State-of-the-art solutions for performing many of the steps in sample preparation prior to either light or electron microscopy

EMS-820 & EMS9000
Precision Pulsed Laboratory Microwave Ovens
EMS-820
Precision Pulsed Laboratory Microwave Oven

State-of-the-art solution for performing many of the steps in sample preparation prior to either light or electron microscopy

Overview
The EMS-820 is designed for easy operation and maintenance. All of the controls can be set with one hand and are easily accessible allowing for changes at any time. An adjustable thermal probe can be set at different heights to accommodate all different types of containers and volumes of liquid. The unit has a built in reflector inside the chamber which evenly distributes the microwaves. A rotator is built into the unit, as well, to prevent “Hot-Spots.”

Features
- Easy operation and maintenance
- Easily adjusted effect % knob
- Accurate temperature control
- Well ventilated chamber
- 3 different timer modes
- Built in air pump for mixing
- Manifold for up to 5 mixing tubes
- Adjustable temperature probe holder
- Stainless steel chamber
- Glass fiber reinforced silicone floor
- Built in reflector for even distribution of microwaves
- On/off rotator switch

Advantages
- Ease of Use
  When using a laboratory microwave oven, one has to determine the set effect to use depending on the type of sample, temperature, and load. Our unit has the effect control knob easily accessible at all times, and can be changed even during the middle of a run. The effect percentage setting is easy to read at all times.

- Continuous Run Mode
  For longer procedures (greater than 99 minutes) our unit runs continuously for an indefinite period of time. There is no need to shut off the unit and begin again.

- Multiple Bubble Mixing
  A 5-port manifold for mixing up to 5 different containers at once.

- Stainless Steel Compartment
  Very easy to clean and resistant to staining or scratching. Resistant to all staining solutions.

- Adjustable Temperature Probe Holder
  It will accommodate any size container and it is flexible and very easy to align.

- Glass Fiber Reinforced Silicone Floor
  It comes standard with the unit and it covers the rotator when it is not in use.

- Ventilation
  Our unit has a built in powerful fan which accommodates at least 2 meters of tubing.
EMS-820 Precision Pulsed Laboratory Microwave Oven

For Optimum Results
The oven features a very well defined adjustable effect, an accurate temperature control, a well ventilated chamber, and three different timing modes for running the unit.

Our temperature control not only prevents the tissue in the chamber from becoming denatured (by high temperature) but it also assists in pulsing the microwave effect in small precise portions. The temperature control has a direct effect on the magnetron (the microwave generator) as it allows the unit to switch on and off in the most efficient way at the preset effect level. The set effect is adjustable at any time either before or during a run. This aids in the balance of the microwave load and the content of the microwave absorber. It should be noted that the penetration rate and process times are influenced by the presence of microwave radiation in the chamber and for this reason it is imperative that the effect rate be adjustable at any given time during a run.

Inside the chamber there is a manifold for up to 5 tubes which allows you to achieve bubble mixing in from 1-5 containers at once. There is a built in air pump that facilitates the mixing, avoiding temperature gradients in the mixing process. These adjustable bubble mixers make the EMS-820 ideal for decalcification.

Our oven is so versatile that you have the option to run it in three different modes depending on your application:

1) 3 optional presets programmed by the operator: 5 seconds-99 minutes
2) Continuous run: indefinite time.
3) Timed run: up to 99 minutes. with or without turntable.

The oven chamber is made entirely of stainless steel and it is very easy to clean. It is extremely resistant to all staining solutions that are usually employed in histology and like fields. The floor of the unit, which covers the rotator cavity, is a glass fiber reinforced silicone plate which serves as a thermal insulator and will not absorb microwaves. The plate is totally chemical resistant.

The EMS-820 is designed for easy operation and maintenance. All of the controls can be set with one hand and are easily accessible allowing for changes at any time. An adjustable thermal probe encased in a white PTFE holder (a microwave transparent material) comes with the unit. The probe can be set at different heights to accommodate all different types of containers and volumes of liquid. Attached to the probe is an adapter to hold one of the mixing tubes; this is important because the liquid which is regulated by the thermostat needs to be mixed well to avoid temperature gradients. The probe automatically measures the existing temperature and displays it.

