



MARS 6

Microwave Acid Digestion

Method Note Compendium

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Contents

Agriculture

Boric Acid HF Neutralization	2
Coffee Beans	3
Cotton	4
Feed Grain	5
Fertilizer AOAC Method 2006.03	6
Plant Tissue	7
Soybean	8
Spinach Leaves	9
Straw	10
Tobacco	11
Wheat	12
Yeast	13

Clinical and Biological

Animal Tissue (Dry)	15
Animal Tissue (Wet)	16
Blood (Human)	17
Bovine Liver (Wet)	18
Hair	19
Lobster Hepatopancreas (Tort2-CRM)	20
Urine (Human)	21

Consumer Products

Boric Acid HF Neutralization	23
Cosmetics (Liquid Foundation)	24
Cotton	25
Eye Shadow	26
Shampoo (Dandruff)	27
Suppository (Capsule)	28

Vaseline	29
Wax (Candle)	30

Environmental and Regulatory

Boric Acid HF Neutralization	32
Fertilizer - AOAC Method 2006.03	33
Limestone	34
NPDES (Wastewater)	35
Pine Needles	36
RoHS (For Pb, Hg, and Cd Analysis)	37
Sediment (BCCS-1 CRM) (Leach)	38
Sediment (Buffalo River) (Leach)	39
Sludge (Industrial)	40
Sludge (Waste Activated)	41
Soil (Montana-CRM) (Leach)	42
TCLP Extract	43
US EPA 3015 (Aqueous Samples)	44
US EPA 3015a (Aqueous Samples)	45
US EPA 3051 (Solid Samples)	46
US EPA 3051a (Solid Samples)	47
US EPA 3052	48
USP 232/233 (Pharmaceuticals)	49
Water (for analysis of Phosphorus)	50
Wood	51

Food Testing

Apple	53
Asparagus	54
Bacon (Cooked Pieces)	55
Beef (Ground)	56
Beer (Light)	57

Blueberry	58
Broccoli	59
Caramel Color	60
Carrot	61
Celery	62
Cheese Crackers	63
Cheese (Processed)	64
Cherry	65
Chewing Gum	66
Chicken (Boneless)	67
Chili Candy (Mexican)	68
Chips (Potato)	69
Coffee Beans	70
Cucumber	71
Dog Food (Dry)	72
Dog Food (Wet)	73
Flour	74
Food Coloring (Liquid)	75
Food	76
Fruit Juice	77
Granola Bar	78
Grape	79
Grapefruit	80
Ham	81
Infant Cereal (Rice Grain)	82
Infant Formula (Liquid)	83
Infant Formula (Liquid) in iPrep Vessels	84
Infant Formula (Powder)	85
Infant Formula (Powder) in iPrep Vessels	86
Kidney Bean	87
Maple Syrup	88
Mayonnaise	89
Milk (Liquid, Whole)	90
Milk (Powder)	91
Nutritional Drink (Adult)	92
Olive Oil	93

Orange	94
Orange Juice	95
Peanut Butter	96
Pear	97
Pepper (Bell, Chili, etc.)	98
Pizza (Frozen, Pepperoni)	99
Plum	100
Pork Gelatin	101
Pork (Ground)	102
Potato	103
Pretzel (Salted)	104
Protein Bar	105
Raspberry	106
Rice	107
Safflower Oil	108
Salami	109
Sausage	110
Soda (Diet)	111
Soybean	112
Spinach	113
Spinach Leaves	114
Strawberry	115
Sugar (Granulated)	116
Tea Leaves	117
Tomato Leaves	118
Tomato Soup	119
Walnut (Ground)	120
Watermelon	121
Whey Powder	122
Wine	123
Yogurt (Plain)	124

Geoscience and Mining

Alpha - Alumina in iPrep Vessels	126
Aluminum Oxide	127

Automotive Catalyst	128
Bauxite (Step 1 of 2)	129
Bauxite (Step 2 of 2)	130
Boric Acid HF Neutralization	131
Carbon	132
Carbon Nanotubes	133
Cement	134
Ceramic (Fused Silica)	135
Ceramics	136
Char (Sulfuric Acid)	137
Clay	138
Coal	139
Coal in iPrep Vessels	140
Coal Ash	141
Diesel Fuel	142
Iron Ore	143
Kerosene	144
Limestone	145
Mill Tailings (Step 1 of 2)	146
Mill Tailings (Step 2 of 2)	147
Motor Oil (Waste)	148
Petroleum Coke (Step 1 of 2)	149
Petroleum Coke (Step 2 of 2)	150
Rock (Pulverized)	151
Rutile Ore	152
Sand	153
Silica Sand	154
Silicon Dioxide	155
Silicon Wafer	156
Slag (Furnace)	157
Titanium Dioxide	158
Tungsten Carbide	159
Tungsten Oxide	160
Zeolite	161

