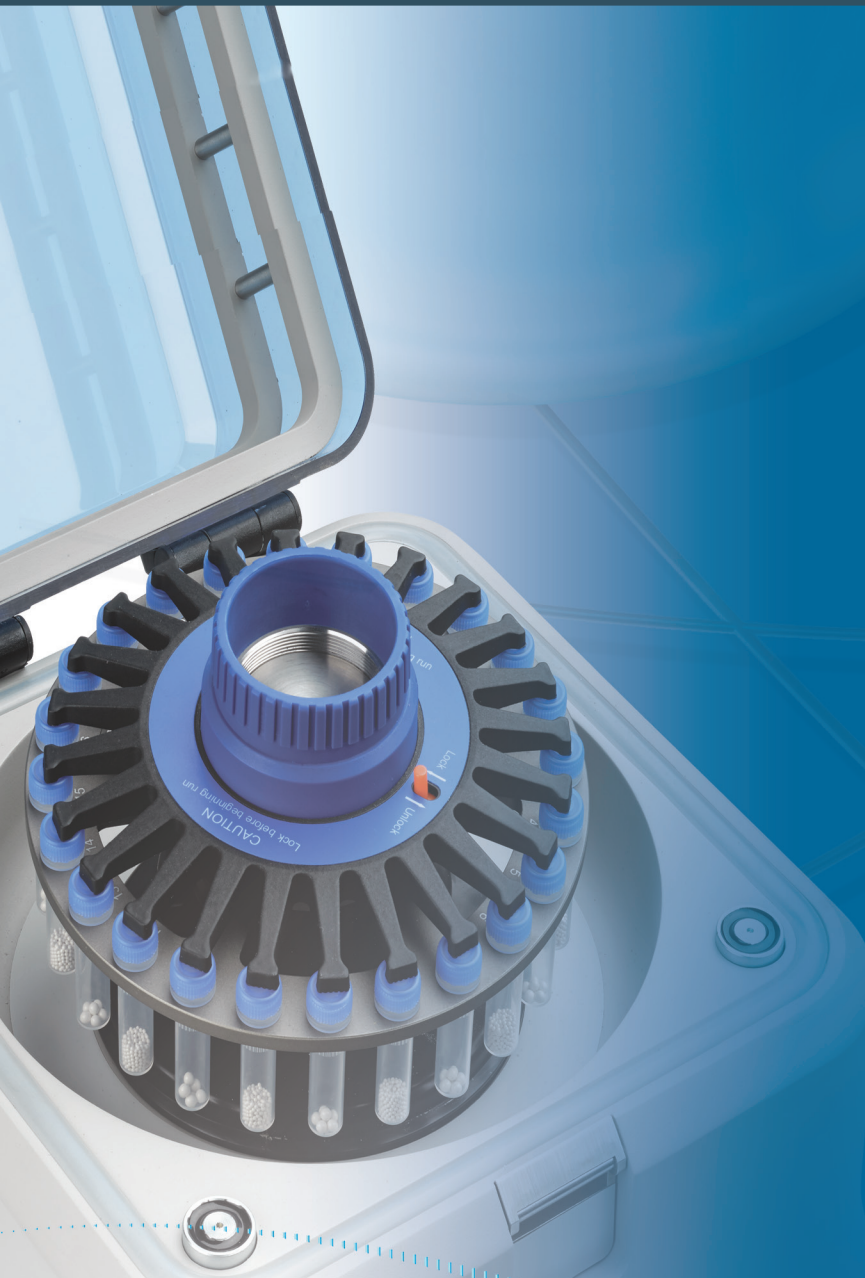


# Homogenizers



Pg. 38

D1000 **Handheld Homogenizer**



Pg. 39

BeadBug™ 3 & 6  
**Microtube Homogenizers**



Pg. 40

BeadBlaster™ 24 & 24R  
**Microtube Homogenizers**



Pg. 41

BeadBlaster™ 96  
**Ball Mill Homogenizer**



Pg. 42

Pulse 150™ **Ultrasonic Homogenizer**



Pg. 42

BenchMasher™ 400 **Paddle Blender**

# D1000 Homogenizer



Ergonomic, "slim-line" handle design

- + Quickly homogenizes samples (in under 30 seconds)
- + For volumes 100µl to 250ml
- + Supplied with two generator probes (5mm and 7mm)

