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NEW & BEST

**LABORATORY EQUIPMENT AND SUPPLIES  
FOR RESEARCH AND PROCESS**

# Cole-Parmer

## Delivering lab essentials to move science forward.

Cole-Parmer, an Antylia Scientific company, is a trusted global leader in laboratory essentials. We deliver a portfolio of reliable equipment and consumables to help speed scientific discovery in life sciences, clinical, academic and research laboratories. Since 1955, we have been known for our knowledgeable team of scientific experts who are devoted to providing one-on-one guidance in product selection, usage, and troubleshooting, enabling laboratories to run efficiently throughout the world. We provide a true one-stop-shop supply chain solution by curating a portfolio of unique industry-leading brands. Cole-Parmer is a division of Antylia Scientific, an operating company of premier life science and diagnostic brands, including Cole-Parmer, Environmental Express, and ZeptoMetrix.

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# Calibration keeps your lab in compliance, measuring accurately, and running consistently.

Cole-Parmer offers a wide range of calibration and maintenance services for your laboratory equipment with our in-house InnoCal® metrology lab, and now nationwide on-site services through our partnership with AL-TAR.

	
<b>Mail-In Calibration &amp; Recalibration</b>	<b>On-Site Calibration &amp; Recalibration</b>
<p><i>Ideal for:</i></p> <ul style="list-style-type: none"> <li>• Smaller, portable, or handheld equipment</li> <li>• Equipment subject to regulatory compliance standards, such as needing a calibration certificate accurate in accordance with National Institute of Standards and Technology (NIST) standards</li> </ul>	<p><i>Ideal for:</i></p> <ul style="list-style-type: none"> <li>• Large, heavy, or highly sensitive equipment that is difficult to move</li> <li>• Equipment subject to regulatory compliance standards, such as IQ/OQ/PQ and calibration with NIST-traceable standards</li> </ul>
<p><i>Examples:</i></p> <p>Data Loggers, Temperature Measurement Devices, Hygrometers, Tachometers, and more</p>	<p><i>Examples:</i></p> <p>Incubators, Autoclaves, Ovens, Freezers, and more</p>
<p><i>Solution:</i></p> <ul style="list-style-type: none"> <li>• Shop calibration services online with InnoCal, our ISO 17025-accredited calibration provider</li> <li>• Visit <a href="http://coleparmer.com/calibration-services">coleparmer.com/calibration-services</a> or call 1.866.INNOCAL (1.866.466.6225) to learn more</li> </ul>	<p><i>Solution:</i></p> <ul style="list-style-type: none"> <li>• Select and purchase flat-rate on-site services from Cole-Parmer and our partner, AL-TAR</li> <li>• Visit <a href="http://coleparmer.com/on-site-services">coleparmer.com/on-site-services</a> or call 1.800.323.4340 to learn more</li> </ul>



# Sample Preparation

At the heart of every successful experiment is the quality of your sample preparation. We offer a wide array of homogenizers, grinders, and mills.

## HG-400 MiniG® Homogenizer

Vigorous clamp movement results in increased yields

- Consistent vertical motion of the clamp ensures equal conditions for all samples
- Adjustable clamp assembly easily secures vials or microplates of various sizes; order inserts separately
- Digital display allows for control of the rate and time
- Observation window in lid lets you view the grinding process
- To preserve your temperature-sensitive samples, cryogenic accessories are available online

The ideal solution for labs that want a compact yet powerful tissue homogenizer and cell lyser. Using the bead beating method, The HG-400 MiniG is designed for rapid cell disruption, cell lysis, and tissue homogenization. The adjustable clamp can handle sample vials from 2 mL to 50 mL or up to two deep-well microplates. Order interchangeable inserts, vials, and grinding media separately.

Speed	Motor	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
500 to 1500 rpm	½ hp	28.6 x 54.6 x 43.2 cm (11.3" x 21.5" x 17")	115/230, 50/60	<b>PV-04500-08</b>

**PV-61031-50 Foam block** holds 24 x 2-mL vials. Set of 2

**PV-04500-12 Foam block** holds 24 x 5-mL vials. Set of 2

**PV-04575-38 Foam block** holds 12 x 15-mL centrifuge tubes

**PV-04500-14 Foam block** holds 6 x 50-mL centrifuge tubes

**PV-04500-15 Nesting plate insert** holds 1 titer plate



### Typical applications:

tissue homogenization, DNA/RNA research and extraction, cell lysis, protein extraction, biofuel research, pesticide residue extraction using QuEChERS or the SweEt method

### Typical samples:

animal tissue, plant tissue, cell cultures, fruit, cannabis, seeds, yeast, and bacteria

## HG-250 GenoLyte® Temperature-Controlled Homogenizer

Cool samples without freezing

- Sample temperature is maintained between 0 to 10 °C throughout the run
- Easily connect cooling system
- Digital control panel lets you set speed, run times, and run/rest cycles

This efficient, compact laboratory homogenizer uses a circulating chiller to maintain sample temperatures while effectively disrupting cellular materials by horizontally oscillating vials. The chamber accommodates most standard 2-mL vials; order vials and grinding media separately. Complete bundle includes HG-250 homogenizer, Cole-Parmer refrigerated/heating circulating bath (120 VAC, 60 Hz), and chiller hose.

Speed	Motor	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
Fixed; 2000, 2500, 3000 rpm	½ hp	38.0 x 20.5 x 30 cm (15" x 8" x 11")	115/230, 50/60	<b>PV-41056-97</b>



### Typical applications:

DNA/RNA research and extraction, protein extraction, tissue homogenization, and cell lysis

### Typical samples:

animal tissue, plant tissue, cell cultures, bacteria, and yeast

## HG-200 GenoLyte® Compact Homogenizer

Ideal for small-scale sample preparation

- High-intensity oscillating motion homogenizes samples in seconds
- Keep an eye on the grinding process with the clear lid for viewing
- Interchangeable vial holders (order separately) handle a range of vial sizes from 2 to 12 mL
- Clamp orientation makes it easy to load and unload samples
- Safety interlock switch stops the motor if the lid is opened during homogenization
- Digital display screen with rate and timer

This multipurpose mill is designed to effectively disrupt cellular material through bead beating, and can also be used to pulverize the toughest rocks and minerals, rapidly reducing samples to analytical fineness, blending powders, and making emulsions. Order interchangeable vial holders, vial sets, and grinding media separately.



**Typical applications:** tissue homogenization, DNA/RNA research and extraction, cell lysis, protein extraction, and biofuel research

**Typical samples:** animal and plant tissue, cell cultures, bacteria, yeast, and stool

Speed	Motor	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
Fixed; 750, 2000, 3000, 4000 rpm	½ hp	38.0 x 20.5 x 30 cm (15" x 8" x 11")	115/230, 50/60	<b>PV-04500-05</b>

**PV-04500-06 Vial holder** for 6 x 2-mL vials

**PV-04500-07 Vial holder** for 4 x 5-mL vials

**PV-04575-35 Vial holder** for 1 x 12-mL vial

Go online for complete product information and accessories

## HG-600 Geno/Grinder® High-Throughput Homogenizer

Fast and efficient homogenization

- Double-locking lid provides safe operation
- Sound insulation and suspension system ensure quiet, vibration-free operation
- Fully adjustable clamp allows simple front loading of vials or microplates
- Interior LED lighting and large observation window improve sample visibility
- Password-protected, programmable control screen tilts for optimal viewing angle
- To preserve your temperature-sensitive samples, cryogenic accessories are available online

The HG-600 Geno/Grinder high-throughput homogenizer lets you process samples with or without reagents in approximately 60 seconds or less. An adjustable clamp features unique vigorous vertical grinding motion allowing increased reproducibility, superior extraction efficiency, and consistency of every sample.



**Typical applications:** tissue homogenization, DNA/RNA research and extraction, cell lysis, pesticide residue extraction, protein and metabolite extraction, biofuel research, and QuEChERS

**Typical samples:** animal tissue, plant tissue, cell cultures, fruit, cannabis, seeds, yeast, and microorganisms

Clamp speed	Motor	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
Adjustable from 500 to 1750 strokes/minute	½ hp	35.6 x 71.1 x 57.2 cm (14" x 28" x 22.5")	115, 50/60	<b>PV-04500-17</b>

**PV-04500-23 Foam block** holds 48 x 2-mL vials

**PV-04500-25 Foam block** holds 48 x 5-mL vials

**PV-04576-89 Foam block** holds 24 x 12-mL vials

**PV-04575-62 Foam block** holds 24 x 15-mL tubes

**PV-04500-27 Foam block** holds 16 x 50-mL tubes

**PV-61197-01 Foam block** holds 30 x 50-mL tubes

## HO-200 Series Tissue Homogenizer

Ergonomically designed to reduce hand strain

- Lightweight and powerful motor ideal for small samples
- Use as a handheld unit or post-mount to optional stand for hands-free operation
- Stainless steel probes are ideal for larger samples; available online
- Disposable plastic tip probes are ideal for when cross-contamination may be of concern
- Includes tip adapter and two disposable plastic probes



Sample size	Speed	Power	Item number
0.05 to 100 mL	5000 to 30,000 rpm	115 VAC, 60 Hz	<b>PV-04727-01</b>

**PV-04727-84 Plastic tip probe** for hard tissue, 0.25 to 50 mL, 25/pk

**PV-04727-86 Plastic tip probe** for soft tissue, 0.25 to 50 mL, 25/pk

## HO-400 Series Laboratory Homogenizer

Process virtually any laboratory sample in seconds

- Powerful 850-watt motor processes samples up to 5 L
- Digital, programmable speed and time controls
- Use as a handheld unit or post-mount to optional stand for hands-free operation
- Accepts either stainless steel rotor-stator generators or disposable plastic probes



Sample size	Speed	Power	Item number
0.2 to 5000 mL	5000 to 25,000 rpm	110 VAC, 60 Hz	<b>PV-04727-28</b>

**PV-04727-43 Stainless steel rotor-stator generator**, 100 to 2000 mL, 195 x 20 mm, saw-tooth end

**PV-04727-45 Stainless steel rotor-stator generator**, 200 to 5000 mL, 195 x 30 mm, flat-bottom end

**PV-04727-89 Lab stand** with support rod

## HO-600 Digital Handheld Tissue Homogenizer

Get accurate, repeatable results

- Integrated digital speed display ensures consistent results; accurate to  $\pm 0.5\%$
- On-board memory stores last set speed
- 40-watt motor maintains speed throughout the cycle, regardless of fluctuations in sample size or viscosity
- Use as a handheld unit or mount to a stand for longer operation time
- Bayonet probe mounting system features fast release



Sample size	Speed	Power	Item number
<0.2 to 120 mL	8000 to 32,000 rpm	100 to 240 VAC	<b>PV-78904-71</b>

**PV-78904-75 Stainless steel rotor-stator generator**, 0.2 to 5 mL, 75 x 5 mm, flat-bottom end

**PV-78904-76 Stainless steel rotor-stator generator**, 0.2 to 5 mL, 110 x 7 mm, saw-tooth end

**PV-78904-77 Stainless steel rotor-stator generator**, 1.5 to 100 mL, 110 x 10 mm, saw-tooth end

## HOA-600 Benchtop Automated Homogenizer Package

Simultaneously homogenize up to six samples in a single process

- Accommodates tube sizes from 1.5 to 50 mL
- Microprocessor control lets you program both time and speed for processing up to 10 minutes at variable speeds up to 30,000 rpm.
- Oscillating motion ensures the generator probes move through the entire tube volume for complete homogenization of each sample
- Motor holds processing speed to  $\pm 1\%$  to ensure reproducibility and accuracy across all samples



Go to [coleparmer.com](http://coleparmer.com) and search for item number **78904-72** or contact our highly trained product experts to customize your package.

## Ultrasonic Processors

100% microprocessor controlled and programmable, ensuring adherence to the most exacting protocol

### 130-Watt Ultrasonic Processors

Ideal for your low-volume applications—from 150 µL to 150 mL

- Automatic amplitude compensation ensures uniform probe amplitude regardless of varying load conditions
- Pulsar feature provides greater control of sample processing and mixing by repeatedly allowing samples to settle back under probe after each burst
- Built-in probe rests help keep everything close at hand
- Supplied with titanium probe and tip

**Model 04714-50** features a timer that controls the processing time from 1 second to 10 hours and an independent on/off pulsar to enable safe treatment of temperature-sensitive samples at high intensity.

**Model 04714-52** incorporates a pulsing button directly on the handpiece; run continuously or in the pulse mode when the button is depressed.



### 500- and 750-Watt Ultrasonic Processors

Process batch samples as small as 250 µL or as large as 1000 mL

- Exclusive energy (joules) monitor provides the most accurate method to reproduce results
- Tactile keypad, menu-driven display, and simple function keys combine for a user-friendly system
- Timer controls processing from 1 second up to 10 hours and monitors both the elapsed time and duration of processing
- On/off independent pulsar helps prevent overheating
- Variable power output control allows the ultrasonic vibrations at the probe tip to be set to any desired amplitude with on-screen display of output level
- Compact size—fits on any laboratory's existing bench space
- Supplied with converter 13-mm (½") dia probe with replaceable tip

**Models 04711-30 and 04711-40** also feature a temperature controller and memory. The integrated temperature controller prevents harmful sample overheating by terminating the ultrasonics when the sample reaches a predetermined temperature (set from 1 to 100 °C); order temperature probe separately below. Time-saving memory stores up to ten procedures to facilitate protocol duplication, automate repetitive tasks, and eliminate user-to-user method variability for consistent reproducibility.



Description	Sample volume	Dimensions (W x H x D)	Power	Item number
130-watt processor with full function pulsar and timer	150 µL to 150 mL	24.8 x 8.9 x 31.8 cm (9¾" x 3½" x 12½")	115 VAC, 50/60 Hz	<a href="#">PV-04714-50</a>
130-watt processor with probe with thumb pulse button				<a href="#">PV-04714-52</a>
500-watt processor with timer	250 µL to 1000 mL	19.1 x 21.6 x 34.3 cm (7½" x 8½" x 13½")		<a href="#">PV-04711-70</a>
500-watt processor with timer, temperature controller, and memory				<a href="#">PV-04711-30</a>
750-watt processor with timer, temperature controller, and memory				<a href="#">PV-04711-40</a>

**PV-04711-50 Stainless steel temperature probe** for models 04711-30 and -40

**PV-04712-92 Stand for all models;** 61 cm H (24") x 13 mm dia (½") stainless steel rod and 22.9 cm L x 14.0 cm W (9"L x 5½"W) cast-iron base

**PV-04714-90 Converter clamp** for 130-watt models. Secures converter onto a 13-mm (½") dia rod

**PV-04714-91 Converter clamp** for 500- and 750-watt models. Secures converter onto a 13-mm (½") dia rod

**PV-04712-05 Foot switch** for all models. Provides hands-free operation; with 1.8-m (6-ft) cable

## Freezer/Mill® Cryogenic Grinders

Makes samples brittle and easier to grind without thermal degradation

- Continuous cooling of samples with liquid nitrogen produces finer ground particles for better particle uniformity and increased production rates
- Intuitive color LCD touch screen panel controls the grinding cycles, grinding time, impact rate as well as pre-cooling and cooling times
- Maintenance-free design with magnetic grinding mechanism and no mechanical moving parts

Some samples are impossible to grind at ambient temperatures. The Freezer/Mill is a programmable cryogenic mill specifically designed for grinding and pulverizing those tough or temperature-sensitive samples.

Samples are placed in a sealed grinding vial then immersed in liquid nitrogen (LN) until cooled to cryogenic temperatures, and then pulverized by magnetically shuttling a steel impactor back and forth against two stationary end plugs. Since the vials are sealed, the integrity of sample contents is maintained. Volatile compounds are retained, hazardous or critical samples are easily controlled, cleanup is simplified, and cross-sample contamination is eliminated.

Each Freezer/Mill has an insulated nitrogen tub with liquid nitrogen level sensor, insulated case, and lid safety interlock switch for user protection (liquid nitrogen required for operation). Model CG-500 with dual pre-cooling chambers keeps samples at the appropriate temperature while other samples are grinding.

**Typical applications:** DNA/RNA extraction, forensic/drug testing, RoHS/WEEE, consumer product testing, food safety, materials research, and medical research

**Typical samples:** animal tissue, plastic and polymers, yeast cultures, pharmaceuticals, tough or sticky food products, electronic components, textiles, hair, teeth, bones, plant tissue, cannabis, and packaging



CG-400  
Freezer/Mill



CG-200  
Freezer/Mill

Sample Types  
Include



Plastics & Polymers



Animal Tissue



Pharmaceuticals



Cannabis



Yeast

Go online for complete product information and accessories

Description	Capacity	No. of tubes held	Dimensions (L x W x H)	Power	Item number
CG-200 Freezer/Mill small cryogenic grinder	0.1 to 5 g	1) small vial or (1) microvial set	48.0 x 27.0 x 32.0 cm (19" x 10.5" x 12.75")	115 VAC, 60 Hz	PV-04500-39
CG-400 Freezer/Mill large cryogenic grinder	0.1 to 100 g	(1) large, (1) mid-size, (4) small vials, or (1) microvial set	52.0 x 55.0 x 46.0 cm (20.5" x 21.5" x 18")		PV-04500-40
CG-450 Freezer/Mill large cryogenic grinder with liquid nitrogen autofill	0.1 to 100 g	(1) large, (1) mid-size, (4) small vials, or (1) microvial set			PV-04500-41
CG-500 Freezer/Mill high-capacity dual-chamber cryogenic grinder with liquid nitrogen autofill	0.1 to 200 g capacity (0.5 to 100 g per chamber)	(2) large, (2) mid-size, (8) small vials, or (2) microvial set	50.8 x 54.6 x 64.8 cm (20" x 21.5" x 25.5")		PV-04500-42



## CG-900 Cryo-Blade™ Cryogenic Grinder

Breakthrough, automated processing from bulk to test portions in 15 minutes or less

- **High-throughput**—process up to 1 kg of sample per run
- **Efficient**—complete a method in 15 minutes or less
- **Versatile**—when liquid nitrogen is not available or desired, you can use dry ice instead \*
- **Safe**—automated dispensing of liquid nitrogen eliminates the handling and manipulation of liquid nitrogen (patent pending)

The Cryo-Blade is an ultra high-capacity cryogenic grinder for comminution and processing capability of up to 1 kg of sample. The Cryo-Blade automatically dispenses liquid nitrogen to allow the sample to reach cryogenic temperatures and then activates a grinding phase to pulverize samples, resulting in repeatable and reproducible sample preparation. No liquid nitrogen handling is required. The unit handles an extensive range of both dry and wet samples from watermelon to the toughest of samples such as muscle tissue.

Automatic and programmed modes are available. In automatic mode, parameters are set based on the volume of the sample. Programmed mode allows you to save up to 10 methods. The intuitive interface includes 12 languages.

The insulated outer bowl, mechanical locking lever, and sensors provide a safe, consistent, and reliable sample each use. The removable 5-L inner bowl accommodates sample volume up to 1 kg and allows samples to be stored in the freezer, giving you the option of using a second bowl to prepare a new batch. The outer bowl is insulated to allow safe touch at all times, although it is recommended you use protective gloves.

Includes Cryo-Blade unit, insulated outer bowl, inner bowl, cryo-processor lid with blade, and USB memory stick.

\*Cycle can be executed in 15 minutes when using liquid nitrogen; 30 minutes when using dry ice.



**Typical applications:** analysis of organic pollutants in food products (pesticide residues), and QuEChERS

**Typical samples:** fruits, vegetables, seeds, cannabis, stalks, roots, fungi, flowers, and animal tissue



Sample volume	Max grinding speed	Mixing speed	Dimensions (L x W x H)	Power	Item number
1 kg	3600 rpm	180 rpm	91.4 x 68.6 x 101.6 cm (36" x 27" x 40")	115 VAC	PV-61211-71

**PV-61211-70 Additional inner bowl**

Go online for complete product information and accessories

## More Sample, Less Time, Better Yield

## BM-200 Mini Mixer/Mill® Compact Ball Mill

### Small but powerful

- Ideal for pulverizing dry, hard, brittle samples, slurry grinding
- High-intensity oscillating motion mills samples to analytical fineness (<50 µm) in just seconds
- Intuitive programmable control panel includes rate, run time, and pause functions
- Four speeds over the 750 to 3500 rpm range for slow-speed mixing to high-speed milling for tough samples
- Safety interlock stops the motor if the lid is opened during the homogenization process
- Clear lid lets you view your sample being processed

The BM-200 Mixer/Mill is an efficient, compact laboratory mill designed for small-scale sample preparation. Finely ground samples provide increased surface area which improves acid dissolution for ICP and pellet pressing or fusion bead for XRF. Functionally described as a ball mill, this Mixer/Mill shakes containers back and forth thousands of times per minute. It is very effective for pulverizing samples from 0.25 to 1.5 g, or mixing product samples with volumes up to 3 mL. Order interchangeable vial holders and vial sets separately. A comprehensive selection of accessories is available online.