Industrial Hygiene

Filter Paper (Cellulose)	163
Filter (37 mm Mixed Cellulose Ester)	164
Filter (47 mm Polycarbonate)	165
Ghost Wipe	166
Toray Filter in iPrep Vessels	167

Materials Science

Circuit Board (Cryo-ground)	169
Glass (Ground)	170
Graphite Fiber (Epoxy Resin, Fiber Content)	171

Metals and Alloys

Alluminum Alloy	173
Alpha - Alumina in iPrep Vessels	174
Aluminum Oxide	175
Aluminum (Metal)	176
Copper (Metal)	177
Copper (Ore)	178
Metal Alloy (CoCr) (Step 1 of 2)	179
Metal Alloy (CoCr) (Step 2 of 2)	180
Metal Alloy (FeCr)	181
Metal Alloy (NiCr)	182
Nickel (Metal)	183
Platinum (Metal)	184
Precious Metal (Ore) (Step 1 of 2)	185
Precious Metal (Ore) (Step 2 of 2)	186
Selenium Alloy	187
SnAg Solder	188
Stainless Steel	189
Steel (Stainless)	190
Titanium Alloy	191
Titanium Dioxide	192
Zinc Oxide	193

Nutraceuticals

Biotin	195
Ginko (Ground)	196
Ginko (Whole Pill)	197
Infant Formula (Liquid)	198
Infant Formula (Liquid) in iPrep Vessels	199
Infant Formula (Powder)	200
Infant Formula (Powder) in iPrep Vessels	201
Kelp	202
Milk (Liquid, Whole)	203
Milk (Powder)	204
Plant Tissue	205
USP 232/233 (Pharmaceuticals)	206
Wheat	207
Whey Powder	208

Organic Chemicals

Photoresist	210
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Paints and Coatings

Paint (Latex Based Liquid)	212
Paint Chips (For Pb Analysis)	213
Photoresist	214
Toner (Ink) in iPrep Vessels	215

Personal Care (Health and Beauty)

Boric Acid HF Neutralization	217
Cosmetics (Liquid, Foundation)	218
Eye Shadow	219
Shampoo (Dandruff)	220

Pharmaceutical and Biotech

Allergy Pill (Ground)	222
Allergy Pill (Whole Pill)	223
Antioxidant (Ground)	224
Antioxidant (Whole Pill)	225
APIs with Aromatic Ring Structures in iPrep Vessels	226
Ascorbic Acid	227
Aspirin (Ground)	228
Aspirin (Whole)	229
Beta Carotene	230
Biotin	231
Calcium Carbonate	232
Calpan Pantothenic Acid	233
Cephalexin	234
Chromium Chelate	235
Cold and Flu Medicine (Liquid)	236
Cupric Sulfate	237
Diclofenac K	238
Empty Capsule (Gel)	239
Fish Oil (No Capsule)	240
Folic Acid	241
Ginko (Ground)	242
Ginko (Whole Pill)	243
Kelp	244
Losataran K	245
Magnesium Carbonate	246
Magnesium Oxide	247
Manganese Carbonate	248
Metaformin (Ground)	249
Multivitamin (Ground)	250
Multivitamin (Whole)	251
Niacinamide	252
Pantothenic Acid	253
Potassium Chelate	254
Pyridoxine	255
Riboflavin	256

Selenium Chelate	257
Stearic Acid	258
Thiamine	259
USP 232/233 (Pharmaceuticals)	260
Vitamin B-12	261
Vitamin C (Ground)	262
Vitamin C (Whole)	263
Vitamin D	264
Vitamin D3	265
Vitamin E	266
Vitamins	267
Zinc Sulfate	268

Plastics, Polymers, and Oils

Acrylamide	270
Bunker Oil	271
Bunker Oil in iPrep Vessels	272
Char (Sulfuric Acid)	273
Crude Oil	274
Diesel Fuel	275
Epoxy Hardener	276
Fatty Alcohol	277
Gasoline	278
HDPE (High Density Polyethylene)	279
Kerosene	280
Kevlar in iPrep Vessels	281
Lube Oil	282
Mineral Oil	283
Motor Oil (Waste)	284
Motor Oil (Waste) in iPrep Vessels	285
Nylon	286
PET (Polyethylene Terephthalate)	287
PET (Polyethylene Terephthalate) in iPrep Vessels	288
Polycarbonate Resin (Step 1 of 2)	289
Polycarbonate Resin (Step 2 of 2)	290

Polyethersulfone (Filter Paper)	291
Polypropylene	292
Polyurethane	293
PVC (Polyvinyl Chloride, Resin)	294
Rubber	295
Terephthalic Acid	296

