MARS 6
Microwave Acid Digestion

Method Note Compendium

Updated January 31, 2018
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Agriculture
Microwave Digestion of
**Boric Acid HF Neutralization**

**Procedure**

Allow vessel to cool. Add 30 ml \( \text{H}_3\text{BO}_3 \) (4%) into the vessel that contains the sample and acid.

**Notes**

This procedure can be used if it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed by reaction of certain analytes with hydrofluoric acid.

Alternatively, 1-4g of solid \( \text{H}_3\text{BO}_3 \) + 25mL deionized \( \text{H}_2\text{O} \) can be used in place of the 4% w/v solution.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus

**Reagents**

\( \text{H}_3\text{BO}_3 \) (4%)

**Max Sample Weight**

Varies by Sample

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

<table>
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<tr>
<th>Stage</th>
<th>Temp (°C)</th>
<th>*Ramp (mm:ss)</th>
<th>Hold (mm:ss)</th>
<th>Pressure (psi)</th>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

See sample specific method notes.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Coffee Beans

**Procedure**

Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

<table>
<thead>
<tr>
<th>MARS 6</th>
<th>MARS 6 iWave</th>
</tr>
</thead>
</table>

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 0.5 g

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Cotton**

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

- Ramp times and power may vary depending on type and number of vessels.
- If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
- The control / reference vessel must contain the largest and most reactive sample.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
- If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

### Reagents

- HNO₃

### Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

1. This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
2. If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
3. The control / reference vessel must contain the largest and most reactive sample.
4. Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
5. If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Feed Grain

Procedure

Weigh 0.5 g (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃, and 2 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Fertilizer AOAC Method 2006.03

### Procedure
Weigh 1 g (0.5 g for organic matrices) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

This method may not provide a total digest of all fertilizer samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrices.

### Recommended Equipment
- MARS 6
- MARS 6 iWave

### Recommended Vessels
- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

### Reagents
- HNO₃
- HCl

### Max Sample Weight
1 g

### Sample Type
Organic

### Control Type
Ramp to Temperature

### Method Type
One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Plant Tissue**

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Some plant tissues contain silicates which would require HF for total dissolution.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

### Reagents

- HNO₃

### Max Sample Weight

- 0.5 g

### Sample Type

- Organic

### Control Type

- Ramp to Temperature

### Method Type

- One Touch

### Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Soybean

**Procedure**

Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 0.5 g

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Spinach Leaves

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Some plant tissues contain silicates which would require HF for total dissolution.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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<th>Stage</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Straw**

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃ and 1 ml of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- EasyPrep
- EasyPrep Plus

### Reagents

- HNO₃
- HF

### Max Sample Weight

0.5 g

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Tobacco

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The use of HF may be required to digest any silicates found in the sample.

**Recommended Equipment**

| MARS 6 | MARS 6 iWave |

**Recommended Vessels**

| Xpress | XpressPlus | EasyPrep | EasyPrep Plus |

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

<table>
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<th>Stage</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Wheat

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment

| MARS 6 | MARS 6 iWave |

Recommended Vessels

| Xpress | XpressPlus | EasyPrep | EasyPrep Plus |

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Yeast

**Procedure**

Weigh 1.0 g of dry weight (0.5 g w/Xpress vessels) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

1.0 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Clinical and Biological
### Microwave Digestion of Animal Tissue (Dry)

#### Procedure

Weigh 0.5 g (0.25 g w/Xpress Vessels) into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

---

#### Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

---

#### Recommended Equipment

- MARS 6
- MARS 6 iWave

---

#### Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

---

#### Reagents

- HNO₃

---

#### Max Sample Weight

0.5 g

---

#### Sample Type

Organic

---

#### Control Type

Ramp to Temperature

---

#### Method Type

One Touch

---

#### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

---

#### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

---

#### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Animal Tissue (Wet)

**Procedure**

Weigh 1 g wet weight (0.5 g w Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

1.0 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

<table>
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<tr>
<th>Stage</th>
<th>Temp (°C)</th>
<th>*Ramp (mm:ss)</th>
<th>Hold (mm:ss)</th>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
**Blood (Human)**

**Procedure**

Weigh 2 ml of the sample into the digestion vessel. Add 5 ml of HNO₃ and 2 ml of H₂O₂. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

Take caution when mixing the acids and the sample. The sample may foam slightly.

**Recommended Equipment**

<table>
<thead>
<tr>
<th>MARS 6</th>
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**Recommended Vessels**

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**Reagents**

<table>
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<th>HNO₃</th>
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<td>H₂O₂</td>
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</table>

**Max Sample Weight**

2 ml

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Bovine Liver (Wet)

Procedure

Weigh 1.0 g wet weight (0.5 g w/Xpress Vessels) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1.0 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Hair

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Lobster Hepatopancreas (Tort2-CRM)

Procedure

Weigh 1.0 g dry weight (0.5 g w/Xpress Vessels) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1.0 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Urine (Human)

**Procedure**

Transfer 4 ml of the sample into the digestion vessel. Add 4 ml of HNO₃, and 2 ml of H₂O₂. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

Take caution when mixing the acids and the sample. The sample may foam slightly.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃
H₂O₂

**Max Sample Weight**

4 mL

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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*Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Consumer Products
Microwave Digestion of
Boric Acid HF Neutralization

Procedure
Allow vessel to cool. Add 30 ml H₃BO₃ (4%) into the vessel that contains the sample and acid.

Notes
This procedure can be used if it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed by reaction of certain analytes with hydrofluoric acid.

Alternatively, 1-4g of solid H₃BO₃ + 25mL deionized H₂O can be used in place of the 4% w/v solution.

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<tr>
<th>Recommended Equipment</th>
<th>Recommended Vessels</th>
<th>Reagents</th>
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<td>H₃BO₃ (4%)</td>
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<td>EasyPrep Plus</td>
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<th>Max Sample Weight</th>
<th>Sample Type</th>
<th>Control Type</th>
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<td>Varies by Sample</td>
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Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
See sample specific method notes.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Cosmetics (Liquid Foundation)

Procedure
Weigh 1 g of the sample into the digestion vessel. Add 8 ml of HNO₃ and 2 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF

Max Sample Weight
1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cotton

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

<table>
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<tr>
<th>MARS 6</th>
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<td>MARS 6 iWave</td>
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**Recommended Vessels**

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<tr>
<th>Xpress</th>
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<tr>
<td>XpressPlus</td>
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**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Eye Shadow

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 7 mL of HNO₃ and 3 mL of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HF
HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Shampoo (Dandruff)

Procedure
Add 1 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Suppository (Capsule)

Procedure

Weigh 1 Capsule (approx. 1.0 g) into the digestion vessel. Add 12 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Ensure that the capsule is completely covered with reagent before sealing the vessel.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1 Capsule (approx 1 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Vaseline

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Wax (Candle)

**Procedure**
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
MARS 6
MARS 6 iWave

**Recommended Vessels**
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**
HNO₃

**Max Sample Weight**
0.5 g

**Sample Type**
Organic

**Control Type**
Ramp to Temperature

**Method Type**
One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Environmental and Regulatory
Microwave Digestion of Boric Acid HF Neutralization

**Procedure**

Allow vessel to cool. Add 30 ml H₃BO₃ (4%) into the vessel that contains the sample and acid.

**Notes**

This procedure can be used if it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed by reaction of certain analytes with hydrofluoric acid.

Alternatively, 1-4g of solid H₃BO₃ + 25mL deionized H₂O can be used in place of the 4% w/v solution.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus

**Reagents**

- H₃BO₃ (4%)

**Max Sample Weight**

Varies by Sample

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

See sample specific method notes.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Fertilizer - AOAC Method 2006.03

Procedure

Weigh 1 g (0.5 g for organic matrices) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

This method may not provide a total digest of all fertilizer samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrices.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Limestone

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 7.5 ml of HNO₃ and 2.5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

Allow any initial reaction to subside before sealing the vessel.