Speed	Motor	Dimensions (L x W x H)	Power (VAC, Hz)	Item number
Fixed; 750, 2000, 3000, or 3500 rpm	½ hp	38.0 x 20.5 x 30.0 cm (15" x 8" x 11")	115/230, 50/60	<b>PV-04576-27</b>



**Typical applications:** size reduction, nanomilling, powder blending, emulsion, and slurry grinding

**Typical samples:** rocks, minerals, cement, soil, and ceramic

Go online for complete product information and accessories

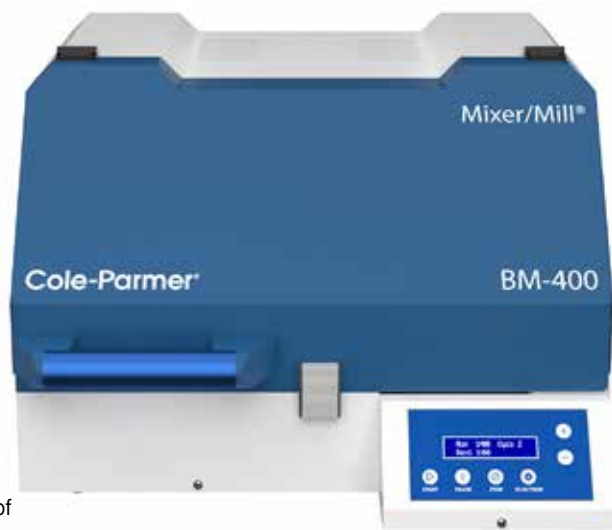
## BM-400 Series Mixer/Mill® High-Energy Ball Mills

### Pulverize the toughest samples from 0.5 to 25 g

- Equipped with forced-air cooling and safety interlock system for operator protection
- Steel housing protects the clamp mechanism and rugged construction ensures a long life of heavy use
- Shock-mounted motor enables benchtop operation
- Digital control panel displays rest and run times, cycles, and mode; programmable 100-minute timer
- Adjustable clamp accepts vials in various materials to effectively grind all sample types

Functionally described as a shaker or a high-energy ball mill, the BM-400 and BM-450 Mixer/Mill is available with a single clamp, or dual clamps for double capacity. The vial, containing the sample and grinding media, is secured in the clamp and moved vigorously back and forth. The back-and-forth shaking motion is combined with lateral movements of the ends of the vial, so that the vial appears to be moving in a figure-8 pattern. Because of the amplitude and velocity of the clamp's movement, each ball develops high G-forces, enough to pulverize the toughest rocks, slag, and ceramics to analytical fineness (<50 µm). Order grinding vial and jar sets separately.

Model	Max speed	Motor	Dimensions (L x W x H)	Power (VAC, Hz)	Item number
BM-400 Single clamp	1725 rpm	½ hp	53.0 x 56.0 x 36.0 cm (21" x 22" x 14")	115, 60	<b>PV-04578-12</b>
BM-450 Dual clamp			64.0 x 54.0 x 36.0 cm (25" x 21" x 14")		<b>PV-04578-10</b>



**Typical applications:** nanomilling, slurry grinding, blending powders, and mixing emulsions. It is also very effective for mechanical alloying or mechanochemistry

**Typical samples:** rocks, minerals, soil, sand, cement, ores, slag, ceramics, catalyst supports, glass, pharmaceuticals, and paints

## BM-600 Planetary Ball Mill

Unique, easy-to-operate jar clamping system for one 250-mL or one 500-mL grinding jar

- Programmable touch screen interface capable of storing up to 10 run protocols
- Ergonomic design makes loading a grinding jar into the mill easy
- Equipped with forced-air cooling and safety interlock system for operator protection
- Accepts hardened steel or stainless steel jars; order separately

The BM-600 planetary ball mill is capable of rapidly rotating a container in a circular motion several hundred times a minute. This multipurpose mill can rapidly reduce hard and brittle samples from 50 to 225 g to analytical fineness (<50 µm), blend powders, or make emulsions. The mechanical milling is performed at a 2:1 ratio causing the container to rotate twice for every single rotation of the sun wheel. Order grinding jars and media separately.

**Typical applications:** size reduction, nanomilling, powder blending, emulsion, and slurry grinding

**Typical samples:** rocks, minerals, sand, cement, slag, ceramics, glass, and pharmaceuticals



Sample capacity	Speed	Motor	Dimensions (L x W x H)	Power (VAC, Hz)	Item number
50 to 100 g in 250-mL jar; 100 to 225 g in 500-mL jar	300 to 600 rpm	1.5 hp	48 x 70 x 61 cm (19 x 27.5 x 24")	115, 60	PV-04900-16

Go online for complete product information and accessories

## SM-300 ShatterBox® Ring and Puck Mill

Grind your samples with minimal loss in a soundproof enclosure

- Efficiently pulverize up to 150 grams of brittle material to analytical fineness (<50 µm)
- Grinding times range from 2 to 5 minutes, with resultant particle size under 100 µm
- LCD touchscreen with easy navigation and real-time monitoring of clamping force
- Automated locking dish and guided dish positioning with an automatic elevation of the dish for easy operation
- Store up to 10 customizable grinding programs
- Electronically controlled, fully reproducible grinding methods with Ethernet capabilities
- Robust IP65-rated industrial interface, modular electronics, and steel cabinet

This versatile ring and puck mill can crush and grind many types and sizes of samples with minimal sample loss and increased safety. The ShatterBox swings a dish-shaped grinding container, with a puck and (often) a ring inside, in a tight high-speed circle; the sample is quickly crushed between the wall and floor of the container and the moving puck/ring grinding elements.

The SM-300 model has many advanced features, including industrial design, user friendly touch-screen interface, variable run speed, ergonomic dish loading platform, automated locking clamp, a safety-interlocking door, and lockable casters making the large more industrial mill easy to move from one laboratory to another.

The versatility of sample containers allows for grinding within smaller dishes without the ring as well as the ability to increase sample sizes and capacity. ShatterBox 8550 accepts a grinding container with or without a handles; order separately.

Speed	Motor	Dimensions (L x W x H)	Power (VAC, Hz)	Item number
800 to 1200 rpm (1050 rpm max for tungsten carbide dish)	½ hp	67.5 x 66.0 x 138.0 cm (26.6" x 26" x 54.3")	115, 60	PV-41010-83



**Typical applications:** reduction, nanomilling, powder blending, emulsion, and slurry grinding

**Typical samples:** cement, superalloy, granite, glass, sand, slag, ceramics, seeds, grains, pigments, and catalyst supports

# Hot Plates & Stirrers

From mini to multiposition to large-capacity, we have the model to meet your lab's stirring and heating needs.

Find more at [coleparmer.com/stirrers](http://coleparmer.com/stirrers)



## ST-200 Series Modular Magnetic Stirrer

Create any configuration you need

- Easily configure your system by joining up to 10 stir plate modules via USB connection or included cable
- Control module features speed display, reverse stirring mode, and timer
- Top plate is corrosion-resistant glass and measures 9.2 cm (3.6") dia
- Each stir plate module accommodates up to 1 L



Description	Speed	Timer	Power (VAC, Hz)	Item number
Kit (1 control module and 4 stir plates)	100 to 1500 rpm	0 to 9 hrs	100 to 240, 50/60	<b>PV-84003-80</b>

**PV-84003-82** Additional stir plate module

## ST-200 Series Ultra-Thin Magnetic Stirrer

Ultra-slim design saves valuable space

- Advanced magnetic coil technology provides quiet, wear-free operation with no moving parts
- Use simple touch-and-slide bar to set stirring speed and timer
- LCD displays real-time parameters
- Reverse stirring mode allows for thorough mixing
- Set built-in timer for up to 9 hours or continuous operation



Top plate	Speed	Max stirring load	Power (VAC, Hz)	Item number
Polyester, 10 cm (4") dia	20 to 1500 rpm	1 L	100 to 240, 50/60	<b>PV-84003-71</b>

## 200 Series Undergrad Hot Plates, Stirrers, and Stirring Hot Plates

Built with tough aluminum casing for longevity

- Compact, stackable design takes up less benchtop and storage space
- Hot warning light remains on even when unplugged
- BioCote® antimicrobial protection is built in for a cleaner, more hygienic product
- Designed to prevent accidental spillage on control panel
- IP32 rated for water and dust resistance

### Safety in Design

For safety, all units are designed to direct spills away from the user controls. Using the latest technology and microprocessor-controlled dual thermocouples, hot plates offer you accurate temperature control and protection from overheating. The “Hot” warning light flashes when the hot plate surface reaches 50 °C keeping personnel safe from accidental burns.

### Power in Performance

Powerful magnets and motors provide you with stirring speeds to 2000 rpm and mixing of large volumes of liquids up to 15 L.

### Choice of Surfaces

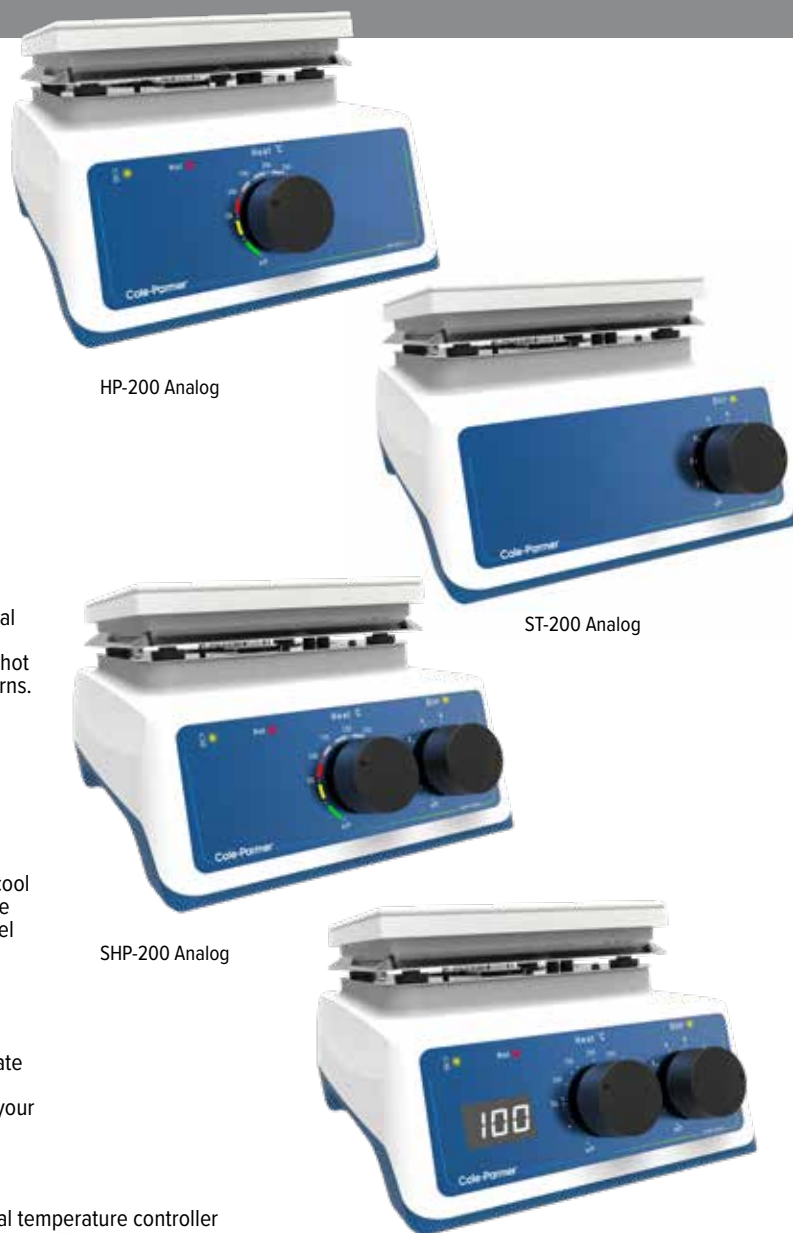
The glass ceramic plate is chemical resistant, easy to clean, and stays cool around the edges to help prevent burns. The coated aluminum top plate provides rapid heating and better temperature uniformity. Stainless steel plate ensures strong coupling to stir bar.

### Temperature Indication

Analog hot plates feature a true temperature indicator—the LED ring surrounding the control knob progressively illuminates, showing the plate temperature increasing in real time. Digital hot plates clearly show the surface temperature while in use, allowing you to keep a close eye on your parameters.

### Optional Temperature Controller

Together with your Undergrad hot plate or stirring hot plate, the optional temperature controller ensures accurate control of sample fluids up to 200 °C with ±0.5 °C accuracy. The controller is automatically detected when plugged in and features a PT100 stainless steel probe.



HP-200 Analog

ST-200 Analog

SHP-200 Analog

SHP-200 Digital

Top plate		Heating	Stirring		Power (VAC, Hz)	Item number
Dimensions	Material	Temp range	Speed range	Max load		
<b>HP-200 Series Undergrad Analog Hot Plates</b>						
15 x 15 cm (6" x 6")	Glass ceramic	450 °C	—	—	120, 60	PV-04807-51
	Coated aluminum	325 °C				PV-04807-53
<b>ST-200 Series Undergrad Analog Stirrers</b>						
15 x 15 cm (6" x 6")	Glass ceramic	—	100 to 2000 rpm	15 L	120, 60	PV-04807-55
	Stainless steel					PV-04807-57
<b>SHP-200 Series Undergrad Analog Stirring Hot Plates</b>						
15 x 15 cm (6" x 6")	Glass ceramic	450 °C	100 to 2000 rpm	15 L	120, 60	PV-04807-59
	Coated aluminum	325 °C				PV-04807-61
<b>SHP-200 Series Undergrad Digital Stirring Hot Plates</b>						
15 x 15 cm (6" x 6")	Glass ceramic	450 °C	100 to 2000 rpm	15 L	120, 60	PV-04807-63
	Coated aluminum	325 °C				PV-04807-65

**PV-04807-90** Temperature controller for HP-200 and SHP-200 units

**Please note:** BioCote® technology does not protect users or others against disease causing bacteria, germs, viruses, or other harmful organisms. This technology is not a substitute for good hygiene and/or cleaning practices.



Optional temperature controller

# Shakers & Mixers

From blending small samples inside tubes, flasks, and dishes to mixing liquid batches up to 380 liters, we have what you need.

Find more at [coleparmer.com/shakers](http://coleparmer.com/shakers)  
[coleparmer.com/mixers](http://coleparmer.com/mixers)

## TR-200 Series Tube Rotators

Keep cultures in suspension without compromising viability

- Adjustable angle of rotation from horizontal for minimal mixing to vertical for full end-over-end mixing
- Safe for use in cold rooms down to 4 °C and incubators to 40 °C
- Order a tube holder disc to fit your application; more available online



Rotator shown with disc 00077-15

00077-11

00077-13

Speed	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
2 to 40 rpm	22.5 x 29.0 x 31.0 cm (8 <sup>7</sup> / <sub>16</sub> " x 11 <sup>7</sup> / <sub>16</sub> " x 12 <sup>1</sup> / <sub>4</sub> " )	120, 60	<a href="#">PV-51901-29</a>
		230, 50	<a href="#">PV-51901-28</a>

- PV-00077-11** Microcentrifuge tube holder disc holds 46 x 1.5-mL tubes  
**PV-00077-13** Centrifuge tube holder disc, holds 12 x 50-mL tubes  
**PV-00077-15** Test tube holder disc holds 20 x 9–20 mm dia tubes

## RS-200 Series Roller Shakers

Gentle rocking and rolling action with little aeration

- Roller tubes can be detached to accommodate larger vessels
- Safe for use in cold rooms down to 4 °C and incubators to 40 °C
- Removable side panels ensure sample bottles stay in place
- Digital models feature a timer from 1 second to 9 hours



RS-200 Analog

RS-200D Digital

No. of rollers	Speed	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
<b>RS-200 Analog Roller Shakers</b>				
6	33 rpm, fixed	26.0 x 11.5 x 61.0 cm (10 <sup>1</sup> / <sub>4</sub> " x 4 <sup>1</sup> / <sub>2</sub> " x 24")	120, 60	<a href="#">PV-51901-19</a>
		38.0 x 11.5 x 61.0 cm (15" x 4 <sup>1</sup> / <sub>2</sub> " x 24")	230, 50	<a href="#">PV-51901-18</a>
9		38.0 x 11.5 x 61.0 cm (15" x 4 <sup>1</sup> / <sub>2</sub> " x 24")	120, 60	<a href="#">PV-51901-21</a>
			230, 50	<a href="#">PV-51901-20</a>
<b>RS-200D Digital Roller Shakers</b>				
6	5 to 60 rpm	26.0 x 11.5 x 61.0 cm (10 <sup>1</sup> / <sub>4</sub> " x 4 <sup>1</sup> / <sub>2</sub> " x 24")	120, 60	<a href="#">PV-51901-23</a>
		38.0 x 11.5 x 61.0 cm (15" x 4 <sup>1</sup> / <sub>2</sub> " x 24")	230, 50	<a href="#">PV-51901-22</a>
9		38.0 x 11.5 x 61.0 cm (15" x 4 <sup>1</sup> / <sub>2</sub> " x 24")	120, 60	<a href="#">PV-51901-25</a>
			230, 50	<a href="#">PV-51901-24</a>

## SH-200 Series Large Orbital Shaker

Versatile—accommodates different sizes of vessels

- Smooth orbital shaking action with 16-mm orbit is ideal for larger samples and multiwell plates
- Built-in timer and digital speed LED display provide reproducible results
- Maintains consistent shaking speeds, even over long periods of time
- Suitable for use in incubators to 40 °C
- Cradle system with four rubber securing bars hold flasks, bottles, and beakers securely in place



Speed	Dimensions (W x H x D)	Power (VAC, Hz)	Item number
30 to 300 rpm	39.0 x 27.5 x 45.0 cm (15 <sup>3</sup> / <sub>8</sub> " x 10 <sup>7</sup> / <sub>8</sub> " x 17 <sup>3</sup> / <sub>4</sub> ")	120, 60	<a href="#">PV-51901-01</a>
		230, 50	<a href="#">PV-51901-00</a>

We offer a variety of laboratory shakers to provide you with the exact shaking motion you require.

Orbital • Reciprocating • Hand motion • Rocking  
• See-Saw • Gyrotary • Rotating • Vortex

## OS-200 Series Ultra-Compact Digital Mixer

Compact yet dependable

- Perfect for smaller-scale mixing needs throughout your lab
- Mixes up to 2 liters of water at maximum speed of 2500 rpm
- Brushless DC motor is maintenance free
- LED display lets you make precise speed adjustments and ensures repeatability
- Stainless steel collet accepts 6 mm (¼") shafts
- Ready to go out of the box—system includes mixer, stand, two mixing blades, and universal AC adapter



Description	Speed	Motor	Max torque	Power (50/60 Hz)	Item number
Mixer system	50 to 2500 rpm	½ hp (15 W)	10.0 N·cm (14.2 in·oz)	115 VAC	<a href="#">PV-50006-01</a>
				115/230 VAC	<a href="#">PV-50006-03</a>

## OS-200 Series Digital Reversing Mixer

One-touch reversing for complete agitation of samples

- Timed mixing cycles let you repeatedly alternate clockwise and counterclockwise rotation to control vortexing and minimize aeration
- Brushless DC motor maintains speeds at all viscosities
- Features through-shaft design, countdown timer, and integrated light
- Complete system includes mixer, propeller/shaft, stand, and clamp



Description	Speed	Motor	Max torque	Power (VAC, Hz)	Item number
Mixer only	40 to 2010 rpm	½ hp (75 W)	100.2 N·cm (142 in·oz)	100/230, 50/60	<a href="#">PV-50004-00</a>
Mixer system					<a href="#">PV-50004-10</a>

## SP Laboratory Overhead Mixer

Designed for durability and reliability

- Soft-start feature and smooth gradual adjustment to speed setting eliminate splashing
- Controller features simple controls—a speed adjustment knob and separate “forward/off/reverse” switch
- Low/no maintenance brushless motor is powerful enough to mix up to 95 liters of water
- Adjustable tilt from 0 to 30° allows proper propeller placement
- System includes mixer, shaft, propeller, double clamp, and stand



Description	Speed	Motor	Max torque	Power (VAC, Hz)	Item number
Mixer only	50 to 2500 rpm	½ hp (50 W)	64 N·cm (91 in·oz)	100/240, 50/60	<a href="#">PV-55008-02</a>
Mixer system					<a href="#">PV-55008-03</a>

# Maintain the Right Temperature

From utility baths to portable chillers, find the baths & circulators you need.