Pulp and Paper

Filter Paper (Cellulose)	298
Filter (37 mm Mixed Cellulose Ester)	299
Filter (47 mm Polycarbonate)	300
Paper Pulp	301

Water and Wastewater Treatment

NPDES (Wastewater)	303
Sludge (Industrial)	304
Sludge (Waste Activated)	305
TCLP Extract	306
US EPA 3015 (Aqueous Samples)	307
US EPA 3015a (Aqueous Samples)	308
Water (for Analysis of Phosphorus)	309

Agriculture

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
Xpress Plus
EasyPrep
EasyPrep Plus

Reagents

HNO₃
H₂O₂

Max Sample Weight

2 ml

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	20:00	800		Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	165	30:00	0:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	10:00	15:00	800	900-1050	Off

* Ramp times and power 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 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 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

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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 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

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	175	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Reagents

HNO₃

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	175	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* Ramp times and power 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	175	5:30	4:30	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	175	5:30	4:30	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	5:30	9:30	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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 (0-4mL) 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 Orange

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

2.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Reagents

HNO₃

Max Sample Weight

5 mL

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	240	30:00	60:00	N/A	1800	N/A

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	270	30:00	20:00	N/A	1800	N/A

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	30:00	800	900-1050	Off

* Ramp times and power 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 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

MARS 6
MARS iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H₃PO₄
H₂SO₄

Max Sample Weight

0.25 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	240	15:00	15:00	800	900-1050	Off

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

Microwave Digestion of Bauxite (Step 2 of 2)

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

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	215	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	220	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	175	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	190	10:00	20:00	800	900-1050	Off

* Ramp times and power 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 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.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HF

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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 200C.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	260	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HF
HNO₃
HCl

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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 step1, allow vessel to cool before proceeding with step 2.

Notes

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	20:00	800	900-1050	Off

* Ramp times and power 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 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.

Recommended Equipment

MARS 6 iWave

Recommended Vessels

iPrep

Reagents

HNO₃

Max Sample Weight

0.2 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	250	20:00	20:00	N/A	500-1800	Off

* 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

- This procedure is a reference 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1		15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	270	15:00	30:00	800	900-1050	Off

* 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

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	260	15:00	15:00	800	900-1050	Off

* 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

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	240	15:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	10:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	10:00	15:00	800	900-1050	Off

* Ramp times and power 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 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.

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HNO₃
HCl
HF

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	220	20:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	220	20:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	260	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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".

Recommended Equipment

MARS 6
MARS 6 iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

HCl
HF
HNO₃

Max Sample Weight

0.1 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	150	10:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	190	10:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	240	30:00	60:00	N/A	1800	N/A

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	270	30:00	20:00	N/A	1800	N/A

* Ramp times and power 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 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
MARS 6 iWave

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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 of 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* 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

Heating Program

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	10:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 Nickel (Metal)

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	20:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	20:00	800	900-1050	Off

* 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

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	10:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1						

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	30:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	240	20:00	20:00	N/A	500-1800	Off

* 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

- This procedure is a reference 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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.

Personal Care (Health and Beauty)

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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
H₂ O₂ (30%)

Max Sample Weight

1 pill (Approx 1.0 g)

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	250	30:00	25:00	N/A	1800	N/A

* Ramp times 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

- This procedure is a reference 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	230	20:00	30:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Max Sample Weight

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	20:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	230	20:00	30:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	30:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	250	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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 200C.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	260	15:00	15:00	800	900-1050	Off

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

Results

See sample specific method notes.

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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	250	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 Mineral 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	240	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	230	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	250	20:00	20:00	N/A	500-1800	Off

* Ramp times and power 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.
- Manual venting of CEM vessels should be performed when wearing hand/eye/body protection and when the 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 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

MARS 6
MARS iWave

Recommended Vessels

EasyPrep
EasyPrep Plus

Reagents

H₂SO₄

Max Sample Weight

1.0 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	260	15:00	15:00	800	900-1050	Off

* 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

Stage	Temp (°C)	*Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	230	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

MARS 6
MARS 6 iWave

Recommended Vessels

Xpress
XpressPlus
EasyPrep
EasyPrep Plus

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

0.5 g

Sample Type

Organic

Control Type

Ramp to Temperature

Method Type

One Touch

Heating Program

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	210	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	220	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	230	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	180	15:00	10:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.

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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	165	30:00	0:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	200	15:00	15:00	800	900-1050	Off

* Ramp times and power 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* Ramp times and power 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	*Power (W)	Stirring
1	170	10:00	10:00	800	900-1050	Off

* 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

- This procedure is a reference 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 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

Stage	Temp (°C)	* Ramp (mm:ss)	Hold (mm:ss)	Pressure (psi)	* Power (W)	Stirring
1	170	15:00	15:00	800	900-1050	Off

* Ramp times and power 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.