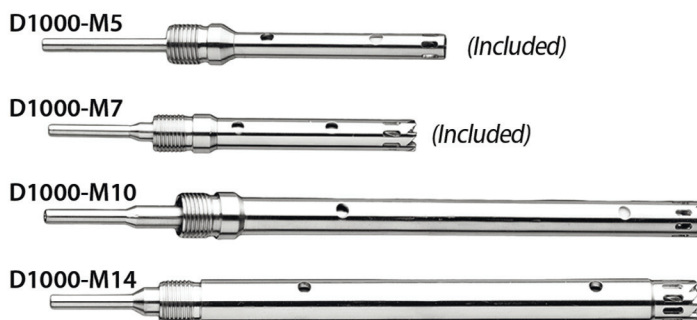
Benchmark's handheld homogenizer, the D1000, is designed to rapidly homogenize, emulsify, suspend and disrupt biological samples. Ideal for use with microtubes, the homogenizer works well with samples from 0.1ml to 250ml (depending upon the generator probe used).

The D1000 is a rotor stator homogenizer which works by drawing the sample, in liquid, into the generator probe with the variable speed rotor, and then forcing it out through the slots in the stator. This achieves mechanical shearing of the sample. As the sample is repeatedly drawn up and forced through the stator, additional shearing takes place.

A powerful, 130W motor drives the rotor at speeds from 8,500 to 30,000 rpm. Speed is continuously adjustable to meet sample processing needs. A separate on/off switch allows the homogenizer to be left at the appropriate setting.

Generator probes are available in four sizes. The 5mm and 7mm diameter have a 50mm length for use with samples in microtubes. The 10mm x 115mm probe is ideal for use with 15 and 50ml tubes and 14mm x 130mm probe, for 50ml tubes and vessels up to 250ml. The unit is supplied with one each of the 5mm and 7mm generator probes. All the generator probes are made of stainless steel and can be sterilized by autoclaving.

## Available Generator Heads



## Ordering Information:

| Item No.                          | Description:                                                                                                       |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|
| D1000                             | D1000 Hand-Held Homogenizer includes one 5mm (flat-bottom) generator probe and one 7mm (saw tooth) generator probe |
| <u>Optional generator probes:</u> |                                                                                                                    |
| D1000-M10                         | 10mm x 115mm saw tooth, for 15 and 50ml tubes                                                                      |
| D1000-M14                         | 14mm x 130mm saw tooth, for 50ml - 250ml vessels                                                                   |
| D1000-M5                          | 5 x 50mm for microtubes, 5pk.                                                                                      |
| D1000-M7                          | 7 x 50mm for microtubes, 5pk.                                                                                      |
| D1000-ST                          | Stand for D1000 Homogenizer                                                                                        |

## Technical Data:

|                                          |                                          |
|------------------------------------------|------------------------------------------|
| Speed Range:                             | 8,500 to 30,000rpm                       |
| Capacity:                                | 0.1 to 250ml                             |
| Noise Level:                             | <70db                                    |
| Dimensions: (W x D x H): (without probe) | 1.8 x 2.3 x 9 in.<br>4.5 x 5.8 x 22.5 cm |
| Weight:                                  | 1.35 lbs (0.6kg)                         |
| Electrical:                              | 115 or 230V, 50-60Hz, 130W               |
| Warranty:                                | 2 Years                                  |

\*115V with US plug. For 230V (EU plug), please add (-E).

# BeadBug™ 3 & 6 Microtube Homogenizers

## BEADBUG MICROTUBE HOMOGENIZERS



- + Extremely powerful mixing action for lysis, grinding or homogenization
- + Eliminates the cross contamination associated with hand-held homogenizers
- + Faster & more effective than tissue grinders
- + Process multiple tubes simultaneously

The BeadBugs™ are high energy benchtop homogenizers that set the performance standard for personal sized cell disruption and lysis instruments. Simultaneous homogenization of up to 6 samples takes place (often within 45 seconds) inside the disposable 2ml screw cap microtubes. The optimized mixing motion causes rapid cell disruption through constant high velocity impacts from the hardened micro-beads chosen specifically for your sample type.