Find more at [coleparmer.com/baths](http://coleparmer.com/baths)

## WB-400 Series Digital Water Baths

Get digital accuracy at an analog price

- Full-color TFT display is visible from across the lab
- Quickly recall five frequently used temperature settings
- Seamless SS tank with rounded corners for easy cleaning
- Feature high domed lid and recessed handles
- Temp range of ambient +5 to 100 °C with  $\pm 0.1$  °C stability



Bath capacity	Bath opening (W x H x D)	Power (VAC, Hz)	Item number
2 L	9.8 x 11.0 x 15.2 cm (3.9" x 4.3" x 6")	120, 60	<a href="#">PV-12105-84</a>
5 L	12.7 x 27.5 x 15.2 cm (5" x 10.8" x 6")		<a href="#">PV-12105-86</a>
10 L	27.0 x 29.5 x 15.2 cm (10.6" x 11.6" x 6")		<a href="#">PV-12105-88</a>
20 L	24.1 x 43.2 x 15.2 cm (9.5" x 17" x 6")		<a href="#">PV-12105-90</a>
28 L	24.1 x 43.2 x 20.3 cm (9.5" x 17" x 8")		<a href="#">PV-12105-92</a>

## WB-200 Series Digital Water Baths

Ideal for every lab, every day

- Digital display with timer and temperature settings
- Temp range of ambient +5 to 100 °C with  $\pm 0.2$  °C stability
- Corrosion-resistant 304 stainless steel (SS) tank
- “Delay” function starts the heating cycle when most convenient for you
- Built-in overtemperature protection
- Attached SS gabled cover reduces heat loss

Bath capacity	Bath opening (W x H x D)	No. of module widths accepted	Power (VAC, Hz)	Item number
6.6 L	30.0 x 15.5 x 15.0 cm (11.8" x 6.1" x 5.9")	2*	120, 60	<a href="#">PV-78905-20</a>
11 L	30.0 x 24.0 x 20.0 cm (11.8" x 9.4" x 7.9")	4	120, 60	<a href="#">PV-78905-22</a>
27 L	50.0 x 29.5 x 20.0 cm (19.7" x 11.6" x 7.9")	8	120, 60	<a href="#">PV-78905-24</a>

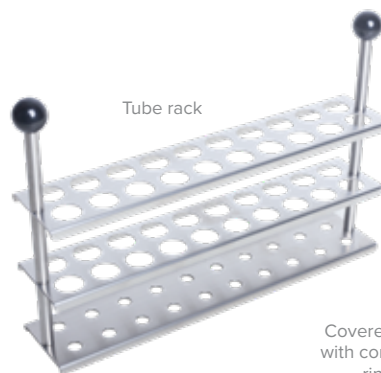
\*The 6.6-L model does not accept the 78905-29 tube rack.

### Optional Tube Racks

Tubes held	Module width	Item number
20 x 13 mm dia	1	<a href="#">PV-78905-26</a>
20 x 18 mm dia	1	<a href="#">PV-78905-27</a>
5 x 31 mm dia	1	<a href="#">PV-78905-28</a>
8 x 56 mm dia	3	<a href="#">PV-78905-29</a>

### Optional Covered Plates with Concentric Rings

Flasks held	Fits bath size	Item number
2 (33 to 92 mm dia)	6.6 L	<a href="#">PV-78905-30</a>
4 (33 to 92 mm dia)	11 L	<a href="#">PV-78905-31</a>
8 (33 to 92 mm dia)	27 L	<a href="#">PV-78905-32</a>





## CHB-400 Series Cooling/Heating Recirculators

Save time with quick ramp up and cool-down

- Don't lose valuable bench space—powerful unit in a compact design
- Internal circulating tank design was built to minimize fluid evaporation
- Easy cooling for smaller instruments, jacketed reactors, and rotary evaporators
- Reliable, robust system maintains temperature to  $\pm 0.1^\circ\text{C}$  from  $-10$  to  $80^\circ\text{C}$



Cooling capacity at 20 °C	Pump type	Flow rate (L/min)	Power (VAC, Hz)	Item number
250 W	Force	17	115, 60	<a href="#">PV-13042-01</a>
500 W	Force	17	115, 60	<a href="#">PV-13042-17</a>
500 W	Force/suction	21	115, 60	<a href="#">PV-13042-21</a>

## RHC-400 Series Circulating Baths

PID algorithms optimize cooling and heating

- Digital display reads to  $0.1^\circ\text{C}$  with  $\pm 0.07^\circ\text{C}$  temperature stability
- Waterproof control panel swivels  $180^\circ$  for easy viewing
- Advanced performance reduces energy consumption
- Flow rate of 13.5 L/min; max 2.3 psi
- Includes reservoir cover



Reservoir capacity	Temperature range	Cooling capacity at 20 °C	Power (VAC, Hz)	Item number
7 L	$-20$ to $135^\circ\text{C}$	200 W	120, 60	<a href="#">PV-20873-47</a>
15 L	$-30$ to $135^\circ\text{C}$	915 W	120, 60	<a href="#">PV-20873-53</a>
20 L	$-30$ to $135^\circ\text{C}$	915 W	120, 60	<a href="#">PV-20873-61</a>

## CH-400 Series Low-Temp Benchtop Chillers

Compact yet powerful

- Precise cooling for daily operation
- Quick setup with intuitive interface and display
- Capable of cooling two rotary evaporators concurrently
- Features 2.65 L reservoir with illuminated level indicator
- PID controller offers stability of  $\pm 0.1^\circ\text{C}$



Temperature range	Max flow	Cooling capacity at 20 °C	Power (VAC, Hz)	Item number
$-10$ to $30^\circ\text{C}$	7.9 L/min	560 W	120, 60	<a href="#">PV-20872-66</a>
	13.2 L/min	420 W	120, 60	<a href="#">PV-20872-67</a>
$-20$ to $40^\circ\text{C}$	9.8 L/min	900 W	120, 60	<a href="#">PV-20872-72</a>
	13.2 L/min	1290 W	120, 60	<a href="#">PV-20872-71</a>

## CB-200D-IB Electronic Ice Bucket

Waterless—no more wet melting ice

- Keep your samples cold, clean, and dry
- Ceramic-coated beads maintain a  $4^\circ\text{C}$  temperature all day
- Holds 60 x 1.5-mL microtubes or a reagent bottle
- Includes aluminum bucket and 1.7 kg (3.7 lb) of autoclavable beads



Temperature range	Resolution	Accuracy	Power (VAC, Hz)	Item number
$0$ to $40^\circ\text{C}$	$0.1^\circ\text{C}$	$\pm 1^\circ\text{C}$	100–230, 50/60	<a href="#">PV-24120-00</a>

[PV-99967-93](#) Additional aluminum bucket

[PV-24120-99](#) Additional ceramic beads

# North Sciences ULT Freezers

## North Sciences/Traceable® Model TEC<sup>2</sup> Ultra-Low Temperature Freezers

100% peace of mind with two dual core compressors and fast recovery times

- Total sample security—system maintains temperature if one of the two cores, controls or systems is disabled
- Smart, situational awareness for complete performance monitoring
- Cloud-based monitoring with TraceableLIVE® service
- 7-inch color touch screen panel allows full user control
- Combines vacuum insulation panels with high-efficiency dual-layered insulated inner doors to ensure longest cold retention and recovery times
- Lockable, ergonomically designed door handle for easy and secure access
- GLP conformity makes transferring logged data to a PC simple and convenient
- USB interface to download historical temperature data

North Sciences series of ultra-low temperature (ULT) freezers offers TEC<sup>2</sup> technology with natural, hydrocarbon-based refrigerants to lower GWP (Global Warming Potential) and 100% redundancy provided by two complete and independent refrigeration systems. Fast, dual cooling system enables faster pull-down (4.5 hr) and door opening recovery times (80 min) after 2-minute door opening. Above industry standard ( $\pm 2.5^\circ\text{C}$ ) uniformity ensures your samples are being stored within the proper temperature range to maintain integrity.

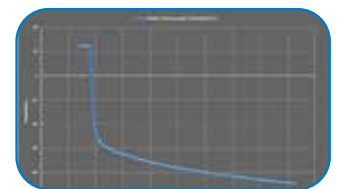
Standard ultra-low freezers rely on a cascade refrigeration system. If this system fails, an LN<sub>2</sub> or CO<sub>2</sub> backup can only sustain temperatures for approximately 7 hours. Your samples will need to be moved quickly. Maintenance, refilling, and supervision are also required with LN<sub>2</sub> and CO<sub>2</sub> backups. With North Sciences' TEC<sup>2</sup> technology, there is no need to move your samples in a rush or worry about LN<sub>2</sub> or CO<sub>2</sub> backups.

Maintaining temperature and uniformity is important, but being aware of external conditions and forces that have the potential to influence the freezer's performance makes the TEC<sup>2</sup> the world's first ULT freezer offering smart, situational awareness for complete performance monitoring and total sample security.

Now you can monitor everything from the inside out, 24/7. These freezers have an integrated Traceable® data logger, plus a one-year subscription to Standard TraceableLIVE® cloud-based control and monitoring service.



Touch-Screen Interface



Temperature Monitoring

### Specifications

Temperature range:  $-86$  to  $-40^\circ\text{C}$  ( $-123$  to  $-40^\circ\text{F}$ )

Cooling type: direct cooling

Controller: microprocessor

Sensor: PT100

Interface: USB and RS-232

Material: 304 stainless steel inner chamber

Refrigerants: natural low GWP, hydrocarbon, CFC free

Alarms: high/low temperature, power-off failure, abnormal voltage, sensor error, filter screen check, controller failure, low battery, condenser malfunction, high ambient temperature, door ajar

Freezer capacity	No. of shelves	Capacity for 2-in boxes	Internal dimensions (W x H x D)	External dimensions (W x H x D)	Watts	Power (VAC, Hz)	Item number
425 L (15 cu ft)	3	288	61.0 x 118.0 x 57.5 cm (24 x 46.5 x 23 in)	90.0 x 194.0 x 94.0 cm (35.5 x 77 x 37 in)	845	120, 60	PV-44260-85
					420	220, 50	PV-44260-86
588 L (21 cu ft)	3	400	61.0 x 131.0 x 74.0 cm (24 x 52 x 29 in)	90.0 x 199.5 x 115.5 cm (35.5 x 79 x 45.5 in)	815	120, 60	PV-44260-87
					405	220, 50	PV-44260-88
728 L (26 cu ft)	3	500	96.6 x 135.0 x 57.0 cm (38 x 53 x 22 in)	125.0 x 199.5 x 97.5 cm (49 x 79 x 38 in)	850	120, 60	PV-44260-89
					425	220, 60	PV-44260-90
					425	220, 50	PV-44260-91
838 L (30 cu ft)	3	600	89.5 x 131.0 x 72.0 cm (35 x 51.5 x 28 in)	118.0 x 199.5 x 113.5 cm (46.5 x 79 x 45 in)	900	220, 60	PV-44260-92
					450	220, 50	PV-44260-93

## North Sciences/Traceable® TSi Series Ultra-Low Temperature Freezers

Sample security, reliability and sustainability for ultra-low temperature storage

- Cooling capacity adapts to user patterns substantially reducing energy and HVAC costs without compromising performance
- Smart, situational awareness for complete performance monitoring
- Cloud-based monitoring with TraceableLIVE® service
- Large 10-inch touch screen with state-of-the-art user interface design, oriented for ultimate user experience.
- Variable-speed inverter drive technology
- Heated pressure equalization port
- Fast door-opening recovery time
- USB interface to download historical temperature data

North Sciences' TSi series ultra-low temperature freezers are designed to exceed all standards in reliability, sustainability and temperature management. The cooling capacity adapts to user patterns, substantially reducing energy and HVAC costs without compromising performance.

High-performance VIP thermal technology combined with double-injected foaming for both inner and outer doors improves the thermal insulation effect and energy savings

Now you can monitor everything from inside out, 24/7. These freezers have an integrated Traceable® data logger, plus a one-year subscription to Standard TraceableLIVE® cloud-based control and monitoring service.



Smart Interface



Safe and Secure Accessibility

### Specifications

Temperature range: -86 to -40 °C (-123 to -40 °F)

Cooling type: direct cooling

Controller: microprocessor

Sensor: PT100

Interface: USB

Material: powder-coated galvanized steel interior and exterior

Refrigerants: R290, R170

Alarms: high/low temperature, hot condenser, sensor error, power failure, low battery, high ambient temp, filter, and door ajar

Freezer capacity	No. of shelves	Capacity for 2-in boxes	Internal dimensions (W x H x D)	External dimensions (W x H x D)	Watts	Power (VAC, Hz)	Item number
360 L (13 cu ft)	3	240	46 x 131 x 60 cm (18.1 x 51.6 x 23.6 in)	64 x 197 x 82 cm (25.2 x 77.5 x 32.3 in)	400	120, 60	PV-44261-69
						220, 50	PV-44261-70
480 L (17 cu ft)	3	320	60 x 131 x 60 cm (23.6 x 51.6 x 23.6 in)	78 x 197 x 82 cm (30.7 x 77.5 x 32.3 in)	440	120, 60	PV-44261-71
						220, 50	PV-44261-72
590 L (21 cu ft)	3	400	74 x 131 x 60 cm (29.1 x 51.6 x 23.6 in)	92 x 192 x 82 cm (36.2 x 75.5 x 32.3 in)	520	120, 60	PV-44261-73
						220, 50	PV-44261-74
730 L (25 cu ft)	3	500	74 x 131 x 73 cm (29.1 x 51.6 x 28.7 in)	92 x 197 x 95 cm (36.2 x 77.5 x 37.4 in)	610	120, 60	PV-44261-75
						220, 50	PV-44261-76
990 L (30 cu ft)	3	720	88 x 131 x 86 cm (34.6 x 51.6 x 33.9 in)	106 x 197 x 108 cm (41.7 x 77.5 x 42.5 in)	720	120, 60	PV-44261-77
						220, 50	PV-44261-78

## North Sciences Minicore™ Compact Ultra-Low Temperature Freezer

Space-saving upright design fits just about anywhere

- Ideal for vaccines and critical material storage in biorepositories, research facilities, or anywhere valuable samples need to be stored safely
- Ensure reliability with cloud-based monitoring
- Compact size yet still has capacity for 2400 x 2-mL samples
- Low energy—operates on less than 3 A with a low 6 kWh/day
- Green technology—single compressor using CFC-free natural mix refrigerants with no environmental impact
- Ergonomically designed door handle for easy access
- Convenient USB port for data download and access port

Minicore ULT freezer is small enough to be used on a tabletop or can be moved around the lab floor on casters. The uniformity is above industry standard at  $\pm 2.5$  °C ensuring your samples are being stored within the proper temperature range to maintain integrity. Constructed of epoxy-painted steel exterior, stainless steel inner chamber, and CFC-free polyurethane vacuum insulation panels.

Freezer comes supplied with a Traceable® data logger plus a 1-year Standard subscription to our TraceableLIVE® cloud-based control and monitoring service. TraceableLive® lets you securely monitor your critical environments and notify your smartphone, tablet, PC, or Apple Watch® if anything goes wrong.



### LEARN MORE ABOUT

TraceableLIVE at [coleparmer.com/traceablelive](http://coleparmer.com/traceablelive)

### Specifications

Temperature range:  $-86$  to  $-40$  °C ( $-123$  to  $-40$  °F)

Controller: microprocessor

Sensor: PT100

Display: LCD

Interface: USB

Alarms: high/low temperature, power failure, abnormal voltage, sensor error, filter, board failure, low battery, condenser, high ambient temperature, door ajar



Control Panel



Safe and Secure Accessibility

Freezer capacity	No. of shelves	Capacity for 2-in boxes	Internal dimensions (W x H x D)	External dimensions (W x H x D)	Watts	Power (VAC, Hz)	Item number
55 L (1.9 cu ft)	1	24	33.0 x 41.0 x 45.3 cm (13 x 16 x 18 in)	63.5 x 121.0 x 75.7 cm (25 x 48 x 30 in)	442	120, 60	PV-44260-94
					221	220, 50	PV-44260-95

## North Sciences Messenger™ Portable Ultra-Low Temperature Freezers

Portable, reliable, continuous ULT operation

- Ideal for clinical trials and biologic drug delivery
- Intelligent temperature control with laboratory-grade PT100 sensor
- Temperature control accuracy of the whole box to avoid temperature fluctuations
- RFID digital locks protect samples
- 100% natural refrigerants
- Piston-based technology with no compressors or moving parts
- Maintenance-free life up to 50,000 hours

These Messenger shuttle freezers are the true portable ULT freezer solutions available today for delivering vaccines at ultra-low temperature without risks. Both models are perfectly sized, lightweight, and efficient—they solve the industry's pain point by making up for the shortage in liquid nitrogen transportation.

A cooling system with Stirling refrigerant delivers fast cooling with no fear of bumps and shakes. The integrated high pressure foam, vacuum insulation panels, double-layer submersible door, and double-layer sealing ring ensure very low thermal leakage.

**Messenger 1 Model** has a 1-L internal volume with adjustable temperature range of –86 to 4 °C and temperature control accuracy of ±0.5 °C. Built-in large capacity lithium battery can work for more than 1 hour without external power. Freezer weighs only 13.5 kg and can be shipped anywhere in the world by courier

**Messenger 10 Model** features a 10-L internal volume with adjustable temperature range from –80 to 30 °C and temperature control accuracy of ±2 °C. Built-in large-capacity lithium battery lets you transport vaccines without any external power source.



Messenger 1  
Ultra-Low Freezer



Messenger 10  
Ultra-Low Freezer

Model	Capacity	Temperature range	Accuracy	Internal dimensions (W x H x D)	External dimensions (W x H x D)	Watts	Power	Weight	Item number
Messenger 1	1 L (0.035 cu ft)	–86 to 4 °C (–123 to 39.2 °F)	±0.5 °C	13.4 x 5.5 x 15 cm (5.3 x 2.2 x 6 in)	27 x 45 x 27 cm (11 x 18 x 11 in)	80	12–24 VDC	13.5 kg (29.8 lb)	PV-44260-96
Messenger 10	10 L (0.35 cu ft)	–80 to 30 °C (–112 to 86 °F)	±2 °C	29.2 x 15.5 x 22.7 cm (11.5 x 6 x 9 in)	46.2 x 62.5 x 61.5 cm (18.2 x 25 x 24.5 in)	100	12–24 VDC	23 kg (50.1 lb)	PV-44260-97

# Incubators & Ovens

From creating optimal growth conditions to drying delicate samples, find the equipment you need.

Find more at [coleparmer.com/incubators](http://coleparmer.com/incubators)  
[coleparmer.com/ovens](http://coleparmer.com/ovens)

## INC-200 Series Mini Incubators

Digital temperature control

- Large chamber holds bottles and flasks up to 2 L
- Internal outlet powers small shakers and rocker

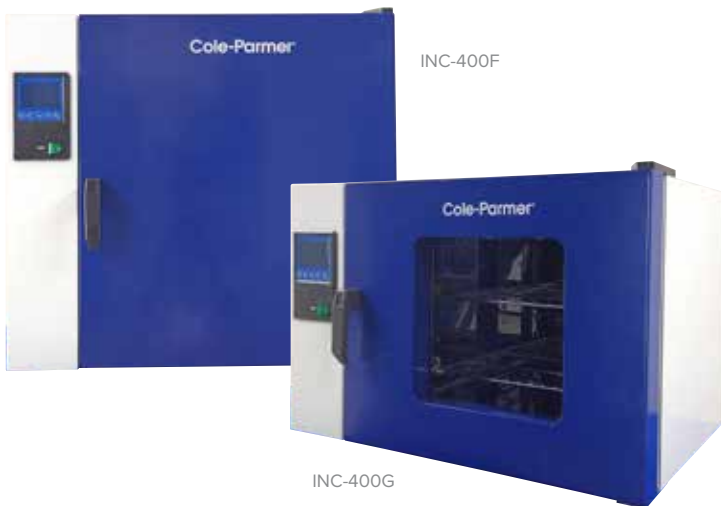
Capacity L (cu ft)	Temperature range	Power (VAC, Hz)	Item number
20 (0.7)	20 to 60 °C	115, 50/60	<b>PV-03608-00</b>
	15 to 60 °C	115, 50/60	<b>PV-03608-01</b>



## INC-400 Series Incubators

Low energy consumption provides operating cost savings

- PID controller gives you accurate and reliable temperature control
- Easy-to-view LCD shows time, current and set temperatures, running status, and fan status
- Long-lasting silicone rubber gasket offers a tight seal, ensuring good heat retention and low energy consumption
- **Gravity convection** allows heat to fill the chamber naturally, providing more uniform growth and a lower chance of cross-contamination between samples
- **Mechanical convection** circulates heat to all levels of the chamber for more efficient heat distribution



Capacity L (cu ft)	Temperature range	Stability	Uniformity at 37 °C	Door configuration	No. of shelves included	Overall dimensions (W x H x D)	Power (VAC, Hz)	Item number
<b>INC-400G Series Gravity Convection Incubators</b>								
16 (0.6)	25 to 65 °C	±0.5 °C	±1.5 °C	Door with glass observation window	2	51.0 x 35.0 x 40.0 cm (20.1" x 13.8" x 15.7")	120, 60	<b>PV-52411-56</b>
35 (1.2)						60.0 x 42.0 x 46.0 cm (23.6" x 16.5" x 18.1")		<b>PV-52411-58</b>
50 (1.8)				Glass inner door, solid outer door	3	66.5 x 60.0 x 47.0 cm (26.2" x 23.6" x 18.5")	120, 60	<b>PV-52411-60</b>
115 (4.1)						78.5 x 71.5 x 59.0 cm (30.9" x 28.1" x 23.2")	120, 60	<b>PV-52411-62</b>
210 (7.4)						91.5 x 87.0 x 66.0 cm (36" x 34.3" x 25.9")	120, 60	<b>PV-52411-64</b>
<b>INC-400F Series Mechanical Convection Incubators</b>								
16 (0.6)	25 to 65 °C	±0.5 °C	±1.5 °C	Door with glass observation window	2	51.0 x 36.5 x 40.0 cm (20.1" x 14.4" x 15.7")	120, 60	<b>PV-52411-66</b>
35 (1.2)						62.5 x 42.0 x 44.5 cm (24.6" x 16.5" x 17.5")		120, 60
50 (1.8)				Glass inner door, solid outer door	2	67.5 x 47.0 x 50.0 cm (26.6" x 18.5" x 19.7")	120, 60	<b>PV-52411-70</b>
80 (2.8)						75.8 x 51.5 x 54.0 cm (29.8" x 20.3" x 21.3")	120, 60	<b>PV-52411-72</b>
160 (5.7)						76.0 x 76.5 x 64.0 cm (29.9" x 30.1" x 25.2")	120, 60	<b>PV-52411-74</b>
270 (9.5)						86.0 x 86.5 x 74.0 cm (33.9" x 34.1" x 29.1")	120, 60	<b>PV-52411-76</b>