The unit has a built in reflector inside the chamber which evenly distributes the microwaves. A rotator is built into the unit, as well, to prevent "Hot Spots" from forming even for very small volumes (e.g.; reagent drops on glass slides).

Specifications
- Magnetron Effect: 1000W
- Effect Range: 0-100%
- Temperature Range: 25-100°C
- Temperature Accuracy: +/- 0.5°C within 25-70°C
- Temperature Variation: +/- 0.4°C at 40°C Balanced effect with 200ml H2O load and 200ml H2O sample

Timer
- 5 sec-99min 99sec
- Continuous Run: Timer override-works as a count up timer for an indefinite period of time

Chamber evacuation
- Fan tubing outlet at rear

Safety Switch Off At
- 105°C Chamber temperature

Measurements (inner)
- 315mm x 315mm x 205mm

Outer Dimensions
- 550mm x 450mm x 350mm

Pulse length
- 3 sec.

Microwave reflector
- Motor-driven metallic field stirrer to eliminate hot spots

Different Timer Options:

I Continuous Run: For long processes requiring more than 99 minutes. (e.g.; decalcification)

<table>
<thead>
<tr>
<th>HOURS</th>
<th>MINUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>34</td>
</tr>
</tbody>
</table>

For 12 Hrs. 34 Min.

II Timer Controlled Run: For processes less than 99 minutes. (e.g.; section staining, fixation, etc.)

<table>
<thead>
<tr>
<th>MINUTES</th>
<th>SECONDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>

For 12 Min. 30 Sec.

III Preset: Operated programmed 5 sec.-99 minutes with or without turntable.

<table>
<thead>
<tr>
<th>MINUTES</th>
<th>SECONDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>18</td>
</tr>
</tbody>
</table>

For 0 Min. 18 Sec.

Ordering Information

Includes:
- Integrated Vacuum Pump
- User's Manual
- Remote Temperature Probe
- Stirrer Antenna
- Microwave Cookbook
- Microwave Tool Book

Cat. No. Description          Qty.
97030  EMS 9000 Laboratory Microwave Precision Pulsed Microwave Oven. Complete with: Integrated Vacuum Pump, Remote Temperature Probe, Stirrer Antenna, Microwave Cookbook; Microwave Tool book  each
Microwave Supplies and Calibration Aids

Microwave Leakage Detector
Evaluate microwave oven leakage and other environmental safety concerns. Features maximum and minimum hold, an audible alarm, and a zero adjustment to eliminate background EMF. The display also indicates overload and low battery. Comes with a soft carrying case and standard 9V battery, which provides approximately 100 hours of use.

Dimensions: 5½” x 2½” x 1¼” (130 x 56 x 38mm). Weight: 6oz (170g).

Specifications
- Display: 3½ digits, maximum reading 3999
- RF Power Density: 0.003~2.700 mW/cm²
- RF Frequency: 50MHz ~ 3.5GHz
- Microwave Frequency: 2450MHz
- Resolution: 0.001mW/cm²
- Accuracy: ±2dB @ 2.45GHz ±50MHz
- Axis: Single
- Alarm: @ readings >1mW/cm²
- Operating Temp: 41°F ~ 104°F (5°C ~ 40°C)
- Operating RH: <80% RH

72083-00 Microwave Leakage Detector each

AirChek® Badges
Monitor vapor levels, simply and effectively. AirChek Badges provide an innovative, simple and effective system for monitoring vapor levels, including Formaldehyde, Glutaraldehyde, Xylene, Toluene, Isopropanol.

The badges are simply clipped on to the technician’s clothing and a record is kept of name, location and time, providing continuous sampling for personal monitoring and allowing the measurements required under Government regulations.

One badge provides continuous sampling over 8 hours. A second badge can be used to supply information for analysis of 15-minute peak exposure periods.