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of NPDES (Wastewater)

Procedure
Transfer 50 ml of the sample into the digestion vessel. Add 3 ml of HNO₃, and 2 ml HCl. Gently swirl the mixture before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress (75 ml)
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
50 ml

Sample Type
Water

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Pine Needles

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 8 mL of HNO₃ and 2 mL of H₂O₂ (30%). Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
H₂O₂ (30%)

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of RoHS (For Pb, Hg, and Cd Analysis)

Procedure

Weigh 0.2 g of the sample into the digestion vessel. Add 10 ml of HNO₃ and 0.02 ml of H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂SO₄

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Sediment (BCCS-1 CRM) (Leach)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃, gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

This method may not provide a total digest of all samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrices.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Sediment (Buffalo River) (Leach)

**Procedure**

Weigh 0.5 g into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

This method may not provide a total digest of all samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrices.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Sludge (Industrial)

Procedure
Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The use of HF may be required to digest any silicates found in the sample.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g (dry weight)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Sludge (Waste Activated)

Procedure

Weigh 0.5 g dry weight (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 5 ml of HNO₃, and 5 ml of H₂O₂. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
MARSXpress
MARSXpress Plus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
H₂O₂

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Soil (Montana-CRM) (Leach)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This method may not provide a total digest of all samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrixes.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Recommended Vessels

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
TCLP Extract

Procedure
Transfer 25 ml of the sample into the digestion vessel. Add 5 ml of HNO₃. Gently swirl the mixture before closing the vessel.

If a high organic content is suspected, a 10 ml sample volume is recommended.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep Plus
Xpress (75 ml)
Xpress Plus

Reagents
HNO₃

Max Sample Weight
25 mL

Sample Type
EPA Digestion (Water)

Control Type
Standard Control

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3015 (Aqueous Samples)

Procedure

Transfer 45 ml of the sample into the digestion vessel. Add 5 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep Plus
Xpress (75 ml)
XpressPlus

Reagents
HNO₃

Max Sample Weight
45 ml

Sample Type
Environmental Digestion
(Water)

Control Type
Standard Control

Method Type
One Touch

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3015a (Aqueous Samples)

Procedure
Transfer 45 ml of the sample into the digestion vessel. Add 5 ml of HNO₃, or alternatively 4 ml of HNO₃ and 1 ml HCl. Gently swirl the mixture before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep Plus
Xpress (75 ml)
XpressPlus

Reagents
HNO₃
HCl (Optional)

Max Sample Weight
45 ml

Sample Type
Environmental Digestion
(Water)

Control Type
Standard Control

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3051 (Solid Samples)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep Plus
Xpress
XpressPlus

Reagents

HNO₃
HCl (Optional)

Max Sample Weight

0.5 g

Sample Type

Environmental Digestion (Solids)

Control Type

Standard Control

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix. (See method 3052 for total digestion).

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3051a (Solid Samples)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃, or alternatively 9 ml HNO₃, and 1 ml HCl. Gently swirl the mixture before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep Plus
- Xpress
- XpressPlus

**Reagents**

- HNO₃
- HCl (Optional)

**Max Sample Weight**

0.5 g

**Sample Type**

Environmental Digestion (Solids)

**Control Type**

Standard Control

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix. (See method 3052 for total digestion)

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

 e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3052

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 3 ml HF. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HF

Max Sample Weight

0.5 g

Sample Type

Environmental Digestion
(Solids)

Control Type

Standard Control

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
USP 232/233 (Pharmaceuticals)

**Procedure**

Weigh 0.2 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml HCl. Gently swirl the mixture before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

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**Recommended Vessels**

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<tr>
<td>EasyPrep</td>
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**Reagents**

| HNO₃ |
| HCl |

**Max Sample Weight**

| 0.2 g |

**Sample Type**

| Organic |

**Control Type**

| Ramp to Temperature |

**Method Type**

| One Touch |

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Water (for analysis of Phosphorus)

Procedure

Weigh 50 mL of H₂O into the digestion vessel. Add 0.5 g of K₂S₂O₈ and 1 mL of H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

K₂S₂O₈
H₂SO₄

Max Sample Weight

50 mL

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Wood

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃, gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Food Testing
Microwave Digestion of Apple

Procedure
Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g (dry weight)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Asparagus

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Bacon (Cooked Pieces)

Procedure
Weigh 1.0 g of the sample into the digestion vessel. Add 8 mL of HNO₃ and 2 mL of DI H₂O. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- DI H₂O

Max Sample Weight
1.0 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Beef (Ground)

**Procedure**
Weigh 1.0 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

**Max Sample Weight**
1.0 g

**Sample Type**
Organic

**Control Type**
Ramp to Temperature

**Method Type**
One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Beer (Light)

**Procedure**

Add 4 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

**Max Sample Weight**
- 4 mL

**Sample Type**
- Organic

**Control Type**
- Ramp to Temperature

**Method Type**
- One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Blueberry

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Broccoli

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Caramel Color

Procedure
Weigh 2.0 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃

Max Sample Weight
- 2.0 mL

Sample Type
- Organic

Control Type
- Ramp to Temperature

Method Type
- One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Carrot**

**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

| MARS 6  
| MARS 6 iWave |

**Recommended Vessels**

| Xpress  
| XpressPlus  
| EasyPrep  
| EasyPrep Plus |

**Reagents**

| HNO₃ |

**Max Sample Weight**

0.5 g (dry weight)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

- a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
- b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
- c) The control / reference vessel must contain the largest and most reactive sample.
- d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
- e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Celery**

**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

MARS 6  
MARS 6 iWave

**Recommended Vessels**

Xpress  
XpressPlus  
EasyPrep  
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g (dry weight)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.  
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.  
c) The control / reference vessel must contain the largest and most reactive sample.  
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.  
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
**Cheese Crackers**

### Procedure

Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

### Reagents

- HNO₃

### Max Sample Weight

- 0.5 g

### Sample Type

- Organic

### Control Type

- Ramp to Temperature

### Method Type

- One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cheese (Processed)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave
- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

Recommended Vessels

- HNO₃

Max Sample Weight

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<th>Max Sample Weight</th>
<th>Sample Type</th>
<th>Control Type</th>
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Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cherry

**Procedure**
Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

**Max Sample Weight**
0.5 g (dry weight)

**Sample Type**
Organic

**Control Type**
Ramp to Temperature

**Method Type**
One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Chewing Gum

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Chicken (Boneless)

**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g (dry weight)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Chili Candy (Mexican)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Chips (Potato)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
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e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Coffee Beans

Procedure

Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
# Microwave Digestion of Cucumber

## Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

## Notes

## Recommended Equipment

| MARS 6 | MARS 6 iWave |

## Recommended Vessels

| Xpress | XpressPlus | EasyPrep | EasyPrep Plus |

## Reagents

| HNO₃ |

## Max Sample Weight

| 0.5 g (dry weight) |

## Sample Type

| Organic |

## Control Type

| Ramp to Temperature |

## Method Type

| One Touch |

## Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

## Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

## General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Dog Food (Dry)**

### Procedure

Weigh 0.5 g of sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

### Reagents

- HNO₃

### Max Sample Weight

0.5 g

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Dog Food (Wet)

Procedure
Weigh 1 g of wet sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Flour

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Food Coloring (Liquid)

Procedure
Add 0.5 mL of the sample into the digestion vessel. Add 10 mL of HNO3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO3

Max Sample Weight
0.5 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Food

Procedure

Weigh 0.5 g dry weight (0.25 g w/Xpress vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Fruit Juice

Procedure
Add 2.5 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
2.5 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/ reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Granola Bar

Procedure
Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Grape

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

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Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Grapefruit

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Ham

Procedure

Weigh 1.0 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1.0 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Infant Cereal (Rice Grain)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Infant Formula (Liquid)

**Procedure**
Transfer 1 ml (0.5 ml w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment
- MARS 6
- MARS 6 iWave

### Recommended Vessels
- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

### Reagents
- HNO₃

### Max Sample Weight
- 1 ml

### Sample Type
- Organic

### Control Type
- Ramp to Temperature

### Method Type
- One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Infant Formula (Liquid) in iPrep Vessels

Procedure

Transfer 2 ml of of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This application can only be run in the iPrep vessel.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6 iWave

Recommended Vessels

iPrep

Reagents

HNO₃

Max Sample Weight

2 ml

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Infant Formula (Powder)

**Procedure**

Weigh 0.5 g (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Infant Formula (Powder) in iPrep Vessels