Developed for samples too tough to be homogenized in a common lab vortexer, the BeadBugs provide a convenient and economical alternative to larger and more expensive homogenizers on the market today. With compact footprints (as small as 7 x 8", in the 3 position model), the Beadbugs are the the ideal homogenizing instruments for low to medium throughput laboratories.



BeadBug 3, accepts 3 x 2.0ml



BeadBug 6, accepts 6 x 2.0ml



Video Demonstration



Benchmark offers a wide range of homogenization beads (including glass, zirconium, stainless steel, etc.)

### Ordering Information:

| Item No.                    | Description:                                                                                     |
|-----------------------------|--------------------------------------------------------------------------------------------------|
| D1030*                      | BeadBug™ 3, Three Position Microtube Homogenizer                                                 |
| D1036*                      | BeadBug™ 6, Six Position Microtube Homogenizer                                                   |
| D1036-A5                    | Optional tube holder 2 x 5ml screw cap tubes (for D1036 only)                                    |
| <b>Prefilled Tube Kits:</b> | Include 2.0ml non-skirted screw cap tubes with caps, sealing rings and beads as specified below: |
| D1031-01                    | Standard glass beads, Ø 0.1mm, 50pk.                                                             |
| D1031-05                    | Standard glass beads, Ø 0.5mm, 50pk.                                                             |
| D1031-10                    | Standard glass beads, Ø 1.0mm, 50pk.                                                             |
| D1032-01                    | Triple-Pure™, high impact zirconium beads, Ø 0.1mm, 50pk.                                        |
| D1032-05                    | Triple-Pure™, high impact zirconium beads, Ø 0.5mm, 50pk.                                        |
| D1032-10                    | Triple-Pure™, high impact zirconium beads, Ø 1.0mm, 50pk.                                        |
| D1032-15                    | Triple-Pure™, high impact zirconium beads, Ø 1.5mm, 50pk.                                        |
| D1032-30                    | Triple-Pure™, high impact zirconium beads, Ø 3.0mm, 50pk.                                        |
| D1032-60                    | One ceria zirconium oxide satellite, Ø 6.0mm, 50pk.                                              |
| D1032-SK                    | Starter Kit, 10 ea. of Ø 0.1, 0.5, 1.0, 1.5 & 3.0 Triple-Pure™ zirconium                         |
| D1033-28                    | Stainless steel beads, Ø 2.8mm, 50pk.                                                            |
| D1033-30G                   | Garnet shards with 1 zirconium bead Ø 6.0mm, 50pk.                                               |
| D1034-MX                    | Mixed format, 0.1mm silica, 1.4mm zirconium, 4mm silica, 50pk.                                   |
| D1031-T20                   | Empty tubes (2.0ml) pack of 1000                                                                 |
| D1031-RFS                   | Reinforced empty tubes (2.0ml) pack of 600                                                       |

\*115V with US plug. For 230V (EU plug), please add (-E).

Additional bead types are also available (in both bulk and prefilled kits). Please contact Benchmark for a complete listing.

### Technical Data:

|                            |                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------|
| Speed Range:               | 2,800 to 4,000rpm (D1030)<br>2,500 to 4,350rpm (D1036)                                            |
| Max. Capacity:             | 3 x 2.0ml non-skirted (D1030)<br>6 x 2.0ml (skirted or non) or 2 x 5ml (D1036)                    |
| Timer:                     | 3 sec. to 3 min. (D1030)<br>1 sec to 90 sec. with up to 10 cycles (D1036)                         |
| Operating Temp. Range:     | +4° C to +45° C (ambient temp.)                                                                   |
| Dimensions:<br>(W x D x H) | 6.9 x 8.3 x 5.3 in. / 17 x 21 x 13.5 cm (D1030)<br>8.6 x 14 x 8 in. / 22 x 35.5 x 20.5 cm (D1036) |
| Weight:                    | 5 lbs (2.2kg) / 20 lbs (9kg)                                                                      |
| Electrical:                | 115 or 230V, 50-60Hz, 50W (D1030)<br>100 to 240V, 50-60Hz, 145W (D1036)                           |
| Warranty:                  | 2 Years                                                                                           |