64472-10 AirChek® Badge, Formaldehyde 6/pk
64472-20 AirChek® Badge, Glutaraldehyde 6/pk
64472-30 AirChek® Badge, Xylene 6/pk
64472-40 AirChek® Badge, Toluene 6/pk
64472-50 AirChek® Badge, Isopropanol 6/pk

The Microwave Tool Book
A Practical Guide For Microscopists
A step-by-step work book of fun laboratory exercises that teaches you how to calibrate and standardize microwave ovens; practice safety when using a microwave in the laboratory; see areas of high and low microwave power; measure cycle time and magnetron warm-up time; use your oven for fixation, staining, embedding, etc. When you complete the exercises in this book, you will find that what has up to now been a confusing amalgamation of concepts and recipes will become understandable and easy. Approx. 150 pp., 24 exercises, dozens of illustrations, and lots of practical tips. Written by: Gary R. Login, DMD, DMSc, and Ann M. Dvorak, MD, Dept of Pathology, Harvard School Of Dental Medicine, Harvard Medical School, and Beth Israel Hospital Boston, MA. 02115.

31110 Microwave Tool Book each

Microwave Calibration Slide Set*
EMS EXCLUSIVE
A calibration slide for microwave staining. A set which includes two glass slides. Slide #1 has liquid crystal squares corresponding to the following temperatures: 35°C, 40°C, 45°C; Slide #2 has liquid crystal squares corresponding to the following temperatures: 50°C, 55°C, and 60°C.

This calibration set will ensure reproducible programming of the oven to achieve an ideal target temperature of large staining volumes (50-200ml solution).

97031-01 Microwave Calibration Slide Set set

Stain-'N'-Temp Slide*
EMS EXCLUSIVE
This device is used as an aid when programming a microwave oven to achieve an ideal target temperature of 20-100ml staining volumes. The tool is designed to give quantitative temperature information about the droplet during staining of tissue sections on electron microscope grids.

This unit is a 4-well PTFE-coated glass slide, each well 8mm in diameter which will maintain the uniform shape of the droplet; 4 liquid crystal temperature strips ranging from 35° to 50° are affixed to each well to monitor the microwave oven temperature.

97030-01 Stain-'N'-Temp Slide each
97030-06 Stain-'N'-Temp Slide 6/pk

Fix-'N'-Temp Container*
EMS EXCLUSIVE
This container will permit rapid specimen handling and provides temperature information during microwave irradiation. A liquid crystal strip is affixed into the bottom of a 35mm diameter petri dish and covered with a thin layer of EMbed resin. The temperature range is 35°C-60°C. This container is ideal for tissue fixing by microwaves. The two active temperature windows are 45°C and 50°C.

97033-01 Fix-'N'-Temp Container each
97033-06 Fix-'N'-Temp Container 6/pk

Alpha-Numeric Oven Trays*
EMS EXCLUSIVE
Made from polypropylene, Each line is spaced 1 cm apart with letters along the sides and numbers across the top and bottom. This tray has ruled lines that aid in the reproducible placement of the specimens in the oven.

97035-01 Alpha-Numeric Oven Tray each

Microwave Leakage Detector
Evaluate microwave oven leakage and other environmental safety concerns. Features maximum and minimum hold, an audible alarm, and a zero adjustment to eliminate background EMF. The display also indicates overload and low battery. Comes with a soft carrying case and standard 9V battery, which provides approximately 100 hours of use.

Dimensions: 5½” x 2½” x 1¼” (130 x 56 x 38mm). Weight: 6oz (170g).

Specifications
- Display: 3½ digits, maximum reading 3999
- RF Power Density: 0.003~2.700 mW/cm²
- RF Frequency: 50MHz ~ 3.5GHz
- Microwave Frequency: 2450MHz
- Resolution: 0.001mW/cm²
- Accuracy: ±2dB @ 2.45GHz ±50MHz
- Axis: Single
- Alarm: @ readings >1mW/cm²
- Operating Temp: 41°F ~ 104°F (5°C ~ 40°C)
- Operating RH: <80% RH

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64472-20 AirChek® Badge, Glutaraldehyde 6/pk
64472-30 AirChek® Badge, Xylene 6/pk
64472-40 AirChek® Badge, Toluene 6/pk
64472-50 AirChek® Badge, Isopropanol 6/pk