Procedure
Weigh 1 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
This application can only be run in the iPrep vessel.
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6 iWave

Recommended Vessels
iPrep

Reagents
HNO₃

Max Sample Weight
1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Kidney Bean

Procedure

Weigh 0.5 g (dry weight) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Maple Syrup

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Mayonnaise**

**Procedure**

Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.25 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Milk (Liquid, Whole)

Procedure
Transfer 4 ml of the liquid sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Recommended Vessels
HNO₃

Max Sample Weight
1 ml

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Milk (Powder)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

0.25 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Nutritional Drink (Adult)

Procedure
Add 1.0 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1.0 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Olive Oil

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

**Max Sample Weight**
- 0.5 g (dry weight)

**Sample Type**
- Organic

**Control Type**
- Ramp to Temperature

**Method Type**
- One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Orange Juice

**Procedure**

Add 2.5 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

<table>
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<th>MARS 6</th>
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<tr>
<td>MARS 6 iWave</td>
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</table>

**Recommended Vessels**

| Xpress |
| XpressPlus |
| EasyPrep |
| EasyPrep Plus |

**Reagents**

| HNO₃ |

**Max Sample Weight**

2.5 mL

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Peanut Butter

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Pear

**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

0.5 g (dry weight)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Pepper (Bell, Chili, etc.)

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

<table>
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<tr>
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Recommended Vessels

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</table>

Recommended Reagents

| HNO₃ |

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control/reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.

* Ramp times and power may vary depending on type and number of vessels.
Microwave Digestion of
Pizza (Frozen, Pepperoni)

Procedure
Weigh 1.0 g (homogenized) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1.0 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<th>Stage</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Plum

**Procedure**

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**  
MARS 6  
MARS 6 iWave

**Recommended Vessels**  
Xpress  
XpressPlus  
EasyPrep  
EasyPrep Plus

**Reagents**  
HNO₃

**Max Sample Weight**  
0.5 g (dry weight)

**Sample Type**  
Organic

**Control Type**  
Ramp to Temperature

**Method Type**  
One Touch

**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.  
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.  
c) The control/reference vessel must contain the largest and most reactive sample.  
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.  
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Pork Gelatin

**Procedure**

Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.25 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Pork (Ground)

**Procedure**
Weigh 2.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Potato

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Pretzel (Salted)

Procedure
Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g (dry weight)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Protein Bar

Procedure
Weigh 0.5 g ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<th>Stage</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Raspberry

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

---

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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<tr>
<th>Stage</th>
<th>Temp (°C)</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Rice

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

**Reagents**

- HNO₃

<table>
<thead>
<tr>
<th>Max Sample Weight</th>
<th>Sample Type</th>
<th>Control Type</th>
<th>Method Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 g</td>
<td>Organic</td>
<td>Ramp to Temperature</td>
<td>One Touch</td>
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**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
# Microwave Digestion of Safflower Oil

## Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

## Notes

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.

## Recommended Equipment

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<tr>
<td>MARS 6 iWave</td>
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## Recommended Vessels

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<tr>
<td>EasyPrep</td>
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<tr>
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## Reagents

| HNO₃ |

## Max Sample Weight

| 0.5 g |

## Sample Type

| Organic |

## Control Type

| Ramp to Temperature |

## Method Type

| One Touch |

## Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

## Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.
Microwave Digestion of **Salami**

**Procedure**
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- EasyPrep
- EasyPrep Plus
- Xpress (75 ml)
- Xpress Plus

**Reagents**
- HNO₃

**Max Sample Weight**
- 0.5 g

**Sample Type**
- Organic

**Control Type**
- Ramp to Temperature

**Method Type**
- One Touch

**Heating Program**

<table>
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<th>Stage</th>
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<th>*Power (W)</th>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
## Microwave Digestion of Sausage

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

<table>
<thead>
<tr>
<th>MARS 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARS 6 iWave</td>
</tr>
</tbody>
</table>

### Recommended Vessels

| EasyPrep |
| EasyPrep Plus |
| Xpress (75 ml) |
| Xpress Plus |

### Reagents

HNO₃

<table>
<thead>
<tr>
<th>Max Sample Weight</th>
<th>Sample Type</th>
<th>Control Type</th>
<th>Method Type</th>
</tr>
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<tbody>
<tr>
<td>0.5 g</td>
<td>Organic</td>
<td>Ramp to Temperature</td>
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### Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
**Soda (Diet)**

**Procedure**

Add 1 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

1 mL

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Soybean

**Procedure**

Weigh 0.5 g of ground sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

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</table>

**Recommended Vessels**

| EasyPrep |
| EasyPrep Plus |
| Xpress |
| Xpress Plus |

**Reagents**

| HNO₃ |

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Spinach

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Spinach Leaves

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Some plant tissues contain silicates which would require HF for total dissolution.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Strawberry

Procedure
Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g (dry weight)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Sugar (Granulated)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Tea Leaves

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Tomato Leaves

**Procedure**
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**
Some plant tissues contain silicates which would require HF for total dissolution.

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃

<table>
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<tr>
<th>Max Sample Weight</th>
<th>Sample Type</th>
<th>Control Type</th>
<th>Method Type</th>
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<tbody>
<tr>
<td>0.5 g</td>
<td>Organic</td>
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<td>One Touch</td>
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**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, with white silica particles upon dilution to 50 mL.

**General Precautions**
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Tomato Soup

Procedure
Add 5 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Max Sample Weight
5 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Walnut (Ground)**

**Procedure**

Weigh 0.5 g (dry weight) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 0.5 g (dry weight)

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Watermelon

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Whey Powder

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

 Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as one touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Wine

Procedure
Transfer 1 ml of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃

Max Sample Weight
1 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Yogurt (Plain)**

**Procedure**

Weigh 1.0 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 1.0 g

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Geoscience and Mining
Microwave Digestion of
**Alpha - Alumina in iPrep Vessels**

**Procedure**

Weigh 0.5 g of sample into the digestion vessel. Add 10 ml HCl. Gently swirl the vessel to thoroughly mix the sample and acid.

**Notes**

**This application can only be run in the iPrep vessel.**

Ensure that particles are well suspended in acid mixture prior to sealing vessel.

Stirring may be helpful to keep particles suspended in solution during digestion.

**Recommended Equipment**

MARS 6 iWave

**Recommended Vessels**

iPrep

**Reagents**

HCl

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Aluminum Oxide

Procedure

Weigh 0.25 g of sample into the digestion vessel. Add 6.5 ml H₃PO₄ and 3.5 ml H₂SO₄. Gently swirl the vessel to thoroughly mix the sample and acid.

Notes

EasyPrep Plus requires a high temperature probe for this method.

Ensure that particles are well suspended in acid mixture prior to sealing vessel.

Stirring may be helpful to keep particles suspended in solution during digestion.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Easy Prep
Easy Prep Plus

Reagents

H₃PO₄
H₂SO₄

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Automotive Catalyst

Procedure

Weigh 0.4 g of the sample into the digestion vessel. Add 10 ml of HCl and 0.5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Reducing the particle size increases the efficiency of digestion and may decrease the digestion time.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HCl
HF

Max Sample Weight

0.4 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Bauxite (Step 1 of 2)

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 6.5 mL of H₃PO₄ and 3.5 mL of H₂SO₄. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment

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<th>Equipment</th>
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Recommended Vessels

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Reagents

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<td>H₃PO₄</td>
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<td>H₂SO₄</td>
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Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.
Procedure

Proceeding step 1 add 1 mL of HNO₃, 1 mL of HCl, and 1 mL of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

Reagents

HNO₃
HCl
HF

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Boric Acid HF Neutralization

**Procedure**

Allow vessel to cool. Add 30 ml H$_3$BO$_3$ (4%) into the vessel that contains the sample and acid.

**Notes**

This procedure can be used if it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed by reaction of certain analytes with hydrofluoric acid.

Alternatively, 1-4g of solid H$_3$BO$_3$ + 25mL deionized H$_2$O can be used in place of the 4% w/v solution.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus

**Reagents**

H$_3$BO$_3$ (4%)

**Max Sample Weight**

Varies by Sample

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

See sample specific method notes.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Carbon

**Procedure**

Weigh 0.1 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The structure, form and surface area of carbon samples varies widely. Higher temperatures and use of other reagents may be necessary in order to digest certain samples.