## General-Purpose Ovens

PID controller for accurate, reliable temperature control

- Stainless steel inner chamber and powder-coated steel plate exterior resist corrosion for longer lifetime
- Rounded inner chamber corners offer easy cleaning

### OVG-400 Series Gravity Convection Drying Ovens

- Gentle, natural air circulation provides more uniform growth and a lower chance of cross-contamination between samples
- Long-lasting silicone rubber gasket offers a tight seal, ensuring good heat retention and low energy consumption

### OVF-400 Series Mechanical Convection Drying Ovens

- Forced air delivers fast heat-up and uniform temperature throughout the chamber for greater drying efficiency
- Long-lasting silicone rubber gasket offers a tight seal, ensuring good heat retention and low energy consumption

### OVV-400B Series Botanical Vacuum Ovens

- Stainless steel internal tubing and compression fittings provide a higher ultimate vacuum ideal for botanicals and cannabis applications

### OVV-400 Series Programmable Vacuum Ovens

- Easily manage up to eight programs with eight steps each
- Rubber O-ring and door lock handle create a secure seal to prevent air leakage or unauthorized access



Capacity L (cu ft)	Temperature range	Stability	Uniformity at 100 °C	No. of shelves included	Overall dimensions (W x H x D)	Power (VAC, Hz)	Item number
<b>OVG-400 Series Gravity Convection Drying Ovens</b>							
27 (0.95)	10 °C above ambient to 200 °C	±0.5 °C	±3 °C	2	46.0 x 66.0 x 52.0 cm (18" x 26" x 20.5")	120, 60	<a href="#">PV-52411-00</a>
56 (1.97)			±3 °C		54.0 x 72.0 x 55.0 cm (21.2" x 28.3" x 21.6")	120, 60	<a href="#">PV-52411-02</a>
96 (3.4)			±3.5 °C		59.0 x 81.0 x 65.0 cm (23.2" x 32" x 25.5")	120, 60	<a href="#">PV-52411-04</a>
140 (5)			±3.5 °C		66.0 x 88.0 x 72.0 cm (26" x 34.6" x 28.3")	120, 60	<a href="#">PV-52411-06</a>
200 (7)			±4 °C		71.0 x 94.5 x 78.0 cm (28" x 37.2" x 30.7")	220, 50/60	<a href="#">PV-52411-08</a>
<b>OVF-400 Series Mechanical Convection Drying Ovens</b>							
16 (0.56)	10 °C above ambient to 250 °C	±0.5 °C	±1.5 °C	2	53.0 x 41.5 x 37.6 cm (20.8" x 16.3" x 14.8")	120, 60	<a href="#">PV-52411-09</a>
30 (1)			±2 °C		62.2 x 50.5 x 45.1 cm (24.5" x 20" x 17.8")	120, 60	<a href="#">PV-52411-11</a>
50 (1.8)			±2.5 °C		70.0 x 53.5 x 53.0 cm (27.5" x 21" x 20.8")	120, 60	<a href="#">PV-52411-13</a>
80 (2.8)			±3 °C		73.6 x 61.5 x 52.2 cm (29" x 24.2" x 20.5")	120, 60	<a href="#">PV-52411-15</a>
136 (4.8)			±3 °C		83.2 x 71.5 x 58.1 cm (32.8" x 28" x 22.8")	120, 60	<a href="#">PV-52411-17</a>
220 (7.8)			±3 °C		88.0 x 91.5 x 63.0 cm (34.6" x 36" x 24.8")	220, 50/60	<a href="#">PV-52411-19</a>
400 (14)			±3.5 °C		128.5 x 106.0 x 75.0 cm (50.5" x 41.7" x 29.5")	220, 50/60	<a href="#">PV-52411-20</a>
620 (22)			±4 °C		198.0 x 188.0 x 80.0 cm (38.5" x 74" x 31.5")	220, 50/60	<a href="#">PV-52411-21</a>
<b>OVV-400B Series Botanical Vacuum Ovens</b>							
25 (0.88)	10 °C above ambient to 100 °C	±0.1 °C	±10 °C	4	60.5 x 45.0 x 49.0 cm (23.8" x 17.7" x 19.3")	120, 60	<a href="#">PV-52411-22</a>
50 (1.7)	10 °C above ambient to 200 °C			6	73.0 x 55.0 x 56.0 cm (28.8" x 21.6" x 22")	120, 60	<a href="#">PV-52411-24</a>
90 (3)				4 (heated)	74.0 x 59.1 x 61.0 cm (29" x 23.2" x 24")	120, 60	<a href="#">PV-52411-26</a>
216 (7.6)				89.0 x 74.1 x 76.0 cm (35" x 29.2" x 30")	120, 60	<a href="#">PV-52411-28</a>	
<b>OVV-400 Series Programmable Vacuum Ovens</b>							
24 (0.85)	10 °C above ambient to 200 °C	±0.1 °C	±10 °C	2	44.5 x 62.0 x 58.0 cm (17.5" x 24.4" x 22.8")	120, 60	<a href="#">PV-52411-30</a>
53 (1.8)				3	58.0 x 70.5 x 67.5 cm (22.8" x 27.8" x 26")	120, 60	<a href="#">PV-52411-32</a>
91 (3.2)				61.0 x 81.0 x 80.5 cm (24" x 31.9" x 31.7")	120, 60	<a href="#">PV-52411-34</a>	

# Weighing Your Options?

Don't miss out on the widest selection of quality balances and scales.

Find more at [coleparmer.com/balances](http://coleparmer.com/balances)



## PB-300 Series Portable Toploading Balances

Comply with data integrity regulations

- Internal memory stores up to 500,000 readings and prevents data tampering
- Data exports feature GLP-compliant time and date stamps and other critical parameters
- Advanced connectivity supports USB and RS-232 interfaces
- Industry-leading 5-year warranty

## PB-350 Series High-Capacity Portable Toploading Balances

Easily weigh heavy dynamic loads

- Collect and export data for further analysis with included software
- RS-232 interface provides printer or PC connection
- Built-in rechargeable battery provides portability
- Industry-leading 5-year warranty



Capacity	Readability	Calibration	Item no. (100/240 VAC)
200 g	0.001 g	External	<a href="#">PV-10402-51</a>
600 g	0.01 g	External	<a href="#">PV-10402-52</a>
2000 g	0.01 g	External	<a href="#">PV-10402-53</a>
3100 g	0.1 g	External	<a href="#">PV-10402-54</a>

[PV-17101-52](#) NIST-traceable calibration for balances

Capacity	Readability	Calibration	Item no. (100/240 VAC)
1000 g	0.01 g	External	<a href="#">PV-10402-58</a>
		Internal	<a href="#">PV-10402-63</a>
2000 g	0.01 g	External	<a href="#">PV-10402-59</a>
		Internal	<a href="#">PV-10402-64</a>
6000 g	0.1 g	External	<a href="#">PV-10402-60</a>
		Internal	<a href="#">PV-10402-65</a>
10,000 g	0.1 g	External	<a href="#">PV-10402-61</a>
		External	<a href="#">PV-10402-62</a>

[PV-17101-52](#) NIST-traceable calibration for balances



## Exclusive Laboratory Balances

Quality features at a remarkable price

### PB-100 Series Portable Toploading Balances

- Perfect for your routine weighing applications requiring accuracy and traceability for GLP requirements
- Features include a print function, RS-232 interface, and capacity tracker
- Internal rechargeable battery allows convenient portability
- 3-year warranty

### LB-200 Series Balances

- Vivid, backlit LCD easily visible in any lighting conditions
- Easy to operate with minimal training
- USB and RS-232 interfaces facilitate data collection
- Industry-leading 5-year warranty

### LB-400 Series Precision Balances

- Large, backlit LCD provides clear visibility of weighing results
- Fast stabilization and response time
- Get secure data connections via USB, RS-232, and Ethernet interfaces; models with internal calibration also have Wi-Fi
- Industry-leading 5-year warranty

### TB-800 Series Precision Touch-Screen Balances

- Color capacitive touch-screen display provides clear visibility to weighing results and menu options
- Go touchless—two IR proximity sensors offer programmable touch-free control
- Statistics working mode quickly analyzes data from series of measurements
- Enhanced features include autotest GLP function and multiple interfaces
- Industry-leading 5-year warranty

### MB-200 Series Moisture Determination Balance

- No need to monitor sample—auto test does the work for you
- Large, backlit display shows temperature, time, and moisture simultaneously
- Measures what you need—grams, % moisture, % solids, % moisture vs dry weight, and % solid vs dry weight
- Industry-leading 5-year warranty



PB-100



LB-200



LB-400



TB-800



MB-200

### Add on these handy Square Weigh Boats

- Antistatic polystyrene material minimizes sample loss
- Rounded corners simplify transfer of powdered or granular samples



Size	Weigh capacity	White	Blue
		Item number	Item number
Small, 1½" x 5⁄8"	20 mL	PV-01017-05	PV-01017-07
Medium, 3½" x 1"	100 mL	PV-01017-15	PV-01017-17
Large, 5½" x 7⁄8"	330 mL	PV-01017-25	PV-01017-27

Capacity	Readability	Calibration	VAC	Item no.
<b>PB-100 Series Portable Toploading Balances</b>				
100 g	0.001 g	External	115	PV-20000-32
400 g	0.01 g	External	115	PV-20000-36
<b>LB-200 Series Toploading Balances</b>				
210 g	0.001 g	External	120/240	PV-55000-05
410 g	0.001 g	External	120/240	PV-55000-06
2200 g	0.01 g	External	120/240	PV-55000-11
4200 g	0.01 g	External	120/240	PV-55000-12
<b>LB-200 Series Analytical Balances</b>				
120 g	0.0001 g	External	120/240	PV-55000-01
220 g	0.0001 g	External	120/240	PV-55000-02
<b>LB-400 Series Precision Toploading Balances</b>				
600 g	0.001 g	Internal/Wi-Fi	120/240	PV-10102-28
6000 g	0.01 g	Internal/Wi-Fi	120/240	PV-10102-32
<b>LB-400 Series Precision Analytical Balances</b>				
160 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-24
220 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-25
310 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-26
<b>TB-800 Series Precision Touch-Screen Toploading Balances</b>				
2100 g	0.01 g	Internal/Wi-Fi	120/240	PV-10102-07
4500 g	0.01 g	Internal/Wi-Fi	120/240	PV-10102-08
6000 g	0.01 g	Internal/Wi-Fi	120/240	PV-10102-09
<b>TB-800 Series Precision Touch-Screen Analytical Balances</b>				
160 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-01
220 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-02
310 g	0.0001 g	Internal/Wi-Fi	120/240	PV-10102-03
<b>MB-200 Series Moisture Determination Balance</b>				
40 g	0.001 g	External	115	PV-11124-06

PV-17101-52 NIST-traceable calibration for balances

# Microscopes

From dissecting specimens to counting cells, we have the microscopes you need.

Find more at [coleparmer.com/microscopes](http://coleparmer.com/microscopes)

## Trinocular Stereozoom Microscopes

Practical for larger objects or opaque specimens

### MSS-200 Series

- Trinocular 45° inclined tubes with 360° rotatable head and pair of widefield WF 10x/21 mm eyepieces
- Incident and transmitted adjustable LED illuminations
- Coarse adjustment with tension control
- Achromatic optics, 29.9 to 4.6 mm field of view, and 100 mm working distance
- 100 to 240 VAC, 50/60 Hz operation



78904-66

78904-54

### MSS-400 Series Professional

- Observe your specimen with the highest precision in three-dimensional imaging
- Trinocular 45° inclined tubes and pair of widefield WF 10x/23 mm eyepieces
- Incident and transmitted adjustable LED illuminations
- Achromatic optics, 35.4 to 4.2 mm field of view, and 110 mm working distance
- 100 to 240 VAC, 50/60 Hz operation



78904-69

78904-57

Magnification	Stand	Item number
<b>MSS-200 Series Stereozoom Microscopes</b>		
7.0 to 45x zoom	Pillar	<a href="#">PV-78904-66</a>
	Rack & pinion	<a href="#">PV-78904-69</a>
<b>MSS-400 Series Professional Stereozoom Microscopes</b>		
6.5 to 55x zoom	Rack & pinion	<a href="#">PV-78904-48</a>
	Pillar	<a href="#">PV-78904-51</a>
	Double-arm boom	<a href="#">PV-78904-54</a>
	Single arm	<a href="#">PV-78904-57</a>
	Pillar with dual LED flexible arms	<a href="#">PV-78904-63</a>

## Compound Microscopes

Ideal for viewing very small samples not otherwise seen with the naked eye

### MSU-100 Series

- Easy to use and rugged—the perfect entry-level educational microscope
- Revolving reversed nosepiece
- 115 x 100 mm stage; integrated 55 x 20 mm X-Y mechanical stage
- Corded or cordless operation
- Ergonomic carrying grip

### MSU-200 Series

- Robust and sturdy with crisp high-resolution images
- Secured eyepieces and adjustable rack stop prevent damage to samples
- Reversed nosepiece for four semi-plan objectives
- 130 x 130 mm stage; mechanical 70 x 28 mm X-Y translation stage
- Ergonomic stand

### MSU-400 Series

- Ideal for secondary schools, universities, small- and mid-sized laboratories
- Smooth-operating, reversed ball-bearing quadruple nosepiece for effortless objective changes
- Siedentopf type head with 30° incline for comfort
- 152/197 x 131 mm stage; integrated 75 x 36 mm X-Y rackless mechanical stage
- Integrated carrying grip for easy portability

### MSU-600 Series

- Powerful with excellent quality—suitable for universities, life science, and biomedical science labs
- Ergonomic features such as height adjustable eye tubes and a large rackless stage with double slide holder
- 187/230 x 140 mm rackless stage; integrated 79 x 52 mm X-Y mechanical stage
- Cable storage system
- We also offer models with polarization and metallurgical attachments suitable for materials science applications



**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

Head style	Objectives	Eyepiece(s)	Working distance	Illumination	Power	Item number
<b>MSU-100 Series Compound Microscopes</b>						
Binocular	4/10/S40/S100x, achromatic	WF 10x/18 mm	48 to 75 mm	1 W NeoLED	Internal rechargeable batteries with AC adapter	<b>PV-78903-90</b>
<b>MSU-200 Series Compound Microscopes</b>						
Binocular	4/10/S40/S100x, brightfield semi-plan	WF 10x/18 mm	48 to 75 mm	Adjustable 1 W NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-00</b>
<b>MSU-400 Series Compound Microscopes</b>						
Binocular	4x/10x/S40x/ S100x, brightfield semi-plan	HWF 10x/20 mm	48 to 76 mm	3 W adjustable Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-02</b>
Trinocular*	4x/10x/S40x/ S100x, brightfield semi-plan			3 W adjustable Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-04</b>
Trinocular*	4x/10x/S40x/ S100x, brightfield plan			3 W adjustable Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-07</b>
Trinocular*	10x/20x/S40x/ S100x, plan, phase contrast			3 W adjustable Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-10</b>
Trinocular*	4x/10x/S40x/ S100x, plan, fluorescence			3 W adjustable Kohler NeoLED; four 5 W LED Epi-illumination for fluorescence	100 to 240 VAC, 50/60 Hz	<b>PV-78904-13</b>
<b>MSU-600 Series Compound Microscopes</b>						
Binocular	4x/10x/S40x/S100x, brightfield semi-plan	EWF 10x/22 mm	48 to 76 mm	3 W NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-16</b>
Trinocular*	4x/10x/S40x/S100x, brightfield semi-plan			3 W NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-18</b>
Trinocular*	4x/10x/S40x/S100x, brightfield plan			3 W Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-21</b>
Trinocular*	10x/20x/S40x/S100x, plan, phase contrast			3 W Kohler NeoLED	100 to 240 VAC, 50/60 Hz	<b>PV-78904-24</b>

\*Camera can be added on 23.2 mm dia port.

# Reaction & Extraction

From small-scale synthesis in the lab to process optimization in industry, you'll find the equipment and chemicals you need.

Find more at [coleparmer.com/extraction](http://coleparmer.com/extraction)  
[coleparmer.com/chemicals](http://coleparmer.com/chemicals)

## RS-250 Series Reaction Station

Perform 10 reactions simultaneously under the same conditions

- Controlled temperature range from ambient +5 to 150 °C with  $\pm 1.0$  °C temperature stability
- Powerful stirring speed from 400 to 2000 rpm
- Soft-start ramp feature minimizes splashing
- Manual and external control via the RS-232/RS-485 ports
- PTFE coating on block protects against chemical spills



No. of positions	Tube diameter	Sample volume	Watts	Power (50/60 Hz)	Item number
10	24 or 25 mm	1 to 25 mL	300	115 VAC	PV-36630-12
				230 VAC	PV-36630-11

## HM-200 Series Heating Mantles

Be safe with “cool to the touch” exterior

- Unique ventilation slots and ceramic fiber insulation keep the chemical-resistant polypropylene exterior cool even while in use
- Holds round-bottom and volumetric flasks
- Maximum element temperature of 450 °C
- Thermal insulating cartridge provides maximum heat transfer



Flask size	Dimensions (W x H x D)	Watts	Power (50/60 Hz)	Item number
50 mL	26.0 x 17.5 x 12.7 cm (10.2" x 6.9" x 5")	60	115	PV-36002-00
100 mL		60	115	PV-36002-04
250 mL	31.0 x 23.8 x 14.5 cm (12.2" x 9.4" x 5.7")	150	115	PV-36002-08
500 mL		200	115	PV-36002-12
1000 mL		300	115	PV-36002-16
2000 mL	40.0 x 35.0 x 19.0 cm (15.7" x 13.8" x 7.5")	500	115	PV-36002-20
3000 mL		500	115	PV-36002-24
5000 mL		800	115	PV-36002-28

## RV-200 Series Rotary Evaporators

Unique PTFE sealing system offers excellent thermostability

- PID temperature controller provides stable temperature control
- Easily set and view operating parameters on two digital displays; one for rotation speed and timer and another for bath temperature and timer
- Stainless steel bath with PTFE coating withstands high temperatures and is easy to clean
- Choose simple one-handed manual lift or automatic motorized lift
- Come with control stand, uncoated glassware set (vertical condenser, 1-L sample flask, 1-L receiving flask), clip, water bath, and vacuum gauge



Simply add a vacuum pump and circulating chiller to complete your setup

Lift mechanism	Condenser type	Max evaporation flask size*	Evaporation rate	Rotation speed	Bath			Max vacuum	Dimensions (W x H x D)	Power (50/60 Hz)		Item number
					Temperature	Material	Watts			120 VAC	220 VAC	
Manual	Vertical	2 L	22 mL/min	20 to 300 rpm	5 to 99 °C	Stainless steel with PTFE coating	1000	8 mbar	57.0 x 75.4 x 38.6 cm (22.4" x 29.7" x 15.2")	120 VAC	PV-52411-92	
Vertical										220 VAC	PV-52411-93	
										120 VAC	PV-52411-94	
										220 VAC	PV-52411-95	

\*Unit is provided with a 1-L evaporation flask but accommodates either a 1-L or 2-L flask.

Find them all at [coleparmer.com/evaporators](http://coleparmer.com/evaporators)

## VPS-200 Vacuum Pump

Compact and portable

- Tough lightweight plastic housing features integral carrying handle
- Low-friction piston runs cool and quiet for a long service life
- ¼" hose barb connections



Free air capacity	Maximum vacuum	Maximum pressure†	Motor	Power (VAC, Hz)	Item number
10.5 L/min (0.37 cfm)	541 mm Hg (21.3 in Hg)	33 psig (2.27 bar)	1/11.5 hp (65 W)	115, 60	PV-79202-00

†Intermittent duty: limit output to 33 psig - Continuous duty: limit output to 10 psig.