The Microwave Tool Book
A Practical Guide For Microscopists
A step-by-step work book of fun laboratory exercises that teaches you how to calibrate and standardize microwave ovens; practice safety when using a microwave in the laboratory; see areas of high and low microwave power; measure cycle time and magnetron warm-up time; use your oven for fixation, staining, embedding, etc. When you complete the exercises in this book, you will find that what has up to now been a confusing amalgamation of concepts and recipes will become understandable and easy. Approx. 150 pp., 24 exercises, dozens of illustrations, and lots of practical tips. Written by: Gary R. Login, DMD, DMSc, and Ann M. Dvorak, MD, Dept of Pathology, Harvard School Of Dental Medicine, Harvard Medical School, and Beth Israel Hospital Boston, MA. 02115.

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This calibration set will ensure reproducible programming of the oven to achieve an ideal target temperature of large staining volumes (50-200ml solution).

97031-01 Microwave Calibration Slide Set set

Stain-'N'-Temp Slide*
EMS EXCLUSIVE
This device is used as an aid when programming a microwave oven to achieve an ideal target temperature of 20-100ml staining volumes. The tool is designed to give quantitative temperature information about the droplet during staining of tissue sections on electron microscope grids.

This unit is a 4-well PTFE-coated glass slide, each well 8mm in diameter which will maintain the uniform shape of the droplet; 4 liquid crystal temperature strips ranging from 35° to 50° are affixed to each well to monitor the microwave oven temperature.

97030-01 Stain-'N'-Temp Slide each
97030-06 Stain-'N'-Temp Slide 6/pk

Fix-'N'-Temp Container*
EMS EXCLUSIVE
This container will permit rapid specimen handling and provides temperature information during microwave irradiation. A liquid crystal strip is affixed into the bottom of a 35mm diameter petri dish and covered with a thin layer of EMbed resin. The temperature range is 35°C-60°C. This container is ideal for tissue fixing by microwaves. The two active temperature windows are 45°C and 50°C.

97033-01 Fix-'N'-Temp Container each
97033-06 Fix-'N'-Temp Container 6/pk

Alpha-Numeric Oven Trays*
EMS EXCLUSIVE
Made from polypropylene, Each line is spaced 1 cm apart with letters along the sides and numbers across the top and bottom. This tray has ruled lines that aid in the reproducible placement of the specimens in the oven.

97035-01 Alpha-Numeric Oven Tray each
Microwave Supplies and Calibration Aids

Neon Bulb Array*
EMS EXCLUSIVE
This Neon Bulb Array is made from silicone and has many advantages:
1. Silicone has a high resistance to extreme heat.
2. The silicone holds each bulb snugly and prevents bulb spillage during handling.
Each bulb in the mat is 2.5cm apart. The mat is divided into quadrants.
A mark on the back left corner of the array lid is used to key the back left corner of the oven. There are letters and numbers along each edge for easy placement on the Alpha-numeric tray. The mat size is 8”x 8”.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Neon Bulb Array</th>
</tr>
</thead>
<tbody>
<tr>
<td>97036-01</td>
<td>Neon Bulb Array</td>
</tr>
</tbody>
</table>

* The above microwave accessories are developed in collaboration with Dr. Gary Login, Beth Israel Hospital, Boston, MA.

Coverplate™ Technology
The Coverplate Microwave Immunostaining Systems
Shandon Lipshaw's patented Coverplate technology is the foundation of our microwave immunostaining system. Increased quality control, time and reagent savings, specimen protection, and consistent superb quality stains can be expected when using our Coverplate Microwave Immunostaining protocols.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Disposable Cover Plates™</th>
<th>10/pk</th>
</tr>
</thead>
<tbody>
<tr>
<td>97091</td>
<td>Disposable Cover Plates™</td>
<td>10/pk</td>
</tr>
<tr>
<td>97092</td>
<td>Cover Plate™ Slide Rack (holds 10 cover plates)</td>
<td>each</td>
</tr>
</tbody>
</table>