**Recommended Equipment**

| MARS 6 | MARS 6 iWave |

**Recommended Vessels**

| EasyPrep | EasyPrep Plus |

**Reagents**

| HNO₃ |

**Max Sample Weight**

| 0.1 g |

**Sample Type**

| Organic |

**Control Type**

| Ramp to Temperature |

**Method Type**

| One Touch |

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Carbon Nanotubes

Procedure

Weigh 0.1 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cement

Procedure

Weigh 0.3 g of the sample into the digestion vessel. Add 3 ml of HNO₃, 6 ml of HCL, and 3 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl
HF

Max Sample Weight

0.3 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ceramic (Fused Silica)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Slowly add 2 ml of HNO₃, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
HF should be added slowly and carefully to the sample. Allow any initial reaction to subside before sealing the vessel.

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/ reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ceramics

Procedure

Weigh 0.2 g of the sample into the digestion vessel. Add 5 ml of HNO₃, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

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<tr>
<td>MARS 6 iWave</td>
<td>EasyPrep Plus</td>
<td>HF</td>
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Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Char (Sulfuric Acid)

Procedure

Add 5 ml H$_2$SO$_4$ into the vessel that contains the sample and acid.

Notes

EasyPrep Plus requires a high temperature probe for this method.

This method is for the pretreatment of large sample sizes or difficult organic samples that are resistant to oxidation. After the char is complete, the vessel is opened and a normal oxidation with HNO$_3$ can be run, usually at around 200°C.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H$_2$SO$_4$

Max Sample Weight

Varies by Sample

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

See sample specific method notes.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Clay

Procedure

Weigh 0.2 g of the sample into the digestion vessel. Add 3 ml of HNO₃, 1 ml of HCl, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Coal**

**Procedure**

Weigh 0.1 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

After heating program in step 1, allow vessel to cool before proceeding with step 2.

**Notes**

- Ramp times and power may vary depending on type and number of vessels.
- If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
- The control / reference vessel must contain the largest and most reactive sample.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
- If programming as one touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
Easy Prep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.1 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as one touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Coal in iPrep Vessels

Procedure

Weigh 0.2 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

This application can only be run in the iPrep vessel.

The use of HF may be required to digest any silicates found in the sample.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Reagents

HNO₃

Recommended Equipment

MARS 6 iWave

Recommended Vessels

iPrep

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless with some particles remaining upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Coal Ash

Procedure
Weigh 0.3 g of the sample into the digestion vessel. Add 3 ml of HNO₃, 3 ml of HCl and 3 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl
HF

Max Sample Weight
0.3 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Diesel Fuel

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes

The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Iron Ore

Procedure

Weigh 1 g of the sample into the digestion vessel. Add 4 ml of H₂O, 8 ml of HCl, 4 ml of HNO₃, and 4 ml of HF. Gently swirl the mixture and wait approximately 15 minute before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

The addition of Conc. HCl (0-8 mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H₂O
HCl
HNO₃
HF

Max Sample Weight

1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Kerosene

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes

The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Limestone

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 7.5 ml of HNO₃ and 2.5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
Allow any initial reaction to subside before sealing the vessel.

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Mill Tailings (Step 1 of 2)

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 3 ml of H₃PO₄ and 2 ml of H₂SO₄. Gently swirl the mixture before closing the vessel.

After heating program in step 1, allow vessel to cool before proceeding with step 2.

Notes
EasyPrep Plus vessels require a high temperature probe for this method.

Recommended Equipment
| MARS 6 | MARS 6 iWave |

Recommended Vessels
| EasyPrep | Easy Prep Plus |

Reagents
| H₃PO₄ | H₂SO₄ |

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.
Microwave Digestion of
Mill Tailings (Step 2 of 2)

Procedure

Cool, vent and open vessel after step 1. Add 2.5 ml HNO₃, 2.5 ml HCl, 2.5 ml HF, and 2.5 ml H₂O.

HF should be added slowly and carefully to the sample. Allow any initial reaction to subside before sealing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in method note entitled "Boric HF Neutralization".

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Reagents

HNO₃
HCl
HF
H₂O

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as one touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
**Microwave Digestion of Motor Oil (Waste)**

**Procedure**
Weigh 0.25 g (0.1 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

**Notes**
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

### Recommended Equipment
- MARS 6
- MARS 6 iWave

### Recommended Vessels
- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

### Reagents
- HNO₃

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Petroleum Coke (Step 1 of 2)

Procedure

Weigh 0.1 g of the sample into the digestion vessel. Add 10 mL of H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

Mars iWave
Mars 6

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H₂SO₄

Max Sample Weight

0.1 g

Sample Type

Inorganic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.
Microwave Digestion of Petroleum Coke (Step 2 of 2)

Procedure

Proceeding step 1 add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Reagents

HNO₃

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
## Microwave Digestion of Rock (Pulverized)

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 5 mL of HNO₃, 3 mL of HCl, and 3 mL of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- EasyPrep
- EasyPrep Plus

### Reagents

- HCl
- HF
- HNO₃

### Max Sample Weight

0.5 g

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Rutile Ore

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 4 ml of HNO₃, 3 ml of H₃PO₄, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF
H₃PO₄

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Sand

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 3 ml of HNO₃, 2 ml of HCl, and 5 ml of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- HF
- HCl

Max Sample Weight
- 0.5 g

Sample Type
- Organic

Control Type
- Ramp to Temperature

Method Type
- One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Silica Sand

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 5 ml of H₂O, 3 ml of HNO₃, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Reducing the particle size increase the efficiency of digestion and may decrease the digestion time.

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Silicon Dioxide

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 2 ml of HNO₃, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric HF Neutralization"

Reducing the particle size increase the efficiency of digestion and may decrease the digestion time.

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Max Sample Weight | Sample Type | Control Type | Method Type |
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Silicon Wafer

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Slowly add 3 ml of HNO₃, and 6 ml of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Slag (Furnace)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 3 ml of HNO₃, 5 ml of HCl, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Reagents

HNO₃
HCl
HF

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Titanium Dioxide

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 2 ml of HNO₃, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Tungsten Carbide

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Slowly add 5 ml of HNO₃, and 10 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Reducing the particle size increase the efficiency of digestion and may decrease the digestion time.

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Tungsten Oxide**

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Slowly add 2 ml of HNO₃, and 7 ml of HF. Gently swirl the mixture before closing the vessel.

### Notes

Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Reducing the particle size increase the efficiency of digestion and may decrease the digestion time.

### Recommended Equipment

MARS 6
MARS 6 iWave

### Recommended Vessels

EasyPrep
EasyPrep Plus

### Reagents

HNO₃
HF

### Max Sample Weight

0.5 g

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Zeolite

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 5 ml of HNO₃, 4 ml of HCl, and 2 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

Add HF slowly, and allow vessels to stand in the fume hood until the initial reaction subsides.

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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<th>Hold (mm:ss)</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Industrial Hygiene
Microwave Digestion of
Filter Paper (Cellulose)

**Procedure**

Weigh 1 filter (approximately 0.9 g) of the sample into the digestion vessel. Add 5 ml of H₂O, and 5 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

Add H₂O before HNO₃.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

**Reagents**

- H₂O
- HNO₃

**Max Sample Weight**

1 filter (approximately 0.9 g)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Filter (37 mm Mixed Cellulose Ester)

Procedure

Weigh 1 filter (approximately 0.3 g) into the digestion vessel. Add 10 ml HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep pLus

Recommended Vessels

HNO₃

Max Sample Weight

1 filter (approximately 0.3 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
# Microwave Digestion of Filter (47 mm Polycarbonate)

## Procedure

Weigh 1 filter (approximately 0.4 g) into the digestion vessel. Add 10 ml HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

## Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

## Recommended Equipment

MARS 6  
MARS 6 iWave

## Recommended Vessels

Xpress  
XpressPlus  
EasyPrep  
EasyPrep pLus

## Reagents

HNO₃

## Max Sample Weight

1 filter (approximately 0.4 g)

## Sample Type

Organic

## Control Type

Ramp to Temperature

## Method Type

One Touch

## Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

## Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

## General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

**Ghost Wipe**

### Procedure

Weigh 1 wipe (approx 2.5 g) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

Ensure that the entire wipe is covered with reagent.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

### Reagents

- HNO₃

### Max Sample Weight

- 1 wipe (approx 2.5 g)

### Sample Type

- Organic

### Control Type

- Ramp to Temperature

### Method Type

- One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control/reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Toray Filter in iPrep Vessels

**Procedure**

Weigh 1 filter (approximately 0.3-0.5 g) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

**Notes**

This application can only be run in the iPrep vessel.