# BeadBlaster™ 24 and 24R Microtube Homogenizers



CE



Stainless steel, 24 position tube carrier



Video Demonstration

- + Fast, efficient homogenization, usually in 35 seconds or less
- + For all sample types, from soft tissue to bone
- + High throughput, up to 24 samples
- + True refrigeration - no external connections, dry ice or liquid nitrogen (D2400-R model only)

The BeadBlaster™ 24 completely lyses, grinds and homogenizes a broad variety of biological samples. Even the most difficult and resistant samples are fully homogenized, often in 35 seconds or less. The stainless steel tube carrier subjects up to 24 samples to an optimized, high speed, 3D motion, producing high energy impacts between the samples and micro-beads to release cellular contents. To protect heat sensitive samples, the unit can be digitally programmed to operate in shortened consecutive cycles with a rest period in between.

Benchmark offers an assortment of prefilled tube kits for a variety of sample types. The popular Triple-Pure™ kits include acid washed, heat treated, zirconium beads. The beads are tested to be free of nucleases, making them ideal for molecular biology applications. A convenient starter kit (D1032-SK) is available to accommodate a broad range of samples and optimize applications.



## Ordering Information:

### Technical Data:

|                         |                                                                                                                       |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Speed:                  | <b>4.00 to 7.00 m/s (2430 to 4260rpm)</b>                                                                             |
| Speed Increments:       | <b>0.05 m/s</b>                                                                                                       |
| Capacity:               | <b>24 x 2.0ml tubes or 12 x 5ml</b>                                                                                   |
| Cycle Time:             | <b>1 to 90 sec. (1 sec. increments)</b>                                                                               |
| Pause Between Cycles:   | <b>0 to 2 min. (1 sec. increments)</b>                                                                                |
| Max Cycles Per Program: | <b>10</b>                                                                                                             |
| Program Memory:         | <b>50</b>                                                                                                             |
| Accel/Decel:            | <b>&lt;2 sec. / &lt;2 sec., D2400</b><br><b>&lt;4 sec. / &lt;4 sec., D2400-R</b>                                      |
| Noise Level:            | <b>&lt;68 db, D2400</b><br><b>&lt;65 db, D2400-R</b>                                                                  |
| Cooling Method:         | <b>Compressor, D2400-R</b>                                                                                            |
| Precool Ambient to 0°C  | <b>&lt;30 minutes, D2400-R</b>                                                                                        |
| Operating Temp. Range:  | <b>+4 °C to +65°C</b>                                                                                                 |
| Temp. Range:            | <b>-10°C to ambient, D2400-R</b>                                                                                      |
| Dimensions: (WxDxH)     | <b>11 x 14.2 x 15.2 in. / 28 x 36 x 38.5cm, D2400</b><br><b>12.6 x 20.1 x 16.2 in. / 32 x 51 x 41cm, D2400-R</b>      |
| Weight:                 | <b>55 lbs (25kg), D2400</b><br><b>88 lbs (40kg), D2400-R</b>                                                          |
| Electrical:             | <b>Universal Voltage</b><br><b>100V to 240V, 50-60Hz, 600W, D2400</b><br><b>100V to 240V, 50-60Hz, 1000W, D2400-R</b> |
| Warranty:               | <b>2 Years</b>                                                                                                        |