## CHB-400 Series Cooling/Heating Recirculators

Save time with quick ramp up and cool-down

- Internal circulating tank design was built to minimize fluid evaporation
- Easy cooling for smaller instruments, jacketed reactors, and rotary evaporators
- Reliable, robust system maintains temperature to ±0.1 °C from -10 to 80 °C



Cooling capacity at 20 °C	Pump type	Flow rate (L/min)	Power (VAC, Hz)	Item number
250 W	Force	17	115, 60	PV-13042-01
500 W	Force	17	115, 60	PV-13042-17

# Life Science Solutions

## Equipment and consumables for research and production.

Find more at [coleparmer.com/lifescience](http://coleparmer.com/lifescience)  
[coleparmer.com/pipettes](http://coleparmer.com/pipettes)

### Omega Zen® Pipette Controllers

Great control in an ergonomic design

- Easily fine-tune pipetting speed with thumbwheel control and speedometer display
- Durable, UV-resistant plastic housing is ideal for use in cleanrooms and fume hoods
- Accepts glass or plastic serological pipettes, from 1 to 100 mL



**WARNING:** This product can expose you to chemicals including nickel, which is known to the State of California to cause cancer. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

Housing color	Power (VAC, Hz)	Item number
Blue	100 to 240, 50/60	PV-25300-96
Steel gray		PV-25300-98

### Single-Channel Adjustable-Volume Pipettors

Cushioned finger grip for comfort

- Ergonomic, lightweight push-button design
- Forward and reverse pipetting modes
- Handgrip window volume display
- Fully autoclavable



Volume (µL)	Increments (µL)	Item number
0.1 to 2.5	0.01	PV-24501-01
0.5 to 10	0.1	PV-24501-02
5 to 50	0.5	PV-24501-03
10 to 100	0.5	PV-24501-05
20 to 200	0	PV-24501-07
100 to 1000	5	PV-24501-08
500 to 5000	50	PV-24501-09
2000 to 10,000	100	PV-24501-10

### Vacuum Aspiration Systems

Safe and convenient handling of liquid waste disposal

- Easily switch between manual aspiration and continuous aspiration, reducing hand fatigue
- Collection bottle outlet with hydrophobic filter prevents aerosol and liquid contamination
- The 4-L model offers level detection which prevents bottle from overfilling
- Wetted parts are autoclavable; easy to disassemble and clean
- Includes vacuum bottle, cap, tubing, aspiration handle, hanging bracket, and single/multi-channel adapters

Pumping speed	Vacuum range	Bottle size	Cap style	Power (VAC, Hz)	Item number
15 L/min (air)	0 to 600 mbar	2 L	Barbed fitting	100 to 240, 50/60	PV-13050-51
		4 L	Quick release		PV-13050-50



## FB-200 Series Tissue Float Bath

View tissue cuttings more easily

- Improved visibility with black anodized bath surface
- Easily set temperature from 30 to 70 °C (86 to 158 °F) with analog dial
- Temperature control prevents overheating
- Dry slides on convenient edge



Bath capacity	Internal dimensions	Power (VAC, Hz)	Item number
2.5 L	7.6 x 22 cm (3" x 8 1/16")	115, 50/60	<b>PV-48572-50</b>

## SW-200 Series Slide Warmer

Holds up to 50 slides

- Use to safely dry glass slides after sample mounting in preparation for clearing and staining
- Slides can be arranged in different orientations
- Dark surface provides good visibility of samples

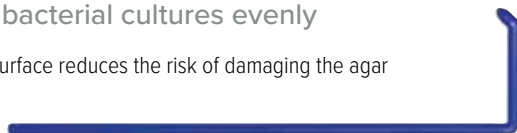


Capacity	Temperature range	Power (VAC, Hz)	Item number
50 slides, 76 x 25 mm (3" x 1")	Ambient to 100 °C	115, 50/60	<b>PV-48573-01</b>

## Sterile Cell Spreaders

Spread bacterial cultures evenly

- Smooth surface reduces the risk of damaging the agar



Material	Packaging	Item number
Sterile polypropylene	50 bags of 10	<b>PV-04396-51</b>
	100, individually wrapped	<b>PV-04396-52</b>

## Sterile Cell and Tissue Culture Plates

Printed lot numbers for easy traceability

- Treated surface provides optimal growth
- Gamma sterilized and nonpyrogenic
- Individually packaged in easy-open blister pack; includes lid



## Sterile Cell-Line Bioreactor Flasks

Achieve high cell density growth

- Features a 10,000 MWC0 regenerated cellulose semi-permeable membrane and 0.2 µm bottom vent membrane barrier
- Polystyrene housing and molded silicone gas transfer bottom
- Sterilized by gamma irradiation and pressure tested



Application	Capacity (mL)	Qty	Item number
For CL1000 suspension cells	1000	3	<b>PV-24406-53</b>
For CL350 suspension cells	350	5	<b>PV-24406-54</b>
For adherent cells	1000	3	<b>PV-24406-55</b>

No. of wells	Max well volume	Qty	Item number
6	17 mL	100	<b>PV-01927-70</b>
12	6.8 mL	100	<b>PV-01927-72</b>
24	3.5 mL	100	<b>PV-01927-74</b>
96	0.2 mL	100	<b>PV-01927-76*</b>
96	0.39 mL	100	<b>PV-01927-78</b>

## Erlenmeyer Flasks

Perfect choice for suspension cell culture

- Sterilized by gamma irradiation per ISO 11137-2 (SAL 10<sup>-6</sup>)
- DNase/RNase free and nonpyrogenic
- Flask neck is designed for easier holding and pouring
- Two cap styles—with a leakproof plug seal or vented with a 0.22 µm hydrophobic PTFE membrane for continuous gas exchange while ensuring sterility and preventing leakage

Capacity (mL)	Graduation intervals (mL)	Cap type	Qty/cs	Item number
<b>Polyethylene Terephthalate Glycol (PETG) Flasks; temp range of –60 to 60 °C</b>				
125	25	Seal	24	PV-34522-40
		Vent		PV-34522-41
250	25	Seal	12	PV-34522-42
		Vent		PV-34522-43
500	50	Seal	12	PV-34522-44
		Vent		PV-34522-45
1000	50	Seal	6	PV-34522-46
		Vent		PV-34522-47
<b>Polycarbonate (PC) Flasks; temp range of –80 to 121 °C</b>				
125	25	Seal	24	PV-34522-48
		Vent		PV-34522-49
250	25	Seal	12	PV-34522-50
		Vent		PV-34522-51
500	50	Seal	12	PV-34522-52
		Vent		PV-34522-53
1000	50	Seal	6	PV-34522-54
		Vent		PV-34522-55
2000	100	Seal	6	PV-34522-56
		Vent		PV-34522-57
3000	100	Seal	4	PV-34522-58
		Vent		PV-34522-59
<b>Baffled PC Flasks; temp range of –80 to 121 °C</b>				
125	25	Vent	24	PV-34522-61
250	25	Vent	12	PV-34522-63
500	50	Vent	12	PV-34522-65
1000	50	Vent	6	PV-34522-67



Use flasks with a baffled bottom to improve mixing and increase gas exchange.

## Sterile Media Bottles

Square shape saves space

- Ideal for safe transport and storage of cell culture media
- Autoclavable PET resin
- Thick walls and crush-resistant corners
- Sterilized by gamma irradiation
- With PE cap



Capacity (mL)	Qty	Item number
125	144	PV-06287-00
250	96	PV-06287-01
500	96	PV-06287-02
1000	48	PV-06287-03

## Class A Glass Round Media Bottles

Meet ASTM E438 requirements

- Wide mouth for easy pouring
- Withstand temperatures from –50 to 550 °C
- Borosilicate glass bottle and PP cap are autoclavable



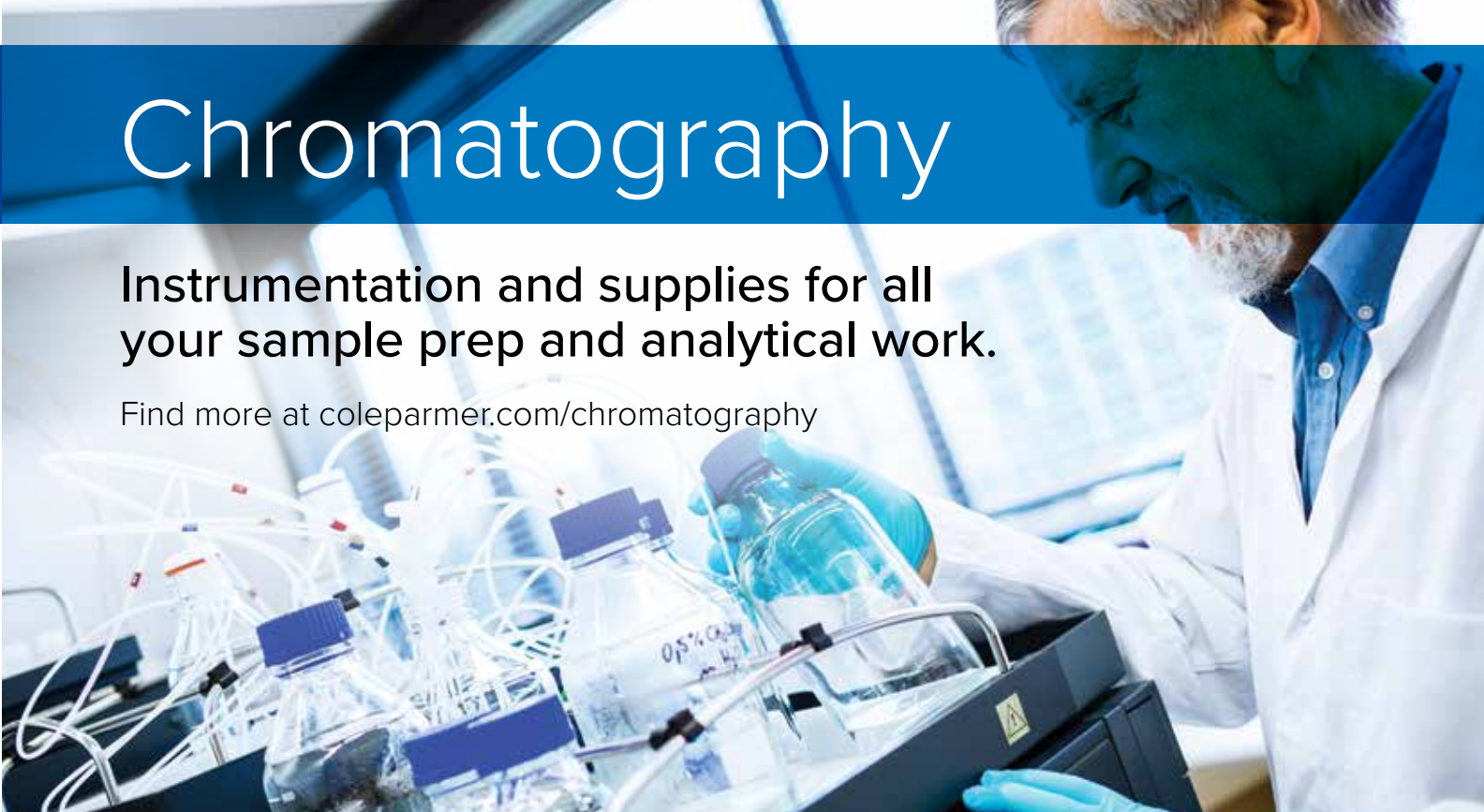
Capacity (mL)	Graduations	Qty	Item number
100	20	10	PV-34503-38
250	50	10	PV-34503-39
500	100	10	PV-34503-40
1000	100	10	PV-34503-41
2000	200	1	PV-34503-43
5000	500	1	PV-34503-82
10,000	1000	1	PV-34503-83



# Chromatography

Instrumentation and supplies for all your sample prep and analytical work.

Find more at [coleparmer.com/chromatography](http://coleparmer.com/chromatography)



## Deuterium Lamps

Economical replacement lamps save you money

- Stretch your budget without sacrificing quality
- Manufactured in an ISO-accredited facility
- Full traceability of each lamp from manufacturer through to customer delivery



## TELOS® Sample Preparation Plates

Increase the performance of your HPLC method by removing interfering species

- Improve sensitivity for more reliable and consistent data
- Extend lifetime of HPLC columns by removing unwanted species
- Accelerates sample preparation compared to centrifugation



**PPT Protein Precipitation Plate** is designed for high throughput and automated processing. The precipitation is removed by filtration, eliminating time-consuming centrifugation and transfer steps. Prefiltration design reduces clogging.

**Phospholipid Removal Plate** easily removes 99% of phospholipids simultaneously with proteins. Provides stable batch-to-batch reproducibility and reduces sample retest rates. Low extractable residue material will not interfere in UV or MS detection.

Compatible with instrument brand	Fits models	Typical life	Item number
ABI Analytical	757, 759, 783A, 785A, 1000S, 980, 120A, 130A	1000 hrs	<a href="#">PV-11941-10</a>
Agilent	1100 DAD, 8453	1000 hrs	<a href="#">PV-11941-12</a>
	1100/1200 DAD (to fit G1315/1365 A & B series detectors)	2000 hrs	<a href="#">PV-11941-13</a>
	1100/1200 DAD (to fit G1315/1365 C & D series detectors)	2000 hrs	<a href="#">PV-11941-14</a>
Dionex™	UltiMate™ 3000, 3000RS, 3100, 3400	2000 hrs	<a href="#">PV-11941-17</a>
Dionex/Gynkotek	UVD160, 170S, 170U, 320, 340S, 340U	2000 hrs	<a href="#">PV-11941-20</a>
Merck Hitachi	L & U series	2000 hrs	<a href="#">PV-11941-22</a>
PerkinElmer®	200 series	1000 hrs	<a href="#">PV-11941-23</a>
Shimadzu	SPD-10A, AVP, AV, AVVP, M10AVP, 20A, 20AV, M20A	2000 hrs	<a href="#">PV-11941-26</a>
	Spectrophotometers	2000 hrs	<a href="#">PV-11941-27</a>
	LC2010	2000 hrs	<a href="#">PV-11941-28</a>
Varian	Prostar 325, 335	2000 hrs	<a href="#">PV-11941-33</a>
Waters	996, 2996 PDA	2000 hrs	<a href="#">PV-11941-35</a>
	2487	2000 hrs	<a href="#">PV-11941-36</a>

Description	Qty	Item number
PPT protein precipitation plate, 96 wells, 2 mL	1	<a href="#">PV-64822-01</a>
Phospholipid removal plate, 96 wells, 30 mg/2 mL	2	<a href="#">PV-64822-00</a>

## UHPLC and HPLC Columns

### Get the performance you deserve

- Large choice of lengths and inner diameters to fit your application
- Multiple phases available in 1.7, 3, and 5 µm particle size
- 1.7 µm particle size provides increased efficiency at high linear velocities and with lower backpressure; operating pressure up to 18,000 psi
- Maintain chromatographic integrity and increase column lifetime with cartridge guards and in-line filters

Each Cole-Parmer UHPLC and HPLC column is tested using a rigorous QC test, using basic analyte probes as well as neutral efficiency markers to ensure that the column reproducibility is of the highest quality. Our columns are subject to tight specification using basic analytes in an unbuffered mobile phase system. Cole-Parmer stationary phases have been proven to exhibit excellent peak shapes and efficiency for the full range of analyte species.

#### Cole-Parmer C18

- Superior peak shapes
- Based on ultra-pure silica
- For acids, bases, and neutrals

C18 stationary phase offers unique high and low pH performance. It provides the best in peak shape, resolution and extended pH range for method development flexibility for simple compound screens or complex metabolite identification.

#### Cole-Parmer Polar Endcapped C18

- Retention of polar analytes by polar endcapping group
- Enhanced resolution
- 100% aqueous compatible
- For hydrophilic analytes, organic acids, and catecholamines

Polar endcapped C18 is designed to aid in the separation and retention of polar analytes. It provides additional interactions between the stationary phase and polar molecules, improving their retention and removing the need for complex mobile phase systems.

#### Cole-Parmer Diphenyl

- Unique selectivity
- No MS bleed; stable hydrophobic ligand
- Enhanced polar retention
- For metabolites, positional isomers, and hydrophilic/hydrophobic analytes

Diphenyl provides extra retention of compounds containing aromatic functionality. Extra selectivity and retention are possible for polar substrates, along with metabolite profiling.

#### Cole-Parmer C8

- Reduced hydrophobicity over C18
- Excellent peak shapes
- For lipids, steroids, and highly hydrophobic analytes

C8 provides similar characteristics to C18 for situations where less hydrophobicity is required.

### Phase Characteristics

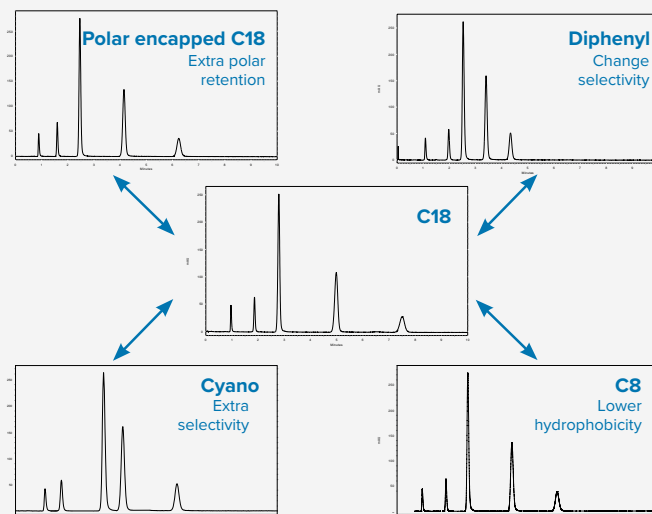
Chemistry	C18	Polar endcapped C18	Diphenyl	C8
Carbon loading	17%	18%	13%	13%
Specific area	380 m <sup>2</sup> /g	380 m <sup>2</sup> /g	380 m <sup>2</sup> /g	380 m <sup>2</sup> /g
Pore size	100 Å	100 Å	100 Å	100 Å
pH range	1 to 12	2 to 10	2 to 9	2 to 10
USP classification	L1	L1	L11	L7

### Method Development

Method development typically starts with a C18 or C8 column as both provide hydrophobic retention with good peak shapes for neutral, acidic and basic analytes. If retention of polar molecules is also needed then the polar endcapped C18 is a good starting choice.

If selectivity is insufficient then diphenyl or cyano stationary phases are a good alternative; they will change selectivity and even elution order since they work on dipole characteristics as opposed to just hydrophobicity.

Cyano stationary phase is good in normal phase (NP) conditions for polar analytes with COOH, NH<sub>2</sub>, NHR<sub>2</sub> or NR<sub>2</sub> groups. If small polar molecules still do not retain then HILIC chromatography is a suitable alternative.



#### Acidic, neutral & basic analytes

- C18
- Diphenyl
- C8

#### Polar basic molecules

- C18 operated at high pH
- Polar endcapped C18
- Diphenyl

#### Polar acidic molecules

- Polar endcapped C18

- HILIC
- Cyano in NP mode

#### Alternate selectivity

- Diphenyl
- Cyano

*Our comprehensive selection of phases and sizes is available online.*



## UHPLC and HPLC Columns

Particle size	Length	Column ID	C18	Polar endcapped C18	Diphenyl	C8
			Item number	Item number	Item number	Item number
<b>UHPLC Columns</b>						
1.7 µm	50 mm	2.1 mm	PV-16470-12	PV-16470-54	PV-16471-33	PV-16470-33
		4.6 mm	PV-16470-09	PV-16470-51	PV-16471-30	PV-16470-30
	100 mm	2.1 mm	PV-16470-11	PV-16470-53	PV-16471-32	PV-16470-32
	150 mm	2.1 mm	PV-16470-10	PV-16470-52	PV-16471-31	PV-16470-31
<b>HPLC Columns</b>						
3 µm	50 mm	2.1 mm	PV-16470-08	PV-16470-50	PV-16471-29	PV-16470-29
		2.1 mm	PV-16470-07	PV-16470-49	PV-16471-28	PV-16470-28
	100 mm	4.6 mm	PV-16470-05	PV-16470-47	PV-16471-26	PV-16470-26
		2.1 mm	PV-16470-06	PV-16470-48	PV-16471-27	PV-16470-27
		4.6 mm	PV-16470-04	PV-16470-46	PV-16471-25	PV-16470-25
5 µm	50 mm	2.1 mm	PV-16470-03	PV-16470-45	PV-16471-24	PV-16470-24
	100 mm	4.6 mm	PV-16470-02	PV-16470-44	PV-16471-23	PV-16470-23
	150 mm	4.6 mm	PV-16470-01	PV-16470-43	PV-16471-22	PV-16470-22
	250 mm	4.6 mm	PV-16470-00	PV-16470-42	PV-16471-21	PV-16470-21

## Guard and Filter Options

Guard cartridges provide extra protection and are quick to replace in the direct-connect guard holder, reducing downtime. Guards are 10 mm in length which adds sufficient protection to the system without changing retention or selectivity parameters. Available in formats to match your analytical HPLC columns.

An alternative to a guard cartridge system is an in-line filter. These filters have a finger tight direct connection design, and are placed between the column and the fitting to trap particulate matter before it reaches the analytical UHPLC or HPLC column.



Particle size	Length	Diameter	Qty	C18	Polar endcapped C18	Diphenyl	C8
				Item number	Item number	Item number	Item number
3 µm	10 mm	2 mm	2	PV-16470-19	PV-16470-61	PV-16471-40	PV-16470-40
		4 mm	2	PV-16470-17	PV-16470-59	PV-16471-38	PV-16470-38
5 µm	10 mm	2 mm	2	PV-16470-15	PV-16470-57	PV-16471-36	PV-16470-36
		4 mm	2	PV-16470-13	PV-16470-55	PV-16471-34	PV-16470-34

**PV-16470-89 Direct-connect guard holder** for guard cartridges above

**PV-16470-92 In-line filters** for UHPLC, 0.5 µm. Pack of 2

**PV-16470-93 In-line filters** for UHPLC, 0.5 µm. Pack of 4

**PV-16470-90 In-line filters** for HPLC, 2 µm. Pack of 5

**PV-16470-91 In-line filters** for HPLC, 2 µm. Pack of 10

## BIO UHPLC and HPLC Columns

Large 300 Å pore size is optimal for peptides

- C18 phase is ideal for peptide mapping and hydrophilic proteins
- Use C4 phase to analyze large hydrophobic molecules
- 1.7 µm UHPLC particle size increases your sensitivity options
- Fully scalable 1.7 to 5 µm particle sizes for method transfer
- Maintain chromatographic integrity and increase column lifetime with in-line filters

Cole-Parmer BIO C18 and BIO C4 columns are optimized stationary phases providing improved selectivity, throughput, sensitivity, and column robustness for biomolecules. Biomolecules are a diverse range of compounds, amino acids, proteins, peptides, nucleic acids, vitamins and obtaining quality separations is critical.

