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.

<table>
<thead>
<tr>
<th>VIALS MATERIAL</th>
<th>MATERIAL PROPERTIES AND FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
</table>
| 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                                                   |

<table>
<thead>
<tr>
<th>HIGH PURITY PTFE AND QUARTZ VIALS</th>
<th>DISPOSABLE GLASS VIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPICAL APPLICATIONS</td>
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</tr>
<tr>
<td>Agriculture</td>
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<tr>
<td>Biological</td>
<td>Beverage</td>
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<tr>
<td>Environmental</td>
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<tr>
<td>Food &amp; Feed</td>
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</tr>
<tr>
<td>Geochemistry</td>
<td>Officials</td>
</tr>
<tr>
<td>Metals</td>
<td>Petrochemical</td>
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<tr>
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<td>Polymers</td>
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<tr>
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<td>Research</td>
</tr>
<tr>
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<td>Food &amp; Feed</td>
</tr>
</tbody>
</table>
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 the available racks providing guidelines on the typical applications and solutions they provide.

<table>
<thead>
<tr>
<th>RACKS</th>
<th>TYPICAL WORKING CONDITIONS &amp; SAMPLES</th>
<th>TYPICAL APPLICATIONS</th>
<th>BENEFITS</th>
</tr>
</thead>
</table>
| 4 POSITIONS | Suggested volume: 12 mL  
Sample amount: up to 3.5 g  
**Extra-large** organic sample amount  
**Highly** reactive sample | Metals  
Reasearch  
Food & Feed | – Achieve instrument DL for trace element detection  
– Representative sample amount  
– Sample homogeneity  
– Long runs at high temperature  
– Lower running cost (consumables) |
|             | Glass  
PTFE/TFM  
Quartz |                      |                                                                 |
| 5 POSITIONS | Suggested volume: 10 mL  
Sample amount: up to 3 g  
**Extra-large** organic sample amount  
**Highly** reactive sample | Metals  
Reasearch  
Food & Feed | – Achieve instrument DL for trace elements detection  
– Representative sample amount  
– Sample homogeneity  
– Long runs at high temperature  
– Lower running cost (consumables) |
|             | Glass  
PTFE/TFM  
Quartz |                      |                                                                 |
| 8 POSITIONS | Suggested volume: 8 mL  
Sample amount: up to 1.5 g  
**Large** organic sample amount  
Medium to **Highly** reactive sample | Metals  
Reasearch  
Food & Feed | – Achieve instrument DL for trace elements detection  
– Representative sample amount  
– Sample homogeneity  
– Long runs at high temperature  
– Lower running cost (consumables) |
|             | Glass  
PTFE/TFM  
Quartz |                      |                                                                 |
### FLEXIBILITY THAT MAKES THE DIFFERENCE

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<th>TYPICAL APPLICATIONS</th>
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</tr>
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</table>
| 15 POSITIONS | **Large** organic sample amount | Food & Feed, Environmental, Inorganics, Pharmaceutical, Petrochemical | - High productivity  
- Ease of use  
- Mixed samples  
- Lower consumables cost  
- Lower labor cost |
| 19 POSITIONS | **Medium** sample amount  
**Low** reactive sample | Clinical, Research, Food & Feed | - Ultratrace metals analysis  
- Low acid volume  
- Ease of use |
| 22 POSITIONS | **Medium** sample amount  
**Low** reactive sample | Clinical, Research, Food & Feed | - Ultratrace metals analysis  
- Low acid volume  
- Ease of use  
- Lower consumables cost  
- Lower labor cost |
| 26 POSITIONS | **Small** sample amount  
**Low** reactive sample | Clinical, Research, Food & Feed | - Ultratrace metals analysis  
- Low acid volume  
- Ease of use |
## ULTRAWAVE
### THE GAME CHANGER
### IN MICROWAVE SAMPLE PREP

<table>
<thead>
<tr>
<th>RACKS</th>
<th>TYPICAL WORKING CONDITIONS &amp; SAMPLES</th>
<th>APPLICATIONS</th>
<th>ADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8 POSITION MIXED RACKS</strong>&lt;br&gt;3 vials of the 5 pos rack&lt;br&gt;5 vials of the 15 pos rack&lt;br&gt;Glass</td>
<td>Suggested volume and sample amount as per the 5 and 15 position racks&lt;br&gt;Extra-large &amp; Large organic sample amount</td>
<td>Food &amp; Feed&lt;br&gt;Pharmaceutical&lt;br&gt;Reasearch</td>
<td>– Mixed samples&lt;br&gt;– Different sample amount&lt;br&gt;– Ease of use</td>
</tr>
<tr>
<td><strong>18 POSITION MIXED RACKS</strong>&lt;br&gt;6 vials of the 15 pos rack&lt;br&gt;12 vials of the 22 pos rack&lt;br&gt;Glass</td>
<td>Suggested volume and sample amount as per the 15 and 22 position racks&lt;br&gt;Large &amp; Small sample amount</td>
<td>Clinical&lt;br&gt;Reasearch&lt;br&gt;Food &amp; Feed</td>
<td>– Mixed samples&lt;br&gt;– Different sample amount&lt;br&gt;– Ultratrace metals analysis&lt;br&gt;– Ease of use&lt;br&gt;– Low acid volumes</td>
</tr>
</tbody>
</table>

### 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.

Visit us at [www.milestonesci.com](http://www.milestonesci.com) or call 866.995.5100 to schedule an onsite demonstration.