| Item No.                    | Description:                                                                                            |
|-----------------------------|---------------------------------------------------------------------------------------------------------|
| D2400*                      | BeadBlaster™ 24 Microtube Homogenizer with 24 x 2.0ml tube holder                                       |
| D2400-R*                    | BeadBlaster™ 24 Refrigerated Microtube Homogenizer with 24 x 2.0ml tube holder                          |
| D2400-R5V2                  | Optional tube holder, 12 x 5ml                                                                          |
| <b>Prefilled Tube Kits:</b> | <b>Include 2.0ml non-skirted screw cap tubes with caps, sealing rings and beads as specified below:</b> |
| D1031-01                    | Standard glass beads, Ø 0.1mm, 50pk.                                                                    |
| D1031-05                    | Standard glass beads, Ø 0.5mm, 50pk.                                                                    |
| D1031-10                    | Standard glass beads, Ø 1.0mm, 50pk.                                                                    |
| D1032-01                    | Triple-Pure™, high impact zirconium beads, Ø 0.1mm, 50pk.                                               |
| D1032-05                    | Triple-Pure™, high impact zirconium beads, Ø 0.5mm, 50pk.                                               |
| D1032-10                    | Triple-Pure™, high impact zirconium beads, Ø 1.0mm, 50pk.                                               |
| D1032-15                    | Triple-Pure™, high impact zirconium beads, Ø 1.5mm, 50pk.                                               |
| D1032-30                    | Triple-Pure™, high impact zirconium beads, Ø 3.0mm, 50pk.                                               |
| D1032-SK                    | Starter Kit, 10 ea. of Ø 0.1, 0.5, 1.0, 1.5 & 3.0 Triple-Pure™, high impact zirconium                   |
| D1032-60                    | One ceria zirconium oxide satellite, Ø 6.0mm, 50pk.                                                     |
| D1033-28                    | Stainless steel beads, Ø 2.8mm, 50pk.                                                                   |
| D1033-30G                   | Garnet shards with 1 zirconium bead Ø 6.0mm, 50pk.                                                      |
| D1034-MX                    | Mixed format, 0.1mm silica, 1.4mm zirconium, 4mm silica, 50pk.                                          |
| D1031-T20                   | Empty tubes (2.0ml) pack of 1000                                                                        |
| D1031-RFS                   | Reinforced empty tubes (2.0ml) pack of 600                                                              |
| D1034-28                    | 5ml tubes with stainless beads, Ø 2.8mm, 50pk.                                                          |

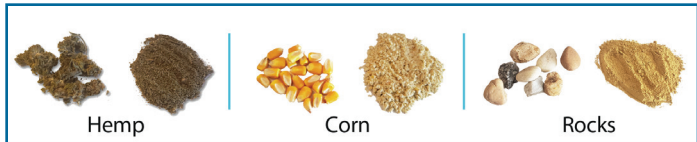
Additional bead types are also available (in both bulk and prefilled kits). Please contact Benchmark for a complete listing.

\*Includes US plug. For EU plug, please add (-E).

# BeadBlaster™ 96 Ball Mill Homogenizer



- + Rapid cell lysis for extraction of DNA, RNA and proteins in plates and microtubes
- + Fine grinding of cannabis/hemp samples
- + Able to homogenize bone, teeth and other hard samples
- + Homogenize/blend powders and suspensions