**Recommended Equipment**

MARS 6 iWave

**Recommended Vessels**

iPrep

**Reagents**

HNO₃

**Max Sample Weight**

1 filter

(approximately 0.3-0.5 g)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Materials Science
Microwave Digestion of
Circuit Board (Cryo-ground)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 3 mL of HNO₃ and 9 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

HCl should be added slowly and carefully to the sample. Allow any initial reaction to subside before sealing vessel.
This method is considered a leach and may not provide a total digestion.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HCl
HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, with particles upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Glass (Ground)

Procedure
Weigh 0.1 g of the sample into the digestion vessel. Add 2 mL of HNO₃, 4 mL of HCl, and 3 mL of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

<table>
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<th>Recommended Equipment</th>
<th>Recommended Vessels</th>
<th>Reagents</th>
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Max Sample Weight 0.1 g
Sample Type Organic
Control Type Ramp to Temperature
Method Type One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Graphite Fiber (Epoxy Resin, Fiber Content)

Procedure
Weigh 1 g of the sample into the digestion vessel. Add 30 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes
Sample must be completely covered with acid prior to digestion.
After digestion the samples are filtered and the graphite fibers are rinsed with deionized water.
This method is for the gravimetric (weight) determination of fiber content.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was digested, but the fiber filler material is left undigested for subsequent gravimetric analysis.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Metals and Alloys
Microwave Digestion of
Aluminum Alloy

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 5 ml of H₂O and 5 ml of HCl. Gently swirl the mixture before closing the vessel.

Notes
Add H₂O before HCl.
Add HCl slowly, and allow vessels to stand in the fume hood until initial reaction subsides.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
MARSXpress
MARSXpress Plus
EasyPrep
EasyPrep Plus

Reagents
HCl
H₂O

Max Sample Weight
0.25g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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<th>Stage</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
**Alpha - Alumina in iPrep Vessels**

**Procedure**
Weigh 0.5 g of sample into the digestion vessel. Add 10 ml HCl. Gently swirl the vessel to thoroughly mix the sample and acid.

**Notes**
This application can only be run in the iPrep vessel.

Ensure that particles are well suspended in acid mixture prior to sealing vessel.

Stirring may be helpful to keep particles suspended in solution during digestion.

**Recommended Equipment**
MARS 6 iWave

**Recommended Vessels**
iPrep

**Reagents**
HCl

**Max Sample Weight**
0.5 g

**Sample Type**
Organic

**Control Type**
Ramp to Temperature

**Method Type**
One Touch

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<th>Heating Program</th>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
# Microwave Digestion of Aluminum Oxide

## Procedure

Weigh 0.25 g of sample into the digestion vessel. Add 6.5 ml H₃PO₄ and 3.5 ml H₂SO₄. Gently swirl the vessel to thoroughly mix the sample and acid.

## Notes

EasyPrep Plus requires a high temperature probe for this method.

Ensure that particles are well suspended in acid mixture prior to sealing vessel.

Stirring may be helpful to keep particles suspended in solution during digestion.

## Recommended Equipment

<table>
<thead>
<tr>
<th>MARS 6</th>
<th>MARS 6 iWave</th>
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</thead>
</table>

## Recommended Vessels

- Easy Prep
- Easy Prep Plus

## Reagents

- H₃PO₄
- H₂SO₄

## Max Sample Weight

| 0.25 g |

## Sample Type

- Organic

## Control Type

- Ramp to Temperature

## Method Type

- One Touch

## Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

## Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

## General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control/reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
**Aluminum (Metal)**

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HCl and 3 mL of DI H2O. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

HCl should be added slowly and carefully to the sample. Allow any initial reaction to subside before sealing vessel.

**Recommended Equipment**

| MARS 6 |

**Recommended Vessels**

| Xpress |
| XpressPlus |
| EasyPrep |
| EasyPrep Plus |

**Reagents**

| HCl |
| DI H2O |

**Max Sample Weight**

| 0.5 g |

**Sample Type**

| Organic |

**Control Type**

| Ramp to Temperature |

**Method Type**

| One Touch |

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Copper (Metal)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Copper (Ore)

Procedure
Weigh 0.5 g (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of Aqua Regia (3:1 HCl:HNO₃). Gently swirl the mixture before closing the vessel.

Notes
This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, and colorless with some remaining particles upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Metal Alloy (CoCr) (Step 1 of 2)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 5 ml of HNO₃, 5 ml of HF, and 5 ml H₂O. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

After heating program in step 1, allow vessel to cool before proceeding with step 2.

**Notes**

The addition of Deionized Water may improve solubility of metal alloys.

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

**Recommended Equipment**

| MARS 6 |
| MARS 6 iWave |

**Recommended Vessels**

| EasyPrep |
| EasyPrepPlus |

**Reagents**

| HNO₃ |
| HF |
| H₂O |

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.
**Microwave Digestion of Metal Alloy (CoCr) (Step 2 of 2)**

**Procedure**

Cool, vent and open vessel after step 1. Add 4 ml of H₂O₂, (30%)

**Notes**

**Reagents**

H₂O₂

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Metal Alloy (FeCr)

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 5 ml of HCl, 5 ml of HNO₃, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization.”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HCl
HF
HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Metal Alloy (NiCr)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 5 ml of H₂O, 5 ml of HNO₃, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization.”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H₂O
HNO₃
HF

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/ reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Procedure

Weigh 0.5 g of sample into the digestion vessel. Add 5 mL of HNO₃ and 5 mL of DI H₂O. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
DI H₂O

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Platinum (Metal)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of Aqua Regia (3:1 HCl:HNO₃). Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Precious Metal (Ore) (Step 1 of 2)

Procedure

Weigh 0.1 g of the sample into the digestion vessel. Add 10 ml of HNO₃, and 0.5 ml of HF. Gently swirl the mixture before closing the vessel.

After heating program in step 1, allow vessel to cool before proceeding with step 2.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
Easy Prep Plus

Reagents

HNO₃
HF

Max Sample Weight

0.1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.
Microwave Digestion of Precious Metal (Ore) (Step 2 of 2)

Procedure

Cool, vent and open vessel after step 1. Add 5 ml of HCl.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Reagents

HCl

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as one touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Selenium Alloy

Procedure

Weigh 1 g (0.5 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of SnAg Solder

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Slowly add dropwise 10 ml of 1:1:1 H2O:HNO3:HF (premixed) to the sample. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
Caution must be taken when adding the acid solution to the sample as the reaction is very vigorous and exothermic. Allow any initial reaction to subside before sealing the vessel.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
H2O
HNO3
HF

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Stainless Steel

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HCl, 3 ml of HNO₃, and 3 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Steel (Stainless)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 3 mL of HNO₃ and 9 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
This method may not provide a total digest of all samples. Hydrofluoric acid will be required to provide complete digestion of some sample matrixes.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HCl
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Titanium Alloy

Procedure
Weigh 0.2 g of the sample into the digestion vessel. Add 5 ml of HNO₃, 2 ml of HCl, and 5 ml of HF. Gently swirl the mixture before closing the vessel.