Incubation Tray for Microwave Immunostaining
For immunostaining, we recommend a water load that is the same size as the bottom of the microwave cavity in order not to disturb the distribution of microwave energy within the cavity. In our research, we found that between 150 and 200ml of water in the bottom of the incubation tray prevents evaporation of the droplets of reagent. A PAP pen should be used to maintain the droplets at a uniform size and shape.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Microwave Incubation Tray for Immunostaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>97060</td>
<td>Microwave Incubation Tray for Immunostaining</td>
</tr>
</tbody>
</table>

Micro Tube Rack - Microwaveable
Polypropylene floating racks keep microtubes submerged in a water bath – perfect for controlling sample temperature. Detachable legs give the users more options: attach legs so rack stands upright on benchtop, or detach legs so sample tubes can be quickly popped out by pushing down onto any surface.
Ideally to hold microcentrifuge tube in water bath during polymerization, such as LR White®, JB4. These racks are not autoclavable.
Measures: 60 mm high, including legs.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Wells</th>
<th>Tubes</th>
<th>Shapes/Color</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>72372-SB</td>
<td>16</td>
<td>0.4/0.5 ml</td>
<td>Square (102mm) Black</td>
<td>each</td>
</tr>
<tr>
<td>72372-SW</td>
<td>16</td>
<td>1.5/2.0 ml</td>
<td>Square (102 mm) White</td>
<td>each</td>
</tr>
<tr>
<td>72372-RB</td>
<td>8</td>
<td>1.5/2.0 ml</td>
<td>Round (58 mm) White</td>
<td>each</td>
</tr>
<tr>
<td>72372-R20</td>
<td>20</td>
<td>1.5/2.0 ml</td>
<td>Round (58 mm) White</td>
<td>each</td>
</tr>
</tbody>
</table>

Cassette Rack for Microwave Histoprocessing
A simple and reliable device designed to hold up to 24 standard cassettes for histoprocessing in a microwave. This new rack is manufactured from PTFE resins, and will withstand repeated exposure to fixatives, dehydrating agents, clearing agents and paraffin. It is easily cleaned in hot water. It is intended for use with a disposable tray which holds the processing chemicals.
Four processing racks and trays will fit into the EMS 9000 Microwave Processor, so that up to 96 cassettes can be processed in one run. Using this system, the histotechnologist needs to handle the individual cassettes only once, to load them into the racks. The rack is then placed into a tray containing the dehydrating medium, usually 100% ethyl alcohol, and microwaved. After dehydration, the rack containing the cassettes is transferred into a tray containing the clearing agent, usually isopropanol, and microwaved. After clearing, the rack is transferred to a tray containing liquid paraffin, and microwaved. The whole process can take as little as 25 minutes (for small specimens, such as needle biopsies). There are no hazardous chemicals needed (no xylene!).

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Cassette Rack for Microwave Histoprocessing</th>
</tr>
</thead>
<tbody>
<tr>
<td>97050</td>
<td>PTFE Cassette Rack for Microwave Histoprocessing</td>
</tr>
<tr>
<td>97051</td>
<td>Microwave Histoprocessing Rack with 10 Disposable Trays</td>
</tr>
</tbody>
</table>

Formalin Solutions: A New Cassette Holder for Microwave Fixation and Processing
Each holds 64 or 40 cassettes in a single horizontal plane, which conforms to research regarding the way to achieve the best distribution of microwave energy. It is based upon an original design in wood (the ‘Bamboozle’) developed by Dr. Richard Dapson of Anatech, Ltd. It is adapted to a pyrex container which allows the paraffin to easily hold its temperature, and minimizes the risk of overheating of specimens due to lack of sufficient microwavable load.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Cassette Holder and Tray, holds 64 cassettes</th>
</tr>
</thead>
<tbody>
<tr>
<td>97070-10</td>
<td>Cassette Holder and Tray, holds 64 cassettes</td>
</tr>
<tr>
<td>97070-01</td>
<td>Tray only</td>
</tr>
<tr>
<td>97070-02</td>
<td>Cassette Holder only, holds 64 cassettes</td>
</tr>
<tr>
<td>97071-10</td>
<td>Cassette Holder and Tray, holds 21 cassettes</td>
</tr>
<tr>
<td>97071-01</td>
<td>Tray only</td>
</tr>
<tr>
<td>97071-02</td>
<td>Cassette Holder, holds 21 cassettes</td>
</tr>
</tbody>
</table>