## Ordering Information:

| Item No.                        | Description:                                                                                                                                                     |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPD9600*                        | BeadBlaster™ 96 Ball Mill Homogenizer for plates, tubes and jars                                                                                                 |
| <b>Accessories:</b>             | All accessories ordered separately.                                                                                                                              |
| <b>Microplates:</b>             |                                                                                                                                                                  |
| IPD9600-96                      | Adapter for 96 well plates, set of 2, required for processing microplates                                                                                        |
| IPD1196-40                      | 96 well plate, 2ml, prefilled w/4mm balls, with sealing mat, 10pk.                                                                                               |
| IPD1196-MP                      | 96 well plate, 2ml, square well, 10pk.                                                                                                                           |
| IPD1196-CM                      | EVA cap mat for above plate, 10pk.                                                                                                                               |
| IPD9600-BD28                    | 96 well ball dropper for 2.8mm balls                                                                                                                             |
| IPD9600-BD4                     | 96 well ball dropper for 4mm balls                                                                                                                               |
| IPD9600-BD5                     | 96 well ball dropper for 5mm balls                                                                                                                               |
| D1133-28                        | 2.8mm stainless steel balls, 1000pk.                                                                                                                             |
| <b>Microtubes:</b>              |                                                                                                                                                                  |
| IPD9600-1520                    | Adapter for 32x2ml tubes, PTFE, set of 2, requires use of IPD9600-96                                                                                             |
| IPD9600-96A2                    | Rack for 20x2ml tubes, set of 2, requires use of IPD9600-96                                                                                                      |
| IPD9600-96                      | Adapter for microplates and tube holders, set of 2                                                                                                               |
| D1032-SK                        | Starter kit of TriplePure™ Prefilled Bead Tubes, 10 tubes each, prefilled with 0.1, 0.5, 1.0, 1.5 and 3.0mm diameter beads, certified nuclease and protease free |
| <b>50mL Tubes:</b>              |                                                                                                                                                                  |
| IPD9600-50T                     | Adapter for 4 x 15/50ml tubes, set of 2                                                                                                                          |
| IPD9600-3858-1                  | Ceramic homogenizers w/angled ends, 3/8" x 5/8", pk of 100                                                                                                       |
| IPD9600-3878-1                  | Ceramic homogenizers w/angled ends, 3/8" x 7/8", pk of 100                                                                                                       |
| <b>Grinding Jars and Balls:</b> |                                                                                                                                                                  |
| IPD9600-25S                     | Stainless steel jar, 25ml, set of 2                                                                                                                              |
| IPD9600-10BS                    | Stainless steel grinding ball, 10mm, 500g                                                                                                                        |
| IPD9600-50BS                    | Stainless steel jar, 50ml, set of 2                                                                                                                              |
| IPD9600-25BS                    | Stainless steel grinding ball, 25mm, 500g                                                                                                                        |
| IPD9600-25TC                    | Tungsten carbide jar, 25ml, set of 2                                                                                                                             |
| IPD9600-10TCB                   | Tungsten carbide grinding ball, 10mm, each                                                                                                                       |
| IPD9600-35ZO                    | Zirconium oxide jar, 35ml, set of 2                                                                                                                              |
| IPD9600-15ZOB                   | Zirconium oxide grinding ball, 15mm, each                                                                                                                        |
| IPD9600-35PTFE                  | PTFE grinding jar, 35ml, set of 2                                                                                                                                |
| IPD9600-15PTFB                  | PTFE grinding ball, steel core, 15mm, each                                                                                                                       |
| IPD9600-CK                      | Cryo Kit, includes bucket, gloves, goggles and tongs, for use with liquid nitrogen                                                                               |

## Technical Data:

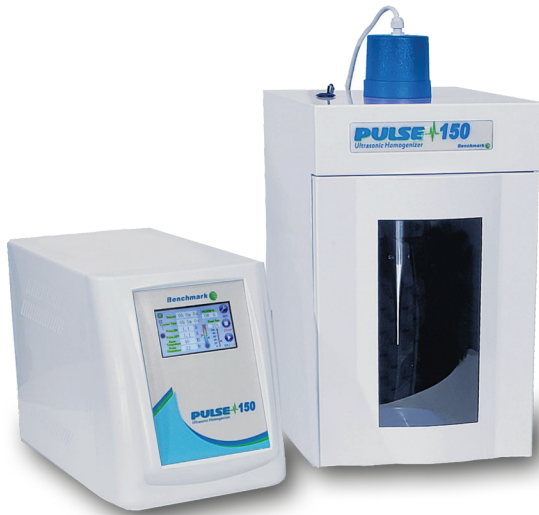
|                         |                                                      |
|-------------------------|------------------------------------------------------|
| Speed:                  | 0.00 to 0.00 m/s (180 to 1800rpm)                    |
| Speed Increments:       | 100rpm                                               |
| Capacity:               | 2 microplates, 8 x 50ml tubes, 64 x 2ml tubes        |
| Cycle Time:             | 1 sec. to 59min.: 59 sec. (1 sec. increments)        |
| Pause Between Cycles:   | 1 sec. to 59min.: 59 sec. (1 sec. increments)        |
| Max Cycles Per Program: | 99                                                   |
| Program Memory:         | 9                                                    |
| Feed Size:              | <10mm                                                |
| Final Fineness*:        | <5µm                                                 |
| Operating Temp. Range:  | +4°C to +40°C (ambient temp.)                        |
| Dimensions: (W x D x H) | 13.2 x 19.7 x 14.4 in. / 33.5 x 50 x 36.6 cm         |
| Weight:                 | 141 lbs (64kg)                                       |
| Electrical:             | Universal Voltage<br>120V to 220V, 50-60Hz, 200W, 6A |
| Warranty:               | 2 Years                                              |

\*Dependent on sample material and grinding configuration

Additional bead types are also available (in both bulk and prefilled kits). Please contact Benchmark for a complete listing.