Notes
The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HF
HCl

Max Sample Weight
0.2 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Titanium Dioxide

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 2 ml of HNO₃, and 8 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

The above procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric HF Neutralization”

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Zinc Oxide

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Nutraceuticals
Microwave Digestion of Biotin

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ginko (Ground)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃

Max Sample Weight
- 0.5 g

Sample Type
- Organic

Control Type
- Ramp to Temperature

Method Type
- One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ginko (Whole Pill)

**Procedure**

Weigh 1 pill (approx 1.0 g) into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂. Gently swirl the mixture and wait approximately
15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃
H₂O₂

**Max Sample Weight**

1 pill (Approx 1.0 g)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Infant Formula (Liquid)

Procedure

Transfer 1 ml (0.5 ml w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1 ml

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Infant Formula (Liquid) in iPrep Vessels

Procedure
Transfer 2 ml of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
This application can only be run in the iPrep vessel.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6 iWave

Recommended Vessels
iPrep

Reagents
HNO₃

Max Sample Weight
2 ml

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Infant Formula (Powder)

Procedure

Weigh 0.5 g (0.25 g with Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
### Microwave Digestion of Infant Formula (Powder) in iPrep Vessels

#### Procedure

Weigh 1 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

#### Notes

This application can only be run in the iPrep vessel.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

#### Recommended Equipment

**MARS 6 iWave**

#### Recommended Vessels

**iPrep**

#### Reagents

**HNO₃**

#### Max Sample Weight

1 g

#### Sample Type

Organic

#### Control Type

Ramp to Temperature

#### Method Type

One Touch

#### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

#### Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

#### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Kelp**

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6  
MARS 6 iWave

**Recommended Vessels**

Xpress  
XpressPlus  
EasyPrep  
EasyPrep Plus

**Reagents**

HNO₃  
HCl

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.  
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.  
c) The control / reference vessel must contain the largest and most reactive sample.  
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.  
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
**Milk (Liquid, Whole)**

**Procedure**

Transfer 4 ml of the liquid sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

| MARS 6 | MARS 6 iWave |

**Recommended Vessels**

| Xpress | Xpress Plus | EasyPrep | EasyPrep Plus |

**Reagents**

HNO₃

**Max Sample Weight**

1 ml

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Milk (Powder)

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

* Ramp times and power may vary depending on type and number of vessels.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 0.25 g

**Sample Type**

- Organic

**Control Type**

- Ramp to Temperature

**Method Type**

- One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Plant Tissue

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Some plant tissues contain silicates which would require HF for total dissolution.

---

**Recommended Equipment**

MARS 6  
MARS 6 iWave

**Recommended Vessels**

Xpress  
Xpress Plus  
EasyPrep  
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

---

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control/reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
USP 232/233 (Pharmaceuticals)

Procedure

Weigh 0.2 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml HCl. Gently swirl the mixture before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Wheat

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment

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Recommended Vessels

| Xpress |
| XpressPlus |
| EasyPrep |
| EasyPrep Plus |

Reagents

| HNO₃ |

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Whey Powder

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
Organic Chemicals
Microwave Digestion of Photoresist

**Procedure**

Add 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Paints and Coatings
Microwave Digestion of Paint (Latex Based Liquid)

Procedure
Weigh 1 g (0.5 g w/Xpress Vessels) of sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes
HF is required for a total dissolution of inorganic filler if present.

If this procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
# Microwave Digestion of Paint Chips (For Pb Analysis)

## Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

## Notes

HF may be required for a total dissolution.

## Recommended Equipment

- MARS 6
- MARS 6 iWave

## Recommended Vessels

- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

## Reagents

- HNO₃

## Recommended Vessels

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<th>Control Type</th>
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## Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

## Results

Sample was clear, colorless, with some remaining inorganic particles upon dilution to 50 ml.

## General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Photoresist

Procedure
Add 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Toner (Ink) in iPrep Vessels

Procedure

Weigh 0.3 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

This application can only be run in the iPrep vessel.

The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment

| MARS 6 iWave |

Recommended Vessels

| iPrep |

Reagents

| HNO₃ |

Max Sample Weight

| 0.3 g |

Sample Type

| Organic |

Control Type

| Ramp to Temperature |

Method Type

| One Touch |

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless with some particles remaining upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Personal Care (Health and Beauty)
Microwave Digestion of
*Boric Acid HF Neutralization*

**Procedure**

Allow vessel to cool. Add 30 ml H$_3$BO$_3$ (4%) into the vessel that contains the sample and acid.

**Notes**

This procedure can be used if it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed by reaction of certain analytes with hydrofluoric acid.

Alternatively, 1-4g of solid H$_3$BO$_3$ + 25mL deionized H$_2$O can be used in place of the 4% w/v solution.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

EasyPrep
EasyPrep Plus

**Reagents**

H$_3$BO$_3$ (4%)

**Max Sample Weight**

Varies by Sample

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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*Ramp times and power may vary depending on type and number of vessels.

**Results**

See sample specific method notes.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control/reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Cosmetics (Liquid, Foundation)

Procedure

Weigh 1 g of the sample into the digestion vessel. Add 8 ml of HNO₃ and 2 ml of HF. Gently swirl the mixture before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF

Max Sample Weight

1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Eye Shadow

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 7 mL of HNO₃ and 3 mL of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled "Boric Acid HF Neutralization".

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- EasyPrep
- EasyPrep Plus

Reagents
- HF
- HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Shampoo (Dandruff)

Procedure
Add 1 mL of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The use of HF may be required to digest any silicates found in the sample.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃

Max Sample Weight
1 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Pharmaceutical and Biotech
Microwave Digestion of
Allergy Pill (Ground)

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- HCl

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Allergy Pill (Whole Pill)

Procedure

Weigh 1 pill (Approx 1.0 g) into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂ (30%). Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂O₂ (30%)

Max Sample Weight
1 pill (Approx 1.0 g)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Antioxidant (Ground)

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

| MARS 6   | MARS 6 iWave |

### Recommended Vessels

| Xpress  | XpressPlus  | EasyPrep  | EasyPrep Plus |

### Reagents

| HNO₃    | HCl         |

### Max Sample Weight

| 0.5 g   |

### Sample Type

| Organic |

### Control Type

| Ramp to Temperature |

### Method Type

| One Touch |

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Antioxidant (Whole Pill)

Procedure
Weigh 1 pill (approx 1.4 g) into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂ (30%). Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
H₂O₂ (30%)

Max Sample Weight
1 pill (Approx 1.4 g)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
APIs with Aromatic Ring Structures in iPrep Vessels

Procedure

Weigh 0.1 g - 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃ and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This application can only be run in the iPrep vessel.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6 iWave

Recommended Vessels

iPrep

Reagents

HNO₃
HCl

Max Sample Weight

0.1 g - 0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml. If the sample contains precious metals the diluted sample may be the color associated with the metals.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ascorbic Acid

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress Plus
Xpress

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Aspirin (Ground)

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Aspirin (Whole)

Procedure
Weigh 1 pill (Approx 1.0 g) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1 pill (Approx 1.0 g)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Beta Carotene

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO3, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6 iWave
MARS 6

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO3
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Biotin

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Calcium Carbonate

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Slowly add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Allow initial reaction to subside before sealing vessel.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

**Reagents**

- HNO₃
- HCl

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

<table>
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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Calpan Pantothenic Acid

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cephalexin

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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<th>Stage</th>
<th>Temp (°C)</th>
<th>Ramp (mm:ss)</th>
<th>Hold (mm:ss)</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Chromium Chelate

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

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Recommended Vessels

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<tr>
<td>EasyPrep</td>
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</table>

Reagents

| HNO₃ |
| HCl  |

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Cold and Flu Medicine (Liquid)

Procedure
Add 0.75 mL of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.75 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Cupric Sulfate

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

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<th>Reagents</th>
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<table>
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<th>Max Sample Weight</th>
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<td>0.5 g</td>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, blue in color, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Diclofenac K

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂ (30%). Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂O₂ (30%)

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Empty Capsule (Gel)

Procedure

Weigh 1 capsule (Approx 0.1 g) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

1 capsule (Approx 0.1 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Fish Oil (No Capsule)

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Folic Acid

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Ginko (Ground)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Reagents
HNO₃

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Ginko (Whole Pill)

Procedure

Weigh 1 pill (approx 1.0 g) into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂O₂

Max Sample Weight

1 pill (Approx 1.0 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Kelp

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Losataran K

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of H₂O₂ (30%). Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂O₂ (30%)

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Magnesium Carbonate

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Allow any reaction to subside before sealing the vessel.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Magnesium Oxide

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃
- HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
**Microwave Digestion of Manganese Carbonate**

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

**Reagents**

HNO₃
HCl

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Metaformin (Ground)

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of **Multivitamin (Ground)**

### Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

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### Recommended Vessels

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### Reagents

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<th>HNO₃</th>
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<td>HCl</td>
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### Max Sample Weight

0.5 g

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Multivitamin (Whole)

Procedure

Weigh 1 pill (Approx 2.5 g) into the digestion vessel. Add 10 mL of HNO₃ and 2 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

1 pill (Approx 2.5 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Niacinamide

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Recommended Vessels

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Pantothenic Acid

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Potassium Chelate

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

Reagents
- HNO₃
- HCl

Max Sample Weight
- 0.5 g

Sample Type
- Organic

Control Type
- Ramp to Temperature

Method Type
- One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Pyridoxine

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Riboflavin

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Selenium Chelate

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
**Stearic Acid**

**Procedure**

Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep
- EasyPrep Plus

**Reagents**

- HNO₃

**Max Sample Weight**

0.25 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Thiamine

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
USP 232/233 (Pharmaceuticals)

Procedure
Weigh 0.2 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml HCl. Gently swirl the mixture before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
- MARS 6
- MARS 6 iWave

Recommended Vessels
- Xpress
- Xpress Plus
- EasyPrep
- EasyPrep Plus

Reagents
- HNO₃
- HCl

Max Sample Weight
0.2 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Vitamin B-12

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- EasyPrep
- EasyPrep Plus
- Xpress
- Xpress Plus

Reagents

- HNO₃
- HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Vitamin C (Ground)

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Vitamin C (Whole)

Procedure
Weigh 1 pill (Approx 1.4 g) into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
1 pill (Approx 1.4 g)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of

Vitamin D

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus
Xpress
Xpress Plus

Reagents

HNO₃
HCl

Recommended Vessels

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Vitamin D3

Procedure

Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Vitamin E

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 9 ml of HNO₃, and 1 ml of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Vitamins

Procedure

Weigh 0.5 g (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 9 ml of HNO₃, 1 ml HCl, and 1 ml of HF. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

This procedure uses hydrofluoric acid. If it is necessary to complex the residual hydrofluoric acid or redissolve insoluble fluorides formed, an additional complexation step with boric acid should be used. This procedure can be found in the One Touch Method note entitled “Boric Acid HF Neutralization”.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- MARSxpress
- MARSxpress Plus
- EasyPrep
- EasyPrep Plus

Reagents

- HNO₃
- HF
- HCl

Max Sample Weight

- 0.5 g

Sample Type

- Organic

Control Type

- Ramp to Temperature

Method Type

- One Touch

Heating Program

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*Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing head/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Zinc Sulfate

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 9 mL of HNO₃ and 1 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Plastics, Polymers, and Oils
Microwave Digestion of Acrylamide

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Bunker Oil

Procedure
Weigh 0.2 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Bunker Oil in iPrep Vessels

Procedure

Weigh 0.3 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes

This application can only be run in the iPrep vessel.
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment
MARS 6 iWave

Recommended Vessels
iPrep

Reagents
HNO₃

Max Sample Weight
0.3 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Char (Sulfuric Acid)

**Procedure**

Add 5 ml H₂SO₄ into the vessel that contains the sample and acid.

**Notes**

EasyPrep Plus requires a high temperature probe for this method.

This method is for the pretreatment of large sample sizes or difficult organic samples that are resistant to oxidation. After the char is complete, the vessel is opened and a normal oxidation with HNO₃ can be run, usually at around 200°C.

**Recommended Equipment**

| MARS 6 | MARS 6 iWave |

**Recommended Vessels**

| EasyPrep | EasyPrep Plus |

**Reagents**

| H₂SO₄ |

**Max Sample Weight**

Varies by Sample

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

See sample specific method notes.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Crude Oil

Procedure
Weigh 0.2 g of the sample into the digestion vessel. Add 10 mL of HNO3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO3

Max Sample Weight
0.2 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Diesel Fuel

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes

The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Epoxy Hardener

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Fatty Alcohol

Procedure
Weigh 0.1 g of the sample into the digestion vessel. Add 2 mL of HNO₃ and 4 mL of HCl. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃
HCl

Max Sample Weight
0.1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Gasoline

Procedure
Add 0.1g of the sample into the digestion vessel. Slowly add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.1 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of HDPE (High Density Polyethylene)

**Procedure**

Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture before closing the vessel.

**Notes**

**Recommended Equipment**

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**Recommended Vessels**

| EasyPrep |
| EasyPrep Plus |

**Reagents**

| HNO₃ |

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<th>Control Type</th>
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**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Kerosene

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Kevlar in iPrep Vessels

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

**Notes**

This application can only be run in the iPrep vessel.

Ensure that all fibers are completely covered with acid and not adhered to the vessel liner wall.

**Recommended Equipment**

MARS 6 iWave

**Recommended Vessels**

iPrep

**Reagents**

HNO₃

**Max Sample Weight**

0.5 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

### Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Lube Oil

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Mineral Oil

Procedure
Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO_3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO_3

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
Motor Oil (Waste)

Procedure
Weigh 0.25 g (0.1 g w/Xpress Vessels) of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment
MARS 6  
MARS 6 iWave

Recommended Vessels
Xpress  
Xpress Plus  
EasyPrep  
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Motor Oil (Waste) in iPrep Vessels

Procedure
Weigh 0.5 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture and wait approximately 15 minutes to pre-digest before closing the vessel.

Notes
This application can only be run in the iPrep vessel.
The pre-digestion step will allow the lighter fuel fractions to react before sealing the vessels.

Recommended Equipment
MARS 6 iWave

Recommended Vessels
iPrep

Reagents
HNO₃

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Nylon

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
PET (Polyethylene Terephthalate)

Procedure
Weigh 0.2 g of the sample into the digestion vessel. Add 8 mL of HNO₃ and 2 mL of H₂SO₄. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
H₂SO₄

Max Sample Weight
0.2 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of PET (Polyethylene Terephthalate) in iPrep Vessels

Procedure

Weigh 0.6 g of the sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

This application can only be run in the iPrep vessel.

Recommended Equipment

MARS 6 iWave

Recommended Vessels

iPrep

Reagents

HNO₃

Max Sample Weight

0.6 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
d) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Polycarbonate Resin (Step 1 of 2)

Procedure

Char Step

Weigh 1.0 g of the sample into the digestion vessel. Add 6 mL of H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment | Recommended Vessels | Reagents
---|---|---
MARS 6 | EasyPrep | H₂SO₄
MARS iWave | EasyPrep Plus | |

Max Sample Weight | Sample Type | Control Type | Method Type
---|---|---|---
1.0 g | Organic | Ramp to Temperature | One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.
Microwave Digestion of
Polycarbonate Resin (Step 2 of 2)

Procedure

Proceeding step one, add 10 mL of HNO3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Reagents

HNO3

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Polyethersulfone (Filter Paper)

Procedure
Weigh 1 filter paper (Approx 0.1 g) into the digestion vessel. Add 8 mL of HNO₃ and 2 mL H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep
EasyPrep Plus

Reagents
HNO₃
H₂SO₄

Max Sample Weight
1 Filter (Approx 0.1 g)

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Polypropylene

Procedure

Weigh 0.25 (0.1 g w/Xpress vessels) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

<table>
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Recommended Vessels

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<td>EasyPrep</td>
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Reagents

| HNO₃            |

Max Sample Weight

0.25 g (0.1 g w/Xpress)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Polyurethane

**Procedure**

Weigh 0.5 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

---

**Notes**

---

**Recommended Equipment**

| MARS 6  
MARS 6 iWave |
---|---|

**Recommended Vessels**

| EasyPrep  
EasyPrep Plus |
---|---|

**Reagents**

| HNO₃ |
---|---|

**Max Sample Weight** | **Sample Type** | **Control Type** | **Method Type**

| 0.5 g  
Organic  
Ramp to Temperature  
One Touch |
---|---|---|---|

**Heating Program**

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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
PVC (Polyvinyl Chloride, Resin)

Procedure
Weigh 0.25 g (0.1 g w/Xpress Vessels) of sample into the digestion vessel. Add 10 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
HNO₃

Max Sample Weight
0.25 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Rubber

Procedure

Weigh 0.25 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

<table>
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<tr>
<th>MARS 6</th>
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<tbody>
<tr>
<td>MARS 6 iWave</td>
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</table>

Recommended Vessels

| EasyPrep |
| EasyPrep Plus |

Reagents

| HNO₃ |

Max Sample Weight

| 0.25 g |

Sample Type

| Organic |

Control Type

| Ramp to Temperature |

Method Type

| One Touch |

Heating Program

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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Terephthalic Acid

**Procedure**

Weigh 0.2 g of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

**Recommended Equipment**

| MARS 6  
| MARS 6 iWave |

**Recommended Vessels**

| EasyPrep  
| EasyPrep Plus |

**Reagents**

| HNO₃ |

**Max Sample Weight**

0.2 g

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 mL.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Pulp and Paper
Microwave Digestion of 
Filter Paper (Cellulose)

Procedure

Weigh 1 filter (approximately 0.9 g) of the sample into the digestion vessel. Add 5 ml of H2O, and 5 ml of HNO3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Add H2O before HNO3.