Other Holders, Racks, and Trays

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Microwave transparent dish</th>
</tr>
</thead>
<tbody>
<tr>
<td>97052-01</td>
<td>Microwave transparent dish</td>
</tr>
<tr>
<td>97052-04</td>
<td>Microwave Slide Staining Holder</td>
</tr>
<tr>
<td>97090</td>
<td>Microwave Slide Staining Holders, with disposable tray (each rack holds 24 slides)</td>
</tr>
<tr>
<td>97082</td>
<td>Microwave-Transparent Trays</td>
</tr>
</tbody>
</table>

Containers

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Microwave-transparent jars with wide mouths and vented lids, (2 x 500ml, 1 x 1000ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>97084</td>
<td>Microwave-transparent jars with wide mouths and vented lids, (2 x 500ml, 1 x 1000ml)</td>
</tr>
<tr>
<td>97088</td>
<td>Microwave-transparent, small-capacity staining containers</td>
</tr>
<tr>
<td>97087</td>
<td>Microwave Coplin Jars with vented lid</td>
</tr>
</tbody>
</table>

EMS Microwave Brochure_Oct2018 EMS Full Line 2013_sec01 9/28/18 2:19 PM Page 5
Overview
The EMS 9000 Laboratory Microwave Oven represents a state-of-the-art solution for performing many of the steps in sample preparation prior to either light or electron microscopy. Procedures such as fixation, staining, dehydration, decalcification, impregnation, polymerization as well as immunohisto and cytochemistry can be done with ease in the EMS 9000.

The EMS 9000 offers a significant reduction in processing times while obtaining improved results.

Features
- 900 watt nominal output with variable wattage
- Bubble manifold for 5 tubes
- Forced exhaust system with fail-safe interlock
- Adjustable duty cycle—one second and greater for very precise process control
- Magnetron pre-warming
- Right side closet
- Vacuum system for rapid infiltration (optional)
- Load cooler/circulation system (optional)
- Three different timer modes
- Multiple safety interlocks
- Visual and aural warnings on errors and malfunctions
- All controls are automated
- Flexible temperature probe

Advantages
- Ease of use: User-friendly touch keypad to set and store all parameters-programmable
- Multiple running modes
- Multiple bubble mixing (5 ports)
- Adjustable temperature probe
- Ventilation
- Optional vacuum cycling for rapid infiltration
- Optional Load cooler
- Safety exhaust fans with fail safe interlock
- Integrated on board digital controller

For Optimum Results
The EMS 9000 features a touch pad keyboard that allows for all settings to be programmed quickly and easily. With a very well defined adjustable effect, accurate temperature control, well ventilated chamber, and three different timing modes, the EMS 9000 is the most advanced microwave processor available today.

For Temperature Control
Our temperature control not only prevents the tissue in the chamber from becoming denatured (by high temperature) but it also assists in pulsing the microwave effect in small precise portions. The temperature control has a direct effect on the magnetron for it allows the unit to switch on and off in the most efficient way at the preset effect level. The temperature probe is mounted on a ball swivel that allows for easy placement of the probe within the microwave chamber. In addition, the probe is made from stainless steel and it is quite flexible so that it may be bent and formed as required to place it in various shaped containers. The temperature sensor is located at the tip of the probe.

Bubble Mixing from up to 5 Tubes
Inside the chamber there is a manifold for up to 5 tubes that allows you to achieve bubble mixing in from one to five containers at the same time. There is a built-in air pump that facilitates the mixing and avoids temperature gradients in the mixing process. These adjustable bubble mixers make the EMS 9000 ideal for decalcification.
EMS 9000 Precision Pulsed Laboratory Microwave Oven

Adjustable Set Effect
The set effect is adjustable at anytime either before or during a run. This aids in the balance of the microwave load and the content of the microwave absorber. It should be noted that the penetration rate and process times are influenced by the presence of microwave radiation in the chamber and for this reason it is imperative that the effect rate be adjustable. The unit allows for preset parameters, which are stored in the EMS 9000 memory and are called upon to perform particular processes automatically.

