sample, sample amount and productivity required. The ultraWAVE racks provides unparalleled flexibility, as they easily accommodate both large sample masses and high productivity. The below table shows all the available racks, providing guidelines on the typical applications and solutions they provide.



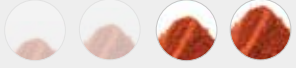



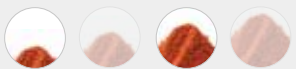



RACKS	TYPICAL WORKING CONDITIONS & SAMPLES	TYPICAL APPLICATIONS	BENEFITS
<b>4 POSITIONS</b>  <p>Glass   PTFE/TFM   Quartz</p>	<p>Suggested volume: 12 ml</p> <p>Sample amount: up to 3.5 g</p>  <p><b>Extra-large</b> organic sample amount</p>  <p><b>Highly</b> reactive sample</p>	 Metals  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Achieve instrument DL for trace element detection</li> <li>– Representative sample amount</li> <li>– Sample homogeneity</li> <li>– Long runs at high temperature</li> <li>– Lower running cost (consumables)</li> </ul>
<b>5 POSITIONS</b>  <p>Glass   PTFE/TFM   Quartz</p>	<p>Suggested volume: 10 ml</p> <p>Sample amount: up to 3 g</p>  <p><b>Extra-large</b> organic sample amount</p>  <p><b>Highly</b> reactive sample</p>	 Metals  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Achieve instrument DL for trace elements detection</li> <li>– Representative sample amount</li> <li>– Sample homogeneity</li> <li>– Long runs at high temperature</li> <li>– Lower running cost (consumables)</li> </ul>
<b>8 POSITIONS</b>  <p>Glass   PTFE/TFM   Quartz</p>	<p>Suggested volume: 8 ml</p> <p>Sample amount: up to 1.5 g</p>  <p><b>Large</b> organic sample amount</p>  <p><b>Medium to Highly</b> reactive sample</p>	 Metals  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Achieve instrument DL for trace elements detection</li> <li>– Representative sample amount</li> <li>– Sample homogeneity</li> <li>– Long runs at high temperature</li> <li>– Lower running cost (consumables)</li> </ul>

# FLEXIBILITY THAT MAKES THE DIFFERENCE

RACKS	TYPICAL WORKING CONDITIONS & SAMPLES	TYPICAL APPLICATIONS	BENEFITS
<b>15 POSITIONS</b>  Glass   PTFE/TFM   Quartz	Suggested volume: 5 ml Sample amount: up to 1 g  <b>Large</b> organic sample amount  <b>Medium to Highly</b> reactive sample	 Food & Feed  Environmental  Inorganics  Pharmaceutical  Petrochemical	<ul style="list-style-type: none"> <li>– High productivity</li> <li>– Ease of use</li> <li>– Mixed samples</li> <li>– Lower consumables cost</li> <li>– Lower labor cost</li> </ul>
<b>19 POSITIONS</b>  Glass   PTFE/TFM   Quartz	Suggested volume: 4 ml Sample amount: up to 0.3 g  <b>Medium</b> sample amount  <b>Low</b> reactive sample	 Clinical  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Ultratrace metals analysis</li> <li>– Low acid volume</li> <li>– Ease of use</li> </ul>
<b>22 POSITIONS</b>  Glass   PTFE/TFM   Quartz	Suggested volume: 3 ml Sample amount: up to 0.3 g  <b>Medium</b> sample amount  <b>Low</b> reactive sample	 Clinical  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Ultratrace metals analysis</li> <li>– Low acid volume</li> <li>– Ease of use</li> <li>– Lower consumables cost</li> <li>– Lower labor cost</li> </ul>
<b>26 POSITIONS</b>  Glass	Suggested volume: 2 ml Sample amount: up to 0.1 g  <b>Small</b> sample amount  <b>Low</b> reactive sample	 Clinical  Research  Food & Feed	<ul style="list-style-type: none"> <li>– Ultratrace metals analysis</li> <li>– Low acid volume</li> <li>– Ease of use</li> </ul>

# ULTRAWAVE

## THE GAME CHANGER IN MICROWAVE SAMPLE PREP

RACKS	TYPICAL WORKING CONDITIONS & SAMPLES	APPLICATIONS	ADVANTAGES
<b>8 POSITION MIXED RACKS</b> 3 vials of the 5 pos rack 5 vials of the 15 pos rack  Glass   PTFE/TFM   Quartz	Suggested volume and sample amount as per the 5 and 15 position racks  Extra-large & Large organic sample amount	 Food & Feed  Pharmaceutical  Reasearch	<ul style="list-style-type: none"> <li>– Mixed samples</li> <li>– Different sample amount</li> <li>– Ease of use</li> </ul>
<b>18 POSITION MIXED RACKS</b> 6 vials of the 15 pos rack 12 vials of the 22 pos rack  Glass   PTFE/TFM   Quartz	Suggested volume and sample amount as per the 15 and 22 position racks  Large & Small sample amount	 Clinical  Reasearch  Food & Feed	<ul style="list-style-type: none"> <li>– Mixed samples</li> <li>– Different sample amount</li> <li>– Ultratrace metals analysis</li> <li>– Ease of use</li> <li>– Low acid volumes</li> </ul>

### ABOUT THE ultraWAVE

The Milestone ultraWAVE isn't just an evolution; it's a revolution—changing how industrial and research laboratories around the world prep samples for analysis. Patented ultraWAVE Single Reaction Chamber (SRC) technology transcends traditional closed and open vessel digestion, offering significantly greater digestion capabilities for even the most difficult sample types.

High-performance stainless steel construction allows for higher pressures and temperatures, while disposable vessels eliminate the need to assemble, disassemble or clean between processing. Just as important, dissimilar samples can be processed simultaneously, saving time and money.



**MILESTONE**  
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C H E M I S T S

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