\*Includes US plug. For EU plug, please add (-E).

# Pulse 150 Ultrasonic Homogenizer



- + Ideal for cell disruption, DNA shearing and ChIP assays
- + Programmable with touch screen control and pulsed operation
- + 150W, for volumes 0.1 to 150ml (requires appropriate horn)
- + Supplied complete with 6mm horn, temperature probe and soundproof enclosure

## Technical Data:

|                                      |                                            |
|--------------------------------------|--------------------------------------------|
| Power:                               | 1.5 - 150W, continuously adjustable        |
| Frequency:                           | 20 - 25kHz                                 |
| Cycle Time (pulse on/off):           | 0.1 - 99.9 sec.                            |
| Timer:                               | 1 sec. - 99 hrs.: 59 min., 59 sec.         |
| Duty Cycle:                          | 0.1 - 99.9%                                |
| Volume*:                             | 0.1 - 150ml                                |
| Program Memory:                      | 20 programs                                |
| Display/Control:                     | 4.3 in. full color touch screen            |
| Horn:                                | 6mm titanium (others available)            |
| Alarms:                              | no load, over load, end of run, over temp. |
| Controller:<br>(W x D x H)           | 12 x 18.5 x 16.9 in. / 30.5 x 47 x 43cm    |
| Controller Weight:                   | 35.3 lbs (16kg)                            |
| Soundproof Enclosure:<br>(W x D x H) | 13.8 x 13.8 x 21.7 in. / 35 x 35 x 55cm    |
| Soundproof Enclosure weight:         | 22 lbs (10kg)                              |
| Electrical:                          | 120V or 230V, 50-60 Hz                     |
| Warranty:                            | 2 years                                    |

\*Volume dependent upon the installed horn. Supplied with 6mm horn for volumes 10 - 100ml.

The Pulse 150™ Ultrasonic Homogenizer uses cavitation and ultrasonic waves to break cells in suspension, shear DNA and prepare samples for ChIP assays. With up to 150 watts of power, the unit can process samples from 0.1ml to 150ml.

All components needed for homogenization are included with the Pulse 150 - a controller, transducer, temperature probe, 6mm diameter titanium alloy horn and wrenches to change horns. A soundproof box with sample platform is also supplied as standard. The box helps to reduce the noise generated by the sonicator.

## Ordering Information:

| Item No. | Description:                                                                                              |
|----------|-----------------------------------------------------------------------------------------------------------|
| DP0150*  | Pulse 150 Ultrasonic Homogenizer, complete with controller, transducer, 6mm horn and soundproof enclosure |
| DP0150-2 | Horn, 2mm diameter, for 0.1 - 5ml                                                                         |
| DP0150-3 | Horn, 3mm diameter, for 3 - 10ml                                                                          |
| DP0150-6 | Horn, 6mm diameter, for 10 - 100ml (included)                                                             |
| DP0150-8 | Horn, 8mm diameter, for 25 - 150ml                                                                        |

\*115V with US plug. For EU plug, please add -E to cat no.

# BenchMasher™ 400



- + Contamination free homogenizing of large samples
- + Adjustable stroke length
- + Built in UV light for chamber decontamination
- + Touch screen control with variable mixing speed and temperature up to 65°C
- + Ideal for recovery of intact microorganisms in food and environmental samples

## Ordering Information:

| Item No.       | Description:                                                       |
|----------------|--------------------------------------------------------------------|
| IPD4400*       | BenchMasher™ 400 Paddle Blender                                    |
| IPD4400-B400   | 400ml x 60µm, 300 x 180mm, 500pk.                                  |
| IPD4400-B400F1 | 400ml x 70µm with lateral (side) nylon filter, 300 x 190mm, 500pk. |
| IPD4400-B400F2 | 400ml x 70µm with full nylon filter, 300 x 190mm, 500pk.           |

\*115V with US plug. For EU plug, please add -E to cat no.

Thorough sample homogenization