### Phase Characteristics

Chemistry	BIO C18	BIO C4
Carbon loading	11.5%	5%
Specific area	150 m <sup>2</sup> /g	150 m <sup>2</sup> /g
Pore size	300 Å	300 Å
pH range	2 to 9	2 to 9
USP classification	L1	L26



Particle size	Length	Column ID	BIO C18	BIO C4
			Item number	Item number
<b>UHPLC Columns</b>				
1.7 µm	50 mm	2.1 mm	PV-16470-75	PV-16470-88
		4.6 mm	PV-16470-72	PV-16470-85
	100 mm	2.1 mm	PV-16470-74	PV-16470-87
	150 mm	2.1 mm	PV-16470-73	PV-16470-86
<b>HPLC Columns</b>				
3 µm	50 mm	2.1 mm	PV-16470-71	PV-16470-84
		2.1 mm	PV-16470-70	PV-16470-83
	100 mm	4.6 mm	PV-16470-68	PV-16470-81
		2.1 mm	PV-16470-69	PV-16470-82
		4.6 mm	PV-16470-67	PV-16470-80
5 µm	50 mm	2.1 mm	PV-16470-66	PV-16470-79
	100 mm	4.6 mm	PV-16470-65	PV-16470-78
	150 mm	4.6 mm	PV-16470-64	PV-16470-77
	250 mm	4.6 mm	PV-16470-63	PV-16470-76

**PV-16470-92 In-line filters** for UHPLC, 0.5 µm. Pack of 2

**PV-16470-93 In-line filters** for UHPLC, 0.5 µm. Pack of 4

**PV-16470-90 In-line filters** for HPLC, 2 µm. Pack of 5

**PV-16470-91 In-line filters** for HPLC, 2 µm. Pack of 10

## Omnifit® EZ and EZ SolventPlus™ Chromatography Columns

Easier to use, yet provide excellent results

- Precision borosilicate glass columns provide inertness, visibility, and performance
- Fixed or adjustable endpieces of PTFE with dual O-rings for secure seal
- PEEK™ column threads offer outstanding durability—won't chip or break
- Superior frit placement adds bed support and even distribution of sample flow

**EZ columns** are ideal for low- to medium-pressure applications and are resistant to many solvents used in liquid chromatography. Modular design gives you the flexibility to mix and match column sizes with different endpiece types to meet your specific requirements.

**EZ SolventPlus columns** have only the most chemically inert materials in the fluid path—borosilicate glass, PTFE, ETFE, and Chemraz®—ensuring the utmost chemical resistance. Ideal for techniques using organic solvents such as reversed phase chromatography.

Select from three endpiece configurations to suit your application—one fixed and one adjustable, two adjustable, or two fixed. Each adjustable endpiece gives you the flexibility to modify the bed length up to 80 mm in height (up to 160 mm with two adjustable endpieces). Once in place, fine adjustments can be made to position the endpiece to cause minimal disturbance to the packed bed. Each column is supplied assembled and ready to use, with all the frits, tubing, fittings, and connections needed to get started.



### EZ Columns

Column ID	Column length	Max pressure	One fixed & one adjustable endpieces	Two adjustable endpieces	Two fixed endpieces
			Item. no.	Item. no.	Item. no.
6.6 mm	100 mm	900 psi	PV-11942-94	PV-11942-93	PV-11942-95
	250 mm		PV-11943-00	PV-11942-99	PV-11943-01
10 mm	250 mm	600 psi	PV-11943-15	PV-11943-14	PV-11943-16
	500 mm		PV-11943-24	PV-11943-23	PV-11943-25
15 mm	250 mm	300 psi	PV-11943-33	PV-11943-32	PV-11943-34
	400 mm		PV-11943-39	PV-11943-38	PV-11943-40
25 mm	250 mm	150 psi	PV-11943-51	PV-11943-50	PV-11943-52
	500 mm		PV-11943-60	PV-11943-59	PV-11943-61
35 mm	250 mm	150 psi	PV-11943-66	PV-11943-65	PV-11943-67
	330 mm		PV-11943-69	PV-11943-68	PV-11943-70
50 mm	250 mm	75 psi	PV-11943-75	PV-11943-74	PV-11943-76

### EZ SolventPlus™ Columns

Column ID	Column length	Max pressure	One fixed & one adjustable endpieces	Two adjustable endpieces	Two fixed endpieces
			Item. no.	Item. no.	Item. no.
6.6 mm	100 mm	900 psi	PV-11943-90	PV-11943-89	PV-11943-91
	400 mm		PV-11944-02	PV-11944-01	PV-11944-03
10 mm	150 mm	600 psi	PV-11944-08	PV-11944-07	PV-11944-09
15 mm	250 mm	300 psi	PV-11944-29	PV-11944-28	PV-11944-30
25 mm	250 mm	150 psi	PV-11944-47	PV-11944-46	PV-11944-48
35 mm	250 mm	150 psi	PV-11944-62	PV-11944-61	PV-11944-63
50 mm	250 mm	75 psi	PV-11944-71	PV-11944-70	PV-11944-72

### Materials of Construction

**Column:** borosilicate glass

**Endpiece:** PTFE

**Threaded end:** PEEK

**Frit (bed support):**

EZ columns: PE

EZ SolventPlus columns: PTFE

**O-ring:**

EZ columns: FKM/FPM

EZ SolventPlus columns: Chemraz®

**Adjusting and retaining nuts:** acetal

**Connection cap:**

EZ columns: glass-filled PP

EZ SolventPlus columns: ETFE

**Fitting nuts:**

EZ columns: glass-filled PP

EZ SolventPlus columns: ETFE

## Your chromatography experts

Liquid chromatography (LC)

Low-pressure liquid chromatography (LPLC)

High-performance liquid chromatography (HPLC)

Ultra high-performance liquid chromatography (UHPLC)

Fast protein liquid chromatography (FPLC)

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## VapLock™ Closed Systems

### Protect lab personnel from hazardous solvent vapors

- Minimize chemical exhaust from solvent reservoir bottles and waste containers—ideal for HPLC and other analytical testing instruments
- Avoid costly fines by maintaining regulatory compliance
- Achieve repeatable results and ensure the purity of the process
- Simply attach to any standard solvent bottle and waste container
- Versatile—large selection of components provides a solution for any system

### Solvent Delivery

- Cap seals securely to prevent contamination and evaporation
- Integral check valve prevents vapors from escaping
- Filtered air replaces fluid withdrawn from the container, maintaining equilibrium
- Simple and quick bottle changes—easy to remove without tangling inlet tubes



**Solvent Delivery Container Caps.** PTFE cap body, PP spin collar, PTFE/SS integrated air inlet valve, and 50 µm PTFE exhaust filter.

Cap size	Ports	Seal material	Item number
GL45	(2) ¼"-28 UNF(F)	FFKM	<a href="#">PV-12018-08</a>
		EPDM	<a href="#">PV-12018-06</a>
	(4) ¼"-28 UNF(F)	FFKM	<a href="#">PV-12018-09</a>
		EPDM	<a href="#">PV-12018-07</a>

**⚠ WARNING:** This product can expose you to chemicals including tetrafluoroethylene, which is known to the State of California to cause cancer and reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

### Waste Collection

- Fully enclosed and sealed system collects waste while containing harmful vapors
- Manifolds include multiple connection ports to adapt to your system; free-spinning collar allows quick disconnect
- Exhaust filter absorbs solvent vapors to prevent escaping to the environment; choose filter with breakthrough indicator to know when to replace
- Includes everything needed for closed waste containment—select a waste manifold kit to use with your existing container, or choose a system with waste container included

**Waste Manifold Kits.** Include a 10-port manifold [6 ports x ¼"-28 UNF(F), 3 ports x ¼" NPT(F), and 1 port x ½" NPT(F)], fittings, plugs for unused ports, tubing with connections, and exhaust filter with breakthrough indicator.

Cap size	Manifold material	Item number
38-430	PTFE	<a href="#">PV-12018-63</a>
Wako 38 mm	PP	<a href="#">PV-12018-68</a>
Wako 38 mm	PTFE	<a href="#">PV-12018-69</a>
GL45	PTFE	<a href="#">PV-12018-75</a>
DIN 45	PP	<a href="#">PV-12018-80</a>

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**Solvent Waste Systems.** Include container, manifold, fittings, plugs for unused ports, tubing with connections, and exhaust filter with breakthrough indicator.

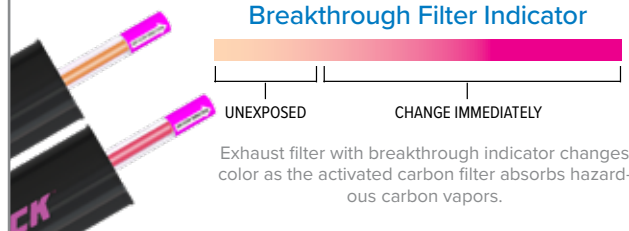
Container	Manifold	Fittings	Item number
20-L capacity, translucent PE; FM approved, OSHA, NFPA, and EPA compliant	10 ports, PP	Quick-disconnect, PP	<a href="#">PV-12020-69</a>
	10 ports, PTFE	Quick-disconnect, SS	<a href="#">PV-12020-70</a>

**⚠ WARNING:** This product can expose you to chemicals including tetrafluoroethylene, which is known to the State of California to cause cancer and reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



For a full selection, please visit [coleparmer.com/vaplock](http://coleparmer.com/vaplock)

### Breakthrough Filter Indicator



Replacement Exhaust Filters. Activated carbon, HDPE cartridge, ¼" NPT(F) port.

Description	Qty	Item number
75 g filter	1	<a href="#">PV-12019-79</a>
	5	<a href="#">PV-12019-81</a>
75 g filter with breakthrough indicator	1	<a href="#">PV-12019-80</a>

**⚠ WARNING:** This product can expose you to chemicals including formaldehyde, which is known to the State of California to cause cancer. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# TraceableLIVE®

## Safeguard temperature-sensitive items and maintain compliance

Your refrigerator or freezer contains valuable samples that are key to your lab's daily operation.

Securely monitor your critical environments and notify your smartphone, tablet, or PC if anything goes wrong.

TraceableLIVE is a cloud-based, subscription software solution for connected data logging devices that sends alerts when an out-of-range condition, lost network connection, low battery charge, or device for calibration is detected.

### Easy to set up

#### Custom templates

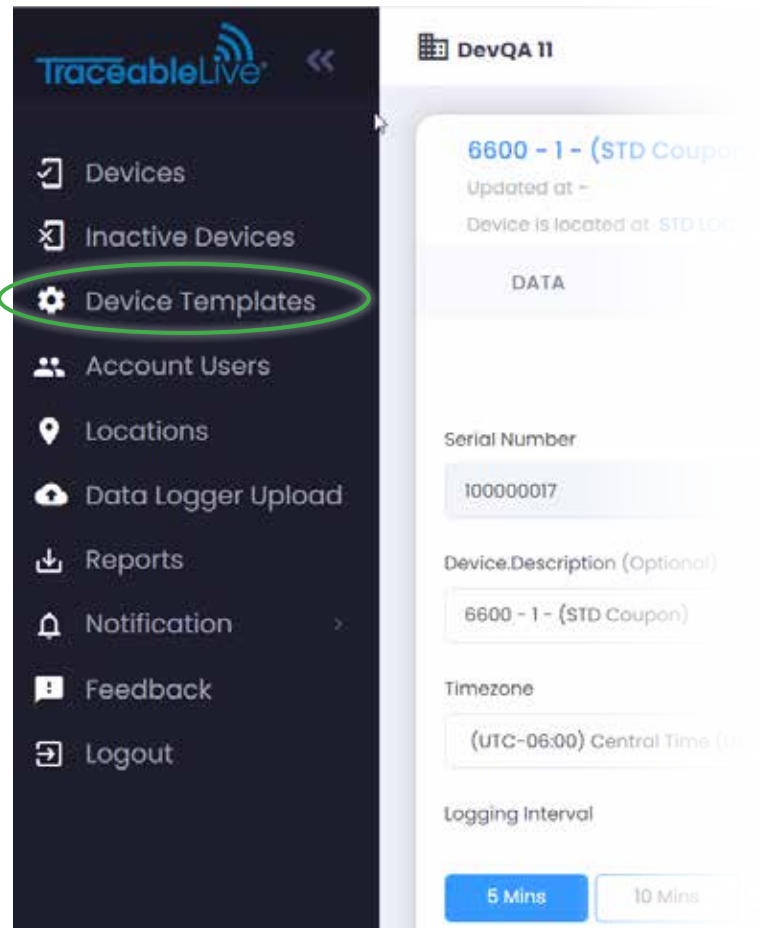
– Build your own templates to meet your exact needs. TraceableLIVE Premium subscribers can create an unlimited number of their own templates using parameters for min/max, time zones, times, and notification types, as well as the name and description of their template

#### Preloaded templates

– We've done it for you. Simply use the preloaded templates complete with all of the information you need for monitoring Spex® chemical products according to the manufacturer's preferred settings  
– Available to Standard and Premium subscribers

#### Device-based user notifications

– All TraceableLIVE subscribers can apply monitoring and alarm settings by device instead of by location for a simplified setup, notifications on a 'per-device' basis, and assignment of users to specific devices



## More ways TraceableLIVE makes life in the lab a little easier

- Voice Notification Escalation available for TraceableLIVE Premium subscribers
- TraceableLIVE Premium subscribers can set up an escalation path that generates an automated phone message for out-of-range conditions to mobile and landline phones
- Easy setup—just configure as an Escalation in the Escalations menu
- Ideal for high importance notifications

## Get notified wherever you are—it's all on your wrist!

- Accessing your TraceableLIVE devices couldn't be easier
- TraceableLIVE paid subscribers can access their devices and notifications via Apple Watch®

## Meet Vaccines for Children (VFC) program requirements

- All TraceableLIVE users can output secure PDF files as required by California code
- Download CSV files from all Traceable® Excursion-Trac™ devices
- Upload USB data from Excursion-Trac data loggers to the TraceableLIVE cloud

## Prepaid Subscription Packages

Now you can get TraceableLIVE without monthly charges on your credit card. Simply opt for a subscription for 1 or 2 years. You can add it to your new TraceableLIVE product purchase or order it alone to add to one of your current TraceableLIVE devices.

Features	Standard	Premium
Preloaded templates included for Spex products and more	✓	✓
Create unlimited custom alarm/settings templates		✓
E-mail and push alarms	✓	✓
Voice call notifications		✓
SMS text notifications included	✓*	✓
Apple Watch compatibility		✓
Unlimited users, data storage	✓	✓
Unlimited devices	✓	✓
21 CFR Part 11 compliance**		✓

Description	Item number
1 year Standard TraceableLIVE subscription (per device)	<a href="#">PV-63003-36</a>
2 year Standard TraceableLIVE subscription (per device)	<a href="#">PV-63003-37</a>
1 year Premium TraceableLIVE subscription (per device)	<a href="#">PV-63003-38</a>
2 year Premium TraceableLIVE subscription (per device)	<a href="#">PV-63003-39</a>

Standard and premium monthly subscriptions also available on [traceablelive.com](https://traceablelive.com)

\*For Standard subscribers SMS Text notifications add additional charges/month/device apply (credit card only).

\*\*Meets 21 CFR Part 11 North American Compliance and Annex 11 for Europe.



Introducing an *exclusive* line of TraceableLIVE-enabled ULT freezers

It's almost like having another set of hands helping in the lab

Freezers come with a Traceable® data logger built in, plus 1 full year of TraceableLIVE cloud-based monitoring service.

See our North Sciences/Traceable freezers at [coleparmer.com](https://coleparmer.com)

# Traceable® Cold Chain

Whether in storage or in transit, make sure your products are kept at the optimal conditions.

Find more at [coleparmer.com/coldchain](http://coleparmer.com/coldchain)

## Wi-Fi Data Loggers with TraceableLive® Cloud Service

Get alerts before you lose valuable samples

- Remotely monitor your critical environments 24/7 via Wi-Fi\*
- View current conditions anywhere—cloud-based interface sends email, text, and push notifications
- Securely connect to data via smartphone, tablet, PC, or Apple Watch®
- No software required—web, Android™, Apple® iOS data visibility

Data loggers compatible with TraceableLIVE cloud service provide a simple, efficient, and reliable way to ensure your critical samples are not compromised due to parameter variations. This latest technology is ideal for monitoring a process in real time, any time. Plus you get the value, accuracy, and peace of mind of NIST-traceable calibration at a noncalibrated price.



Sensor included	Temperature parameters			Item number
	Range	Resolution	Accuracy	
<b>Cryogenic data loggers</b>				
One 316 SS probe with 1.8-m (6-ft) cable	-200 to 105 °C (-328 to 221 °F)	0.01 °C/F	±0.25 °C (±0.4 °F)	PV-18001-08
Two 316 SS probes with 1.8-m (6-ft) cable				PV-18001-09
<b>Ultra-low temperature data loggers</b>				
One 316 SS probe with 1.8-m (6-ft) cable	-90 to 105 °C (-130 to 221 °F)	0.01 °C/F	±0.1 °C (±0.18 °F)	PV-18000-27
Two 316 SS probes with 1.8-m (6-ft) cable				PV-18000-28
<b>Refrigerator/freezer data loggers</b>				
Two bottle probes	-50 to 60 °C (-58 to 140 °F)	0.01 °C/F	±0.25 °C (±0.45 °F) from -40 to 60 °C, otherwise ±0.5 °C	PV-99460-00
Two quick-disconnect bottle probes				PV-98768-68
Two vaccine bottle probes				PV-61011-31
Two SS probes with detachable sensor and 3-m (10-ft) cable				PV-99460-15
<b>Temperature/humidity data loggers</b>				
Ambient sensor dongle	0 to 55 °C (32 to 131 °F)	0.01 °C/F	±0.4 °C (±0.72 °F)	PV-18000-29
External probe with 3-m (10-ft) cable	0 to 100% RH	0.1% RH	±3% (20 to 80% RH), ±5% (remaining)	PV-18000-30

\*Requires a TraceableLIVE subscription; see pages 34–35 for details.



## Bluetooth®-Enabled Data Loggers with TraceableGO™ App

Connect to your data on your smartphone

- View and download data with free TraceableGO app\* and your Bluetooth®-enabled device
- Track environmental conditions of reagents, clinical samples, vaccines, pharmaceuticals, and food items during transport to any location
- Get an immediate response to see if your contents have been exposed to conditions outside the set parameters
- Set sampling rate from 1 minute to 12 hours
- Supplied with NIST-traceable calibration



Description	Temperature data loggers				Temperature/humidity data logger
	PV-18004-12	PV-18004-28	PV-18004-29	PV-18004-30	PV-18004-13
Item number	PV-18004-12	PV-18004-28	PV-18004-29	PV-18004-30	PV-18004-13
Sensor type	Integrated (ambient)	Bullet	Bottle	Platinum RTD sensor; 316 SS tip	Integrated (ambient)
Cable	None	3-m (10-ft) immersible	3-m (10-ft) micro	2.7-m (9-ft) FEP coated	None
Temperature range	-20 to 70 °C (-4 to 158 °F)	-50 to 70 °C (-58 to 158 °F)	-50 to 70 °C (-58 to 158 °F)	-90 to 100 °C (-130 to 212 °F)	-20 to 70 °C (-4 to 158 °F)
Temperature accuracy	±0.4 °C (±0.7 °F)	±0.3 °C (±0.5 °F)	±0.3 °C (±0.5 °F)	±0.2 °C (±0.4 °F)	±0.4 °C from -10 to 70 °C, otherwise ±0.5 °C (±0.7 °F from 14 to 158 °F; otherwise ±0.9 °F)
Humidity range	—	—	—	—	0 to 95% RH, noncondensing
Humidity accuracy	—	—	—	—	±3% RH from 5 to 75%, otherwise ±5% RH
Memory	64K (65,536) data points, 7.5 months on a 5-minute logging interval. Store up to 90 alarm events				

\*You have the option to subscribe to cloud-based TraceableLIVE™ service to upload data to cloud—ideal for tracking data from multiple loggers or to comply with regulatory agency requirements. The low-cost TraceableLIVE subscription provides unlimited trip data to be saved on the cloud as well as the ability to send a report to an email; see pages 34–35 for details.