Our oven is so versatile that you have the option to run it in three different modes depending on your application:

1. Dual mode
   a.) Time at temperature—The timer starts after the selectable threshold temperature is reached.
   b.) Total time—The timer starts upon entry into “run” state and measures the total time of the process including the ramp-up time.

2. Extended timer range of 99 hours: 59 minutes: 59 seconds

3. Count up and count down timing

The EMS 9000 processor has two microwave power control modes.
- **Temperature**—Under the temperature control, the power is adjusted in a closed loop fashion to obtain a particular temperature profile.
- **Power**—Under power control, the power is adjusted in a fashion that ignores the process temperature as a control factor. In both of the control methods power output is pulsed with a one second cycle time. However, because the EMS9000 can supply power pulses as short as 120 milliseconds, the power output can be finely tuned to provide excellent control in both modes.

The system has many unique safety features that make the EMS 9000 the safest unit on the market!

The on-board screen will caution and shut down the system if there is high probe temperature, system over temperature; keyboard error; inoperative vent or low probe temperature.

The oven chamber is made entirely of stainless steel and is very easy to clean. It is extremely resistant to all staining solutions and solvents. The floor of the unit is ceramic which serves as a thermal insulator and will not absorb microwaves and it is completely chemical resistant.

The EMS 9000 is designed for easy operation and maintenance. All of the controls can be set with one hand and are easily accessible allowing for changes at anytime.

The unit has a built-in reflector inside the chamber that evenly distributes the microwaves and prevents “hot spots” from forming even for very small volumes.

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**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwave Output</td>
<td>825 W</td>
</tr>
<tr>
<td>Effect Range</td>
<td>0-100%</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>0-120°C</td>
</tr>
<tr>
<td>Temperature Accuracy</td>
<td>Timer error: &lt;0.1% in all modes</td>
</tr>
<tr>
<td>Temperature Readout Update Rate</td>
<td>once/sec</td>
</tr>
<tr>
<td>Temperature Readout Accuracy</td>
<td>&lt;0.5°C</td>
</tr>
<tr>
<td>Power Control Accuracy</td>
<td>error &lt;1%</td>
</tr>
<tr>
<td>Air Agitation</td>
<td>Chamber air agitator flow is 1 liter per minute nominal</td>
</tr>
<tr>
<td>Internal Lighting</td>
<td>Chamber lighting available at all times via keyboard switch (40 watt incandescent lamp)</td>
</tr>
<tr>
<td>Fluid Ports</td>
<td>2 ports supplied as a standard - accepts up to 3/16” hose.</td>
</tr>
<tr>
<td>Pulse Length</td>
<td>1 second</td>
</tr>
<tr>
<td>Timer Value</td>
<td>0-99:59:59:59</td>
</tr>
<tr>
<td>Vent System</td>
<td>Vent fan rated at 106 CFM nominal</td>
</tr>
<tr>
<td>Input Power</td>
<td>15A at 120 Volts nominal</td>
</tr>
<tr>
<td></td>
<td>10A at 230 Volts nominal</td>
</tr>
<tr>
<td>System Dimensions</td>
<td>19” High x 21.5” Wide x 24.5” Diameter (48.3cm x 54.6cm x 62.2cm)</td>
</tr>
<tr>
<td>Microwave Chamber</td>
<td>9.5” High x 13.5” Wide x 15.5” Diameter (24.1cm x 34.3cm x 39.4cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>70 lbs.</td>
</tr>
<tr>
<td>Continuous Run</td>
<td>Timer override works as a count up timer for an indefinite period of time.</td>
</tr>
</tbody>
</table>

**Safety Interlocks:**
- * Vent interlock inhibits operation unless vent airflow is normal
- * Primary Door Interlock
- * Secondary Door Interlock
- * Monitor Switch - Short circuit of the magnetron when door is open
- * Oven temperature Switch

100, 120, 230 volt models FCC approved, CSA NRTL approved.