The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

H2O
HNO3

Max Sample Weight

1 filter (approximately 0.9 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Filter (37 mm Mixed Cellulose Ester)

**Procedure**

Weigh 1 filter (approximately 0.3 g) into the digestion vessel. Add 10 ml HNO3. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

**Notes**

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**

MARS 6
MARS 6 iWave

**Recommended Vessels**

Xpress
XpressPlus
EasyPrep
EasyPrep pLus

**Reagents**

HNO3

**Max Sample Weight**

1 filter (approximately 0.3 g)

**Sample Type**

Organic

**Control Type**

Ramp to Temperature

**Method Type**

One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Filter (47 mm Polycarbonate)

Procedure

Weigh 1 filter (approximately 0.4 g) into the digestion vessel. Add 10 ml HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment

- MARS 6
- MARS 6 iWave

Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep pLus

Reagents

- HNO₃

Max Sample Weight

- 1 filter (approximately 0.4 g)

Sample Type

- Organic

Control Type

- Ramp to Temperature

Method Type

- One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control/reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of Paper Pulp

Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃

Max Sample Weight

0.5 g (dry weight)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Water and Wastewater Treatment
Microwave Digestion of NPDES (Wastewater)

**Procedure**
Transfer 50 ml of the sample into the digestion vessel. Add 3 ml of HNO₃, and 2 ml HCl. Gently swirl the mixture before closing the vessel.

**Notes**
The addition of Conc. HCl (0-4mL) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

**Recommended Equipment**
- MARS 6
- MARS 6 iWave

**Recommended Vessels**
- Xpress (75 ml)
- Xpress Plus
- EasyPrep
- EasyPrep Plus

**Reagents**
- HNO₃
- HCl

**Max Sample Weight**
50 ml

**Sample Type**
Water

**Control Type**
Ramp to Temperature

**Method Type**
One Touch

**Heating Program**

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* Ramp times and power may vary depending on type and number of vessels.

**Results**
Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of 
**Sludge (Industrial)**

### Procedure

Weigh 0.5 g (dry weight) of the sample into the digestion vessel. Add 10 mL of HNO₃. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

### Notes

The use of HF may be required to digest any silicates found in the sample.

The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

### Recommended Equipment

- MARS 6
- MARS 6 iWave

### Recommended Vessels

- Xpress
- XpressPlus
- EasyPrep
- EasyPrep Plus

### Reagents

- HNO₃

### Max Sample Weight

0.5 g (dry weight)

### Sample Type

Organic

### Control Type

Ramp to Temperature

### Method Type

One Touch

### Heating Program

<table>
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<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

### Results

Sample was clear, colorless, and particle free upon dilution to 50 mL.

### General Precautions

a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.

b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.

c) The control / reference vessel must contain the largest and most reactive sample.

d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.

e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Sludge (Waste Activated)

Procedure
Weigh 0.5 g dry weight (0.25 g w/Xpress Vessels) of the sample into the digestion vessel. Add 5 ml of HNO₃, and 5 ml of H₂O₂. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
| MARS 6 |
| MARS 6 iWave |

Recommended Vessels
| MARSXpress |
| MARSXpress Plus |
| EasyPrep |
| EasyPrep Plus |

Reagents
| HNO₃ |
| H₂O₂ |

Max Sample Weight
0.5 g

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 ml.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
TCLP Extract

**Procedure**

Transfer 25 ml of the sample into the digestion vessel. Add 5 ml of HNO₃. Gently swirl the mixture before closing the vessel.

If a high organic content is suspected, a 10 ml sample volume is recommended.

**Notes**

**Recommended Equipment**

- MARS 6
- MARS 6 iWave

**Recommended Vessels**

- EasyPrep Plus
- Xpress (75 ml)
- Xpress Plus

**Reagents**

- HNO₃

**Max Sample Weight**

- 25 mL

**Sample Type**

- EPA Digestion (Water)

**Control Type**

- Standard Control

**Method Type**

- One Touch

### Heating Program

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<th>Stage</th>
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<th>*Ramp (mm:ss)</th>
<th>Hold (mm:ss)</th>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

**Results**

Sample was clear, colorless, and particle free upon dilution to 50 ml.

**General Precautions**

- This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
- If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
- The control / reference vessel must contain the largest and most reactive sample.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
- If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3015 (Aqueous Samples)

Procedure
Transfer 45 ml of the sample into the digestion vessel. Add 5 ml of HNO₃. Gently swirl the mixture before closing the vessel.

Notes

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep Plus
Xpress (75 ml)
XpressPlus

Reagents
HNO₃

Max Sample Weight
45 ml

Sample Type
Environmental Digestion
(Water)

Control Type
Standard Control

Method Type
One Touch

Heating Program

<table>
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</table>

* Ramp times and power may vary depending on type and number of vessels.

Results
This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
US EPA 3015a (Aqueous Samples)

Procedure
Transfer 45 ml of the sample into the digestion vessel. Add 5 ml of HNO₃, or alternatively 4 ml of HNO₃ and 1 ml HCl. Gently swirl the mixture before closing the vessel.

Notes
The addition of Conc. HCl (0-4 ml) is appropriate for the stabilization of Ag, Ba and Sb, and high concentrations of Fe and Al in solution. The amount of HCl will vary depending on the matrix and the concentration of the analytes. The addition of HCl may, however, limit the techniques or increase the difficulties of analysis.

Recommended Equipment
MARS 6
MARS 6 iWave

Recommended Vessels
EasyPrep Plus
Xpress (75 ml)
XpressPlus

Reagents
HNO₃
HCl (Optional)

Max Sample Weight
45 ml

Sample Type
Environmental Digestion (Water)

Control Type
Standard Control

Method Type
One Touch

Heating Program

<table>
<thead>
<tr>
<th>Stage</th>
<th>Temp (°C)</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
This method is intended to be an acid leach, not a total digest. Hydrofluoric acid will be required to provide complete digestion of the sample matrix.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.
Microwave Digestion of
Water (for Analysis of Phosphorus)

Procedure
Weigh 50 mL of H₂O into the digestion vessel. Add 0.5 g of K₂S₂O₈ and 1 mL of H₂SO₄. Gently swirl the mixture and wait approximately 15 minutes before closing the vessel.

Notes

Recommended Equipment
MARS 6

Recommended Vessels
Xpress
XpressPlus
EasyPrep
EasyPrep Plus

Reagents
K₂S₂O₈
H₂SO₄

Max Sample Weight
50 mL

Sample Type
Organic

Control Type
Ramp to Temperature

Method Type
One Touch

Heating Program

<table>
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<tr>
<th>Stage</th>
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* Ramp times and power may vary depending on type and number of vessels.

Results
Sample was clear, colorless, and particle free upon dilution to 50 mL.

General Precautions
a) This procedure is a reference point for sample digestion using a CEM system and may need to be modified or changed to obtain the required results on your sample.
b) If using a vessel other than the recommended choice, adjust sample size and pressure limit to values appropriate for the vessel chosen.
c) The control / reference vessel must contain the largest and most reactive sample.
d) Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the vessel contents are at or below room temperature to avoid the potential for chemical burns. Always point the vent hole away from the operator.
e) If programming as One Touch, the ramp time and power will be automatically determined based on the number and type of vessels detected.