## Excursion-Trac™ Data Logging Refrigerator/Freezer Thermometers

Rolling memory retains most recent 525,600 readings

- Track excursion durations with time and date
- Memory can be cleared after downloading data and alarm events to USB drive
- Works with TraceableLIVE® platform to upload, manage, and store reports
- Solution-filled bottle probe mimics temperature of stored samples, eliminating rapid temperature fluctuations caused by door opening
- Features LCD, visual and audible alarms, min/max, and NIST-traceable calibration
- Choose Vaccine-Trac™ model to meet CDC recommendations for vaccine storage and handling



Description	Temperature range	Accuracy	Power	Item number
Excursion-Trac; 1 bottle probe	-50 to 70 °C (-58 to 158 °F)	±0.25 °C	Two AAA batteries (included)	PV-94460-07
Excursion-Trac; 2 bottle probes				PV-94460-09
Vaccine-Trac; 1 bottle probe				PV-94460-03

## TraceableOne™ USB Temperature Data Loggers

Economical, single-use units

- Automatically generate a PDF report
- Download directly to PC—no software required
- Ready to use—preprogrammed alarm parameters
- Plastic pouch keeps logger dry even when shipping materials with cold packs or ice
- Supplied with NIST-traceable calibration



Alarms (low to high)	Logging cycle	Logging interval	Qty/pk	Item number
<b>For refrigerated items</b>				
2 to 8 °C	10 days	1 min	10	PV-18004-15
	10 days	1 min	40	PV-18004-01
	30 days	3 min	40	PV-18004-04
	60 days	6 min	40	PV-18004-07
	90 days	10 min	40	PV-18004-10
<b>For frozen items</b>				
-20 to -15 °C	10 days	1 min	40	PV-18004-02
	60 days	6 min	40	PV-18004-08
	90 days	10 min	40	PV-18004-11

# Cryogenics

Get the cryogenic products you need to handle, store, transport, and safeguard valuable samples.

Find more at [coleparmer.com/cryogenics](http://coleparmer.com/cryogenics)

## PolarSafe® Cardboard Cryogenic Storage Boxes and Dividers

Customize to fit your needs

- Snug-fitting lid prevents accidental separation if dropped
- Bottom drain holes allow safe drainage of liquid nitrogen and prevent moisture buildup
- Moisture repellent coating for use in mechanical freezers or liquid nitrogen tanks to  $-196^{\circ}\text{C}$



### Storage Boxes

Description	Vial size	Vials held	Dimensions (L x W x H)	Item number
Boxes with cell dividers	0.5, 1.5, 2 mL	25	3" x 3" x 2"	<b>PV-06755-71</b>
	0.5, 1.5, 2 mL	81	5¼" x 5¼" x 2"	<b>PV-06755-72</b>
	0.5, 1.5, 2 mL	100	5¼" x 5¼" x 2"	<b>PV-06755-73</b>
Boxes without cell dividers	—	—	3" x 3" x 2"	<b>PV-06755-74</b>
	—	—	5¼" x 5¼" x 4⅞"	<b>PV-06755-75</b>
	—	—	5¼" x 5¼" x 2"	<b>PV-06755-76</b>
	—	—	5¼" x 5¼" x 3"	<b>PV-06755-77</b>
	—	—	—	—

### Cell Dividers

For box model(s)	Vial size	Vials held	Dimensions (L x W x H)	Item number
06755-74	0.5, 1.5, 2 mL	25	2⅝" x 2⅝" x 1¼"	<b>PV-06755-80</b>
06755-75	50 mL	16	5⅝" x 5⅝" x 2¾"	<b>PV-06755-78</b>
	15 mL	36		<b>PV-06755-79</b>
06755-76, 06755-77	15, 50 mL	25	4⅞" x 4⅞" x 1⅝"	<b>PV-06755-81</b>
	1.5, 2 mL	49		<b>PV-06755-82</b>
	1.5, 2 mL	64		<b>PV-06755-83</b>
	0.5, 1.5, 2.0 mL	81	4⅞" x 4⅞" x 1⅝"	<b>PV-06755-84</b>
	0.5, 1.5 mL	100		<b>PV-06755-85</b>
	0.5, 1.5 mL	144		<b>PV-06755-86</b>

## Magne-Box™ Cry-Boxes

Magnetic closure keeps your samples secure

- Clear lids with colored inserts and numbered grids for easy sample identification
- Polycarbonate design for use from  $-196$  to  $121^{\circ}\text{C}$
- Slot openings on the bottom of boxes allow for drainage
- Fits in standard-size freezer rack



Vial size (mL)	Vials held	Color	Dimensions (inches)	Item number	Qty/pk
2	25	Orange	3 x 3 x 2⅞	<b>PV-04200-03</b>	8
2	81	Assorted (purple, green, blue, orange)	5¼ x 5¼ x 2⅞	<b>PV-04200-04</b>	4
4 to 5	81-tall	Blue	5¼ x 5¼ x 3¾	<b>PV-04200-05</b>	4
2	100	Green	5¼ x 5¼ x 2⅞	<b>PV-04200-06</b>	4

## PolarSafe® EPS Microtube Rack

Secure, stackable freezer storage

- Accommodates microtubes and cryovials up to 2.0 mL
- Snug-fitting lid remains in place during handling
- Grippable indentations allow easy removal from freezer
- Alphanumeric index in base lets you quickly locate tubes



Deep wells with conical bottoms securely hold both microtubes and cryovials.

Vial size	Vials held	Dimensions (L x W x H)	Item number	Qty/pk
0.5 to 2.0 mL	100	14½" x 4⅞" x 3"	<b>PV-06755-01</b>	10

## PolarSafe® Stainless Steel Freezer Racks

Get organized for easier retrieval of samples

- Sturdy corrosion-resistant stainless steel construction for long-term use
- Designed to fit all major brands of –80 °C ultralow upright and chest freezers
- Handles at both ends accommodate freezers with right- or left-handed doors
- Drawer racks facilitate access to samples without having to remove the entire rack from the freezer
- Vertical racks include stainless steel locking rods to secure containers



### Racks for Upright Freezers

For use with	Capacity	Array	Rack dimensions (W x H x D)	Item number
2" boxes	9	3 x 3	5½" x 6⅝" x 16⅝"	PV-04398-12
	12	3 x 4	5½" x 8⅞" x 16⅝"	PV-04398-13
	16	4 x 4	5½" x 8⅞" x 21⅝"	PV-04398-14
	20	4 x 5	5½" x 11" x 21⅝"	PV-04398-15
	20	5 x 4	5½" x 8⅞" x 26¾"	PV-04398-17
	24	4 x 6	5½" x 12⅝" x 21⅝"	PV-04398-16
3" boxes	12	4 x 3	5½" x 9⅞" x 21⅝"	PV-04398-30
	16	4 x 4	5½" x 12⅝" x 22⅝"	PV-04398-32
2", 3", 3¾" boxes	16, 12, 10	4 open columns	5½" x 9⅞" x 21⅝"	PV-04398-33
Standard 96-/384-well plates	70 w/lids, 80 w/o lids	—	5½" x 9⅞" x 18⅝"	PV-04398-34
	84 w/lids, 96 w/o lids	—	5½" x 9⅞" x 22"	PV-04398-35
96-well deep well plates	36	6 x 6	5½" x 11" x 22"	PV-04398-36

### Drawer Racks for Upright Freezers

For use with	Capacity	Array	Rack dimensions (W x H x D)	Item number
2" boxes	9	3 x 3	5½" x 7⅞" x 16½"	PV-04398-19
	12	3 x 4	5½" x 9⅞" x 16½"	PV-04398-20
	16	4 x 4	5½" x 9⅞" x 22"	PV-04398-21
	20	4 x 5	5½" x 11⅜" x 22"	PV-04398-22
	20	5 x 4	5½" x 9⅞" x 26¾"	PV-04398-24
	24	4 x 6	5½" x 12⅝" x 22"	PV-04398-23
3" boxes	12	4 x 3	5½" x 10⅞" x 22"	PV-04398-31
	15-mL centrifuge tubes	160	2 drawers	5½" x 9⅞" x 22"
50-mL centrifuge tubes	78	2 drawers	5½" x 9⅞" x 22"	PV-04398-26

### Vertical Racks for Chest Freezers

For use with	Capacity	Array	Rack dimensions (W x H x D)	Item number
2" boxes	12	1 x 12	5⅝" x 26⅝" x 5½"	PV-04398-28
	13	1 x 13	5⅝" x 28¼" x 5½"	PV-04398-29

## Cryogenic Vials

Get a leakproof seal

- Temperature range of –196 to 121 °C
- Polyethylene vial and cap
- Stable skirted bottom
- Sterile and autoclavable



Volume	Thread	Qty	Item number
2 mL	External	50	PV-04395-59
	Internal		PV-04395-65

## PolarSafe® EVA Ice Containers

Mess-free insulation for any cryogenic medium

- Thick, nontoxic EVA material is leakproof and will not "sweat"
- Compatible with ice, dry ice, liquid nitrogen, alcohol, and saline solutions
- Ergonomic handles on bases and lids are glove friendly
- Integral pour spouts make cleanup easy



Capacity	Color	Item number
<b>Round buckets</b>		
2.5 L	Blue	PV-04393-88
	Green	PV-04393-90
	Purple	PV-04393-93
4 L	Green	PV-04394-02
	Purple	PV-04394-06
	Black	PV-04394-09
<b>Rectangular pans</b>		
1 L	Green	PV-04393-54
	Purple	PV-04393-57
	Black	PV-04393-60
4 L	Blue	PV-04393-64
	Green	PV-04393-66
	Purple	PV-04393-69
9 L	Blue	PV-04393-76
	Green	PV-04393-78
	Purple	PV-04393-81

## Insulated Cryogenic Gloves

Protect your hands

- Multilayered for maximum protection, yet still flexible and lightweight
- Cryogenic safety kits with gloves, apron, and face shield are also available online



Size	Qty	Item number
Small	One pair	PV-04578-05
Medium	One pair	PV-04578-04
Large	One pair	PV-04578-03
X-large	One pair	PV-04578-06

## Portable Dewar Flasks

Ideal for short-distance transport and cooling small samples

- Two spring clips keep insulated lid securely in place
- Constructed of borosilicate glass 3.3 core with blue-coated protective metal casing
- Features a detachable handle



Capacity (L)	Static holding time* (hours)	Evaporation rate* (L/day)	ID cm (in.)	Height cm (in.)	Item number
1	18	1.2	10.0 (3 <sup>15</sup> / <sub>16</sub> )	21.5 (8 <sup>1</sup> / <sub>2</sub> )	PV-03772-10
2	26	1.9	13.8 (5 <sup>7</sup> / <sub>16</sub> )	24.5 (9 <sup>5</sup> / <sub>8</sub> )	PV-03772-20
4	75	1.4	13.8 (5 <sup>7</sup> / <sub>16</sub> )	38.5 (15 <sup>3</sup> / <sub>16</sub> )	PV-03772-40

\*Values given for liquid nitrogen. For storing dry ice and liquid nitrogen, it is necessary to drill a 2-mm hole in center of lid.

## PolarSafe® Cryogenic Transport and Storage Dewars

Safely store samples for up to 80 days without a LN<sub>2</sub> refill

- Ultralow evaporation loss and high thermal efficiency enhance cryogenic protection
- Lightweight aluminum construction and carrying handles for easy mobility
- Choose models supplied with stainless steel racks to hold your storage boxes
- The 115-L model features a lockable lid with temp and fluid level display
- Go online to order a PolarSafe dewar bundled with a Traceable® liquid nitrogen data logger—the perfect combination for your cryogenic storage needs



Capacity	Included racks	Maximum storage	Evaporation rate	Static holding time	Neck ID	Height	Item number
3 L	—	—	0.1 L/day	20 days	5.0 cm (2")	42.9 cm (16 <sup>7</sup> / <sub>8</sub> ")	PV-44260-61
6 L	—	—	0.1 L/day	38 days	5.0 cm (2")	47.6 cm (18 <sup>3</sup> / <sub>4</sub> ")	PV-44260-62
10 L	—	—	0.1 L/day	63 days	5.0 cm (2")	53.7 cm (21 <sup>1</sup> / <sub>8</sub> ")	PV-44260-63
30 L	6 square racks able to hold 4 boxes each	600 1.2-/2-mL cryovials (25 per box)	0.28 L/day	71 days	12.5 cm (4 <sup>7</sup> / <sub>8</sub> ")	65.7 cm (25 <sup>7</sup> / <sub>8</sub> ")	PV-44260-56
95 L	6 square racks able to hold 5 boxes each	3000 2-mL cryovials (100 per box); 972 5-mL cryovials (81 per box)	0.81 %/day	66 days	21.6 cm (8 <sup>1</sup> / <sub>2</sub> ")	79.1 cm (31 <sup>1</sup> / <sub>8</sub> ")	PV-44260-54
115 L	6 square racks able to hold 6 boxes each	3600 2-mL cryovials (100 per box); 1458 5-mL cryovials (81 per box)	0.83 %/day	80 days	21.6 cm (8 <sup>1</sup> / <sub>2</sub> ")	81.9 cm (32 <sup>1</sup> / <sub>4</sub> ")	PV-44260-55

PV-44260-80 Trolley for 30 L to 50 L dewars

## PolarSafe® Insulated Transport Bags and Boxes

Transport critical samples with less worry

- Maintain a temperature range of 2 to 8 °C for 8 to 15 hours\*
- Easily arrange modular cooling packs for different-sized samples
- Money-saving bundles include the recommended cooling packs
- **Lightweight nylon bag** features shoulder strap and document pocket
- **Extremely durable polypropylene box** has integrated handles and shoulder strap



Description	Item number
5-L bag with two end-caps and two frames	PV-03726-32
10-L bag with two end-caps and four frames	PV-03726-34
16-L bag with four blocks (1 L)	PV-03726-36
30-L bag with two blocks (1 L, slim) and four blocks (1 L)	PV-03726-38
5-L box with two end-caps and two frames	PV-03726-40
10-L box with two end-caps and four frames	PV-03726-42
20-L box with two blocks (2 L)	PV-03726-44

\*Based on 25°C ambient temperature. Estimates can vary depending on how samples are packed. Additional temperature/time data available online.

PV-03726-19 Security sealing ties, plastic. 100/cs

# Traceable's most popular products

Reimagined with even more intuitive user experience.

Maintain compliance—all come with NIST-traceable certificate from our A2LA-accredited (1750.01) calibration laboratory.



## Refrigerator/Freezer Digital Thermometer with Probe

Protect valuable samples in your fridge

- Alarm indicator bar lights up orange when you are 1° away from out-of-range set point; turns bright red and blinks when excursion occurs
- Get alerts about issues affecting the contents of your fridge—without even opening the door
- Use the mute button to silence the buzzer alarm while investigating the issue
- Reduce upkeep with boosted battery power and interior tech upgrades for higher performance
- Make readings quickly and with certainty using the triple display—shows current, high, and low temperatures simultaneously



Range	Accuracy	Power	Probe type	Item number
-50 to 70 °C (-58 to 158 °F)	±1 °C	Two AAA batteries (included)	Buffered bottle	<b>PV-56000-00</b>
			Bullet	<b>PV-56000-03</b>
			Buffered 5-mL vaccine	<b>PV-56000-07</b>

## Thermohygrometer with Clock

Monitor temperature, humidity, and time simultaneously, at a glance

- All three parameters are displayed on screen, all the time, so you can log conditions without putting down your clipboard
- Features Min/Max memory, which is easily cleared at the beginning of each process
- Goes anywhere, whether magnetically mounted or set on the benchtop with built-in kickstand
- Internal sensors make it ideal for use in hoods, cleanrooms, incubators, and environmental cabinets



Humidity	Temperature	Power	Item number
20 to 90% RH; accuracy is ±5% RH mid-range, otherwise 8%	0 to 50 °C (32 to 122 °F); accuracy is ±1 °C	One AAA battery (included)	<b>PV-56000-10</b>

## Multichannel Timers

Antimicrobial protection is built in for a cleaner, more hygienic product

- Ergonomic design provides optimal viewing angle, easy use, and increased stability on bench
- Large, tactile buttons are glove-friendly
- Repetitive or recurring tasks are quick and easy with on-board memory function that returns display to previously programmed countdown time
- Never miss your cue with extra-loud alarms that sound for one full minute

Channels	Timing capacity	Accuracy	Power	Item number
3	99 hours, 59 minutes, 59 seconds	±0.001%	One AAA (included)	<b>PV-56000-13</b>
4		±0.01%		<b>PV-56000-16</b>



56000-13

56000-16

# Traceable® Products

Accurate, reliable measurements every time!

Each Traceable® product goes through an intense quality control process and comes with NIST-traceable certification.

Find more at [coleparmer.com/traceable](http://coleparmer.com/traceable)



## Table/Wall-Mount Thermometers

Don't be caught off guard

- Alarm provides alert when temperature rises above or falls below a set point
- Display shows current probe temperature in °C or °F
- Min and Max monitor high and low readings for any time period
- Bottle probes have sensors buffered from rapid temperature fluctuations



Application	Sensor	Temperature	Item number
General purpose	Probe on 3-m (10-ft) micro-cable	-50 to 70 °C (-58 to 158 °F)	PV-94460-88
Refrigerator/ freezer	Bottle probe		PV-94460-74
	5-mL bottle probe		PV-94460-73

## Remote Alarm RH/Temperature Monitor

Triple display simultaneously shows Min/Max, and current RH/temperature

- Remote humidity/temperature sensor on a 2-m (6.5-ft) cable
- High/low alarm feature may be set by user in 1% RH or 1° increments
- Supplied with battery, external sensor, stand, and wall mount



Humidity	Temperature	Item number
5.0 to 95.0% RH Accuracy: ±3% RH from 25 to 75%, ±5% otherwise	0 to 60 °C (32 to 140 °F) Accuracy: ±0.5 °C	PV-98766-85

## Precision Monitoring Thermohygrometer

View numerically and graphically

- Scroll through temperature and humidity data for the past seven days
- Maintain data integrity—historical data cannot be cleared, only overwritten



Humidity	Temperature	Item number
0 to 90% RH Accuracy: ±4% from 20 to 80%; ±5% otherwise	-20 to 50 °C (-4 to 122 °F) Accuracy: ±0.4 °C	PV-18004-34

## Thermohygrometer with Dew Point and Wet Bulb

High/low alarm for all four parameters

- Audible alarm will sound for one minute and red LED will flash until readings return to non-alarm condition
- Displays current conditions along with minimum and maximum readings
- Wall mount or place on your desktop



Humidity	Temperature	Item number
1 to 99% RH Accuracy: ±4% from 35 to 75%; ±5% otherwise	-40 to 70 °C (-40 to 158 °F) Accuracy: ±1.8 °F (±1 °C)	PV-90080-03

## General-Purpose and Refrigerator/Freezer Thermometers

### Get multiple readings simultaneously

- Keep samples safe—programmable alarm alerts you to out-of-range conditions
- Min/Max feature stores the highest and lowest readings until cleared
- Get more done—monitor multiple applications with dual-probe units
- Versatile—mount to outside of freezer or place on benchtop
- **Advanced models** feature high accuracy, one-button field calibration, and date/time stamp
- **Data logging models** record up to 525,600 data points to be transferred to your computer using a USB flash drive



Application	Probe(s) included	Range	Resolution	Accuracy	Power	Item number
<b>A. Standard thermistor models</b>						
Refrigerator/freezer	One bottle probe	-50 to 70 °C (-58 to 158 °F)	1°	±1 °C	One AA battery (included)	PV-94460-72
Refrigerator/freezer	One 5-mL bottle probe					PV-94460-71
General purpose	One bullet probe					PV-94460-70
<b>B. Advanced thermistor models with improved accuracy (not shown)</b>						
Refrigerator/freezer	Two bottle probes	-50 to 70 °C (-58 to 158 °F)	0.01°	±0.30 °C	Two AAA batteries (included)	PV-94460-92
General purpose	One solid SS probe					PV-94460-98
<b>C. Advanced thermistor models with improved accuracy and data logging</b>						
Refrigerator/freezer	One bottle probe	-50 to 70 °C (-58 to 158 °F)	0.01°	±0.25 °C	Two AAA batteries (included)	PV-94460-07
Refrigerator/freezer	Two bottle probes					PV-94460-09
General purpose	One bullet probe					PV-94460-11
<b>D. Advanced RTD high-accuracy models</b>						
Refrigerator/freezer	One bottle probe	-50 to 70 °C (-58 to 158 °F)	0.01°	±0.01 °C	Two AAA batteries (included)	PV-37803-88
General purpose	One bullet probe					PV-37804-03
General purpose	One bullet probe	-100 to 70 °C (-148 to 158 °F)				PV-37804-05
General purpose	One solid SS probe	-100 to 199.99 °C (-148 to 392 °F)				PV-37804-04

## Our Most Popular Digital Timers and Stopwatches

### Accurately track time in the lab, field, or production floor



Description	A. Large-display clock/timer	B. 100-Hour triple-display clock/timer	C. Extra-large-digit timer	D. Dual-display flashing LED timer	E. Water-resistant stopwatch	F. Waterproof/shockproof stopwatch
Item number	PV-08649-10	PV-94411-10	PV-94461-07	PV-94461-16	PV-35002-13	PV-94460-55
Number of channels	Four	Three	One	Two	—	—
Timing modes	—	—	—	—	Single-event, lap, cumulative split	Single-event, lap, cumulative split
Timing capacity	100 hours	100 hours	100 minutes	100 hours	24 hours	24 hours
Resolution	1 sec	1 sec	1 sec	1 sec	0.01/1 sec*	0.01/1 sec*
Accuracy	±0.01%	±0.001%	±0.01%	±0.01%	±5 sec/day	±0.01
Count direction	Up/down	Up/down	Up/down	Up/down	Up	Up
Display	LCD, ¾"H	LCD, ¾"H	LCD, ½"H	LCD, ¾"H	LCD, ¾"H	LCD, ½"H
Clock	Yes	Yes	No	No	Yes	Yes
Alarm	1 min beep	1 min or infinity (will beep until acknowledged)	1 min beep	Adjustable audio and visual	1 min beep	1 min beep
Battery included	One 1.5 V button cell	One AAA battery	One AAA battery	Two AAA batteries	1.5 V button cell	1.5 V button cell

\*Resolution is 0.01 second for the first 30 minutes of timing and 1 second thereafter.