**Ordering Information**

**Includes:**
- 8’ Ventilation Hose
- User’s Manual
- Microwave Companion
- Processor Tray
- Vacuum Processor Bowl (when ordering Vacuum option)
- Vacuum Processor Cover (when ordering Vacuum option)
- 74 Position Cassette Basket Set
- (2) Histoprocessing Bowls
- (2) Microwave Transparent Containers
- Polar Heat Sample Pack
- Preserve Solution

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>97030</td>
<td>EMS 9000 Laboratory Microwave Precision Pulsed Microwave Oven. Complete with:  Integrated Vacuum Pump, Remote Temperature Probe, Stirrer Antenna, Microwave Cookbook; Microwave Tool book</td>
<td>each</td>
</tr>
</tbody>
</table>
## EMS 9002 Vacuum Processor (factory-installed option)

Made from Pyrex® glass which offers better temperature conductivity and stability than any other material and is chemically resistant and microwave transparent. The EMS 9002, when used in conjunction with our EMS 9000 processor, improves ultra-structural preservation during microwave assisted chemical fixation and reduces infiltration times dramatically.

### Specifications

**Vacuum Pump**  
Voltage: 115V, Amps: 2.6, CFM (Free Air): 0.8, Fittings: 1/4” I.D. tubing

**Cassette Rack**  
Material: All PTFE, Capacity: 74 cassettes

**Vessel**  
Dimensions — Tray: 12” x 10” x 5”

**Bowl**  
9.75” diameter x 2” depth, Liquid Capacity: 2.9 liters, Vacuum Cover Material: polypropylene

| Fittings | 1/4” I. D. Tubing |

### Accessories for the EMS 9002 Vacuum Processor

**Vacuum Processor Kit**  
For vacuum processing of tissue samples in the Vacuum Microwave Processor  
Includes: Vacuum Processor Bowl (H2825/1), Processor Tray (H2825/3), Vacuum Processor Tubing Kit (H2825/4), 74 Cassette Processing Rack (H2825/6)

**Vacuum Processor Tubing Kit**  
Used in conjunction with Vacuum Processor Bowl (H2825/1) and Vacuum Processor Cover (H2825/2).

**Non-Vacuum Processor Kit**  
For processing of tissue samples in the H2850 Microwave Processor  
Includes: Non Vacuum Processor Bowl (H2825/5), Processor Tray (H2825/3), 74 Cassette Processing Rack (H2825/6)

**74 Cassette Processing Rack**  
For cassette storage during tissue processing.

**Processor Tray**  
Used to transfer processor bowls in and out of microwave processors. Made of durable microwave transparent polypropylene plastic.

**Vacuum Processor Bowl**  
Used in conjunction with Vacuum Processor Cover and Vacuum Processor Tubing Kit.

**Non-Vacuum Processing Bowl**  
Not for use with vacuum attachments

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>97045-A</td>
<td>MPC9000 Microwave Processing Chamber</td>
<td>each</td>
</tr>
<tr>
<td>97050-A</td>
<td>EMS 9002 Vacuum Processor, factory installed option, Complete with: Processing Vessel, Cassette Rack, and Vacuum Pump.</td>
<td>each</td>
</tr>
<tr>
<td>97052-10</td>
<td>Vacuum Processor Kit</td>
<td>each</td>
</tr>
<tr>
<td>97052-11</td>
<td>Vacuum Processor Tubing Kit</td>
<td>each</td>
</tr>
<tr>
<td>97052-12</td>
<td>Non-Vacuum Processor Kit</td>
<td>each</td>
</tr>
<tr>
<td>97052-13</td>
<td>74 Cassette Processing Rack</td>
<td>each</td>
</tr>
<tr>
<td>97052-14</td>
<td>Processor Tray</td>
<td>each</td>
</tr>
<tr>
<td>97052-15</td>
<td>Vacuum Processing Bowl</td>
<td>each</td>
</tr>
<tr>
<td>97052-16</td>
<td>Non-Vacuum Processing Bowl</td>
<td>each</td>
</tr>
</tbody>
</table>

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