# Lab Supplies

From outfitting your lab bench to stocking your shelves to keeping your cleanroom clean, we keep you working efficiently day after day.

Find more at [coleparmer.com/labware](http://coleparmer.com/labware)  
[coleparmer.com/glassware](http://coleparmer.com/glassware)  
[coleparmer.com/cleaning](http://coleparmer.com/cleaning)  
[coleparmer.com/pipettes](http://coleparmer.com/pipettes)

## Graduated Cylinders

Wide hexagonal base provides stability

- Easy-read graduations will not wear off
- Feature convenient pour spout
- Choose polypropylene (PP) or borosilicate 3.3 glass

Capacity	Graduations	Qty	Item number
<b>PP cylinders; –15 to 150 °C</b>			
50 mL	1 mL	10	<a href="#">PV-06200-24</a>
100 mL	1 mL	10	<a href="#">PV-06200-25</a>
250 mL	5 mL	10	<a href="#">PV-06200-26</a>
<b>Glass cylinders; –50 to 550 °C</b>			
50 mL	1 mL	1	<a href="#">PV-34502-71</a>
100 mL	1 mL	1	<a href="#">PV-34502-72</a>
250 mL	2 mL	1	<a href="#">PV-34502-73</a>
500 mL	5 mL	1	<a href="#">PV-34502-74</a>
1000 mL	10 mL	1	<a href="#">PV-34502-75</a>



## Graduated PP Beakers

Perfect for general lab use

- Molded-in graduations will not wear off
- Handles temperatures from –15 to 150 °C
- Feature convenient pour spout



Capacity	Graduations	Qty	Item number
<b>Beakers; accurate to ±2.5%</b>			
50 mL (1¾ oz)	5 mL (½ oz)	100	<a href="#">PV-06200-06</a>
100 mL (3½ oz)	5 mL (½ oz)	100	<a href="#">PV-06200-08</a>
250 mL (8 oz)	10 ml (1 oz)	50	<a href="#">PV-06200-12</a>
400 mL (13 oz)	25 mL (1 oz)	50	<a href="#">PV-06200-14</a>
600 mL (20 oz)	25 mL (1 oz)	25	<a href="#">PV-06200-16</a>
<b>Beakers with molded-in handle; accurate to ±3% to 4%</b>			
250 mL	50 mL	5	<a href="#">PV-06200-18</a>
1000 mL	50 mL	5	<a href="#">PV-06200-20</a>
2000 mL	100 mL	4	<a href="#">PV-06200-21</a>
5000 mL	100 mL	5	<a href="#">PV-06200-23</a>

## CHEMICAL COMPATIBILITY

Can't decide on the right material for your sample? No worries—we make it as easy as 1, 2, 3 with our Chemical Compatibility Chart. Go to [coleparmer.com/chemchart](http://coleparmer.com/chemchart).



## Wide-Mouth HDPE Bottles

Large opening allows easier filling

- Meets USP Class VI requirements
- Reliable and sturdy; include leakproof PP closure
- Handles freezer storage to  $-100^{\circ}\text{C}$



Capacity	Qty	Item number
30 mL (1 oz)	12	<a href="#">PV-06047-10</a>
60 mL (2 oz)	12	<a href="#">PV-06047-20</a>
125 mL (4 oz)	12	<a href="#">PV-06047-30</a>
250 mL (8 oz)	12	<a href="#">PV-06047-40</a>
500 mL (16 oz)	12	<a href="#">PV-06047-50</a>
1000 mL (32 oz)	6	<a href="#">PV-06047-60</a>
2000 mL (64 oz)	1	<a href="#">PV-06055-10</a>
4000 mL (128 oz)	1	<a href="#">PV-06055-20</a>

## Glass Erlenmeyer Flasks

Economical option for everyday use

- Easy-to-read graduations; graduated tolerances to  $\pm 5\%$
- Feature a heavy-duty rim with narrow mouth opening
- Temperature range of  $-50$  to  $550^{\circ}\text{C}$ ; autoclavable



Capacity	Graduations	Qty	Item number
25 mL	5 mL	24	<a href="#">PV-34502-55</a>
50 mL	10 mL	12	<a href="#">PV-34502-56</a>
100 mL	20 mL	12	<a href="#">PV-34502-57</a>
125 mL	20 mL	12	<a href="#">PV-34502-58</a>
250 mL	50 mL	12	<a href="#">PV-34502-59</a>
300 mL	50 mL	8	<a href="#">PV-34502-60</a>
500 mL	100 mL	8	<a href="#">PV-34502-61</a>
1000 mL	100 mL	6	<a href="#">PV-34502-62</a>
2000 mL	400 mL	1	<a href="#">PV-34502-63</a>
3000 mL	500 mL	1	<a href="#">PV-34502-64</a>
4000 mL	500 mL	1	<a href="#">PV-34502-65</a>
5000 mL	500 mL	1	<a href="#">PV-34502-66</a>
6000 mL	500 mL	1	<a href="#">PV-34502-67</a>

## Tri-Corner PP Beakers

Easy pouring from three sides

- Perfect for use with stirrers—flat bottom keeps stir bars centered
- Accurate to  $\pm 5\%$ ; molded graduations
- Withstand temperatures to  $121^{\circ}\text{C}$
- Autoclavable



Capacity	Graduations	Qty	Item number
50 mL / 1.5 oz	5 mL / 0.5 oz	100	<a href="#">PV-06020-01</a>
100 mL / 3.5 oz	10 mL / 0.5 oz	100	<a href="#">PV-06020-03</a>
250 mL / 8 oz	10 mL / 0.5 oz	100	<a href="#">PV-06020-05</a>
400 mL / 13 oz	20 mL / 1 oz	100	<a href="#">PV-06020-07</a>
800 mL / 26 oz	50 mL / 2 oz	100	<a href="#">PV-06020-09</a>
1000 mL / 32 oz	50 mL / 2 oz	100	<a href="#">PV-06020-11</a>
Five of each above		30	<a href="#">PV-06010-07</a>

## Graduated PP Sample Containers

Durable, leakproof design

- Includes sample identification label and screw-on HDPE cap
- Sterile models come individually wrapped



Capacity	Sterile	Qty	Item number
4 oz	Yes	100	<a href="#">PV-06049-40</a>
	No	500	<a href="#">PV-06049-50</a>
8 oz	Yes	100	<a href="#">PV-06049-60</a>
	No	500	<a href="#">PV-06049-61</a>

## Disposable PS Forceps

Reduce cross-contamination

- Corrugated handles provide a secure grip
- Features serrated blunt tips
- Sterile; come individually wrapped



Overall length	Qty	Item number
12.2 cm (4.8")	100	<a href="#">PV-06443-20</a>

## Double-Ended Stainless Steel Spatulas

One-piece seamless construction for long life

- Multifunctional—ideal for sample transfer, mixing, scraping, and handling powders and pastes
- Smooth polished 304 SS surface resists chemical and corrosion



End types	Overall length	Qty	Item number
Micro spoon for small particles / flat straight spatula	15.0 cm (5.9")	3	PV-06287-16
	18.0 cm (7.1")	3	PV-06287-17
	21.0 cm (8.3")	3	PV-06287-18
Macro spoon for medium to large particles / flat straight spatula	12.0 cm (4.7")	3	PV-06287-04
	15.0 cm (5.9")	3	PV-06287-05
	18.0 cm (7.1")	3	PV-06287-06
	21.0 cm (8.3")	3	PV-06287-07
	25.0 cm (9.8")	3	PV-06287-08
Flat rounded spatula / flat straight spatula	30.0 cm (11.8")	3	PV-06287-09
	13.0 cm (5.1")	3	PV-06287-10
	15.5 cm (5.9")	3	PV-06287-11
	18.0 cm (7.1")	3	PV-06287-12
	21.0 cm (8.3")	3	PV-06287-13
	25.5 cm (9.8")	3	PV-06287-14
	30.0 cm (11.8")	3	PV-06287-15

## Disposable HDPE Volumetric Spoons

Accurately measure set volumes

- Manufactured and packed in an ISO Class 8 cleanroom to ensure cleanliness and reduce cross-contamination
- High-quality HDPE conforms to FDA, EC, and EU regulations
- Gamma irradiated and individually packaged so they can be used straight out of the bag without cleaning
- SAL 10<sup>-6</sup> compliant
- BSE/TSE free



Capacity	Overall length	Qty	Item number
1 mL	15.3 cm (6.0")	100	PV-06264-00
2.5 mL	16.0 cm (6.3")	100	PV-06264-01
5 mL	16.5 cm (6.5")	100	PV-06264-02
10 mL	17.1 cm (6.7")	100	PV-06264-03
20 mL	18.0 cm (7.1")	100	PV-06264-04
30 mL	18.7 cm (7.4")	100	PV-06264-05

## Disposable PS Sampling Spoons and Scoops

Long handles are curved at bottom for a more secure grip

- Flat bottom for stability on benchtop or scale
- FDA-grade material; safe for food, drug, and cosmetic contact
- Individually packaged, sterilized by gamma irradiation, and lot stamped for accurate tracing
- Choose double bagged for extra protection from contamination—ideal for use in multi-zone cleanrooms
- Scoops with snap-on lid let you safely transport samples without any spills



Capacity	Qty/cs	Item number
<b>Double-Bagged Spoons</b>		
¼ tsp	50	PV-06302-13
½ tsp	50	PV-06302-12
1 tsp	50	PV-06302-11
1 tbsps	50	PV-06302-10
<b>Double-Bagged Scoops</b>		
60 mL (2 oz)	50	PV-06302-00
120 mL (4 oz)	50	PV-06302-01
250 mL (8 oz)	25	PV-06302-02
<b>Single-Bagged Scoops</b>		
30 mL (1 oz)	100	PV-06260-00
60 mL (2 oz)	100	PV-06260-01
120 mL (4 oz)	100	PV-06260-02
250 mL (8 oz)	100	PV-06260-03
500 mL (17 oz)	50	PV-06260-04
1000 mL (34 oz)	25	PV-06260-05
<b>Single-Bagged Scoops with Snap-On Lid</b>		
60 mL (2 oz)	50	PV-06302-03
120 mL (4 oz)	50	PV-06302-04

## 316L Stainless Steel Pharma Scoops

Fully welded with no dead spaces or crevices

- Hygienic design for the pharmaceutical industry
- Smooth, mirror polish surface—better than 0.5 µm Ra is ideal for powders and granules
- BSE/TSE free



Capacity	Overall length	Qty	Item number
10 mL	7.5 cm (3.0")	1	PV-07205-10
50 mL	11.0 cm (4.3")	1	PV-07205-11
100 mL	18.0 cm (7.1")	1	PV-07205-12
250 mL	23.5 cm (9.3")	1	PV-07205-13
500 mL	24.0 cm (9.4")	1	PV-07205-14
750 mL	33.0 cm (13.0")	1	PV-07205-15
1000 mL	34.0 cm (13.4")	1	PV-07205-16
1250 mL	30.5 cm (12.0")	1	PV-07205-17
1700 mL	35.5 cm (14.0")	1	PV-07205-18
2500 mL	32.0 cm (12.6")	1	PV-07205-19

## ThinTouch™ Nitrile Gloves

Soft feel and textured fingertips for better grip

- Specially formulated for enhanced tactile sensitivity
- High tensile strength for puncture and tear resistance
- Powder-free, latex-free, and AQL of 1.5



Size	Box of 100 gloves	Case of 10 boxes
	Item number	Item number
Small	<b>PV-15957-64</b>	<b>PV-15957-68</b>
Medium	<b>PV-15957-65</b>	<b>PV-15957-69</b>
Large	<b>PV-15957-66</b>	<b>PV-15957-70</b>
X-large	<b>PV-15957-67</b>	<b>PV-15957-71</b>

## Critical Task Wipes

Eco-friendly lab wipes made from 100% recycled cellulose

- Perfect for light-duty tasks, delicate surfaces, and optics
- Low linting and low in chemical extractables



Wipe size	Qty	Item number
11 x 21 cm (4.4" x 8.3")	1 box of 280 wipes	<b>PV-78902-93</b>
	60 boxes of 280 wipes	<b>PV-78902-95</b>

## Test Tube Rack with Tubes

Two tiered and adjustable

- Durable, chemical-resistant polypropylene rack
- Twelve 15-mL graduated tubes with screw-on cap



Rack capacity	Item number
Twelve tubes, 15 mm dia	<b>PV-06739-27</b>

## Cleanroom Swabs

Ideal for precision cleaning and applying lubricants

- Reduce the potential for lint and other residues
- Polypropylene handle minimizes contaminants
- Suitable for ISO Class 5 cleanroom



Wipe head	Handle	Overall length	Qty	Item number
Double-layer polyester	PP, notched	12.8 cm (5.0")	100	<b>PV-33676-04</b>
Double-layer polyester, large	PP	13.1 cm (5.2")	100	<b>PV-33676-11</b>
Open-hole foam	PP, notched	8.5 cm (3.3")	500	<b>PV-33676-05</b>

## Premoistened Clean Wipes

Will not scratch surfaces

- Strong, nonwoven cloth is soft and lint-free
- Individually sealed canister for use in cleanrooms

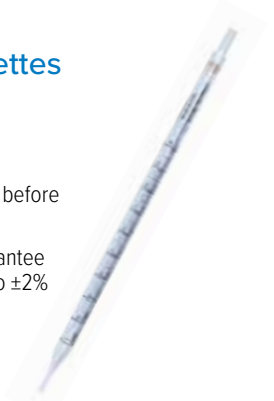


Solution	Qty	Item number
100% DI water	100 wipes	<b>PV-33675-05</b>
70% Alcohol/ 30% DI water	100 wipes	<b>PV-33675-03</b>

## Disposable Serological Pipettes

Filter plug prevents overfilling

- Transparent medical-grade polystyrene
- Sterilized by gamma irradiation and tested before lots are released
- Sharp, black, permanent graduations guarantee precise reading and accurate dispensing to  $\pm 2\%$
- Come individually wrapped in fiber-free paper with easy peel-apart opening



Max volume	Graduation interval	Band color	Qty	Item number
1.1 mL	0.5, 1.0, 1.2 mL	Purple	500	<b>PV-04395-18*</b>
2.2 mL	0.01 mL	White	500	<b>PV-04395-19</b>
10 mL	0.1 mL	Orange	200	<b>PV-04395-21</b>
100 mL	1.0 mL	Pink	50	<b>PV-04395-22</b>

\*Pipette 04395-18 meets the APHA standards for the examination of dairy products.

# Lab Essentials

Make sure you have everything you need for your lab design. Use this convenient checklist to ensure you have all the essentials.

## Balances and Scales

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- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Analytical Balances         | <input type="checkbox"/> Health Scales              | <input type="checkbox"/> Semi and Micro-Analytical Balances |
| <input type="checkbox"/> Bench and Floor Scale Bases | <input type="checkbox"/> Indicators for Scales      | <input type="checkbox"/> Toploading Balances                |
| <input type="checkbox"/> Bench and Floor Scales      | <input type="checkbox"/> Mechanical Balances        | <input type="checkbox"/> Weighing Accessories               |
| <input type="checkbox"/> Counting Scales             | <input type="checkbox"/> Moisture Balances          | <input type="checkbox"/> Weighing Dishes                    |
| <input type="checkbox"/> Crane and Hanging Scales    | <input type="checkbox"/> Platform and Pallet Scales |   |
|  | <input type="checkbox"/> Production Weighing        |   |

## Calibration

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- |  |   |
|--|---|
| <input type="checkbox"/> Calibration Accessories | <input type="checkbox"/> Calibration Masses   |
| <input type="checkbox"/> Calibration Equipment   | <input type="checkbox"/> Calibration Services |

## Chemicals

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- |  |  |                                |
|--|--|--------------------------------|
| <input type="checkbox"/> Acids                 | <input type="checkbox"/> Salts                   | <input type="checkbox"/> Water |
| <input type="checkbox"/> Adhesives and Epoxies | <input type="checkbox"/> Solvents                |                                |
| <input type="checkbox"/> Bioreagents           | <input type="checkbox"/> Standards and Solutions |                                |

## Electrical Products

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- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Batteries and Battery Testers | <input type="checkbox"/> Gauss Meters           | <input type="checkbox"/> Power Meters and Analyzers |
| <input type="checkbox"/> Cable Testers                 | <input type="checkbox"/> Insulation Testers     | <input type="checkbox"/> Power Suppliers            |
| <input type="checkbox"/> Cable Ties                    | <input type="checkbox"/> LCR Meters             | <input type="checkbox"/> Resistance Testers         |
| <input type="checkbox"/> Clamp Meters                  | <input type="checkbox"/> Megohmmeters           | <input type="checkbox"/> RF Signal Generators       |
| <input type="checkbox"/> Electrical Accessories        | <input type="checkbox"/> Motor Rotation Testers | <input type="checkbox"/> Surge Protectors           |
| <input type="checkbox"/> Electronics Enclosures        | <input type="checkbox"/> Multimeters            | <input type="checkbox"/> Test Leads and Probes      |
| <input type="checkbox"/> Function Generators           | <input type="checkbox"/> Oscilloscopes          | <input type="checkbox"/> Voltage Detectors          |
|  | <input type="checkbox"/> Outlet Strips          |   |

## Filtration Products

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- |   |  |
|---|--|
| <input type="checkbox"/> Laboratory Filtration Products | <input type="checkbox"/> Process Filtration Products |
|---|--|

## Furniture

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- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Anti-vibration Platforms and Tables | <input type="checkbox"/> Fume Hoods            | <input type="checkbox"/> Shelving         |
| <input type="checkbox"/> Benches and Tables                  | <input type="checkbox"/> Furniture Accessories | <input type="checkbox"/> Storage Cabinets |
| <input type="checkbox"/> Chairs and Stools                   | <input type="checkbox"/> Glove Boxes           | <input type="checkbox"/> Workstations     |
| <input type="checkbox"/> Cleanroom Furniture                 | <input type="checkbox"/> Instrument Cases      |   |
|  | <input type="checkbox"/> PCR Chambers          |   |

# Lab Essentials

## Heating and Cooling Equipment

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- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Cryogenic Products     | <input type="checkbox"/> Incubators          | <input type="checkbox"/> Refrigerators and Freezers |
| <input type="checkbox"/> Environmental Chambers | <input type="checkbox"/> Laboratory Burners  | <input type="checkbox"/> Steam Generators           |
| <input type="checkbox"/> Heaters                | <input type="checkbox"/> Laboratory Furnaces | <input type="checkbox"/> Sterilizers                |
| <input type="checkbox"/> Ice Machines           | <input type="checkbox"/> Ovens               |   |

## Laboratory Equipment

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- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Baths and Circulators    | <input type="checkbox"/> Flame Photometers                      | <input type="checkbox"/> Magnetic Stirrers and Hot Plates |
| <input type="checkbox"/> Burettes                 | <input type="checkbox"/> Fluid Bed Dryers                       | <input type="checkbox"/> Microscopes and Magnification    |
| <input type="checkbox"/> Calorimeters             | <input type="checkbox"/> Freeze Dryers                          | <input type="checkbox"/> Mixers and Blenders              |
| <input type="checkbox"/> Centrifuges              | <input type="checkbox"/> Glassware Washers                      | <input type="checkbox"/> Particle Counters                |
| <input type="checkbox"/> Chromatography Products  | <input type="checkbox"/> Histology Products                     | <input type="checkbox"/> Pipettes and Pipettors           |
| <input type="checkbox"/> Desiccators              | <input type="checkbox"/> Homogenizers and Ultrasonic Processors | <input type="checkbox"/> Refractometers                   |
| <input type="checkbox"/> Digestion Systems        | <input type="checkbox"/> Humidifiers and Dehumidifiers          | <input type="checkbox"/> Shakers                          |
| <input type="checkbox"/> Dispensers               | <input type="checkbox"/> Laboratory Evaporators                 | <input type="checkbox"/> Thermal Cyclers                  |
| <input type="checkbox"/> Distillation             | <input type="checkbox"/> Laboratory Sieves and Sieve Shakers    | <input type="checkbox"/> Titrators                        |
| <input type="checkbox"/> Electrophoresis Products | <input type="checkbox"/> Leachate Equipment                     | <input type="checkbox"/> Ultrasonic Cleaners              |
| <input type="checkbox"/> Electroporation Products | <input type="checkbox"/> Lighting and Illumination              | <input type="checkbox"/> Vacuums                          |
| <input type="checkbox"/> Environmental Samples    |   | <input type="checkbox"/> Water Purification Products      |
| <input type="checkbox"/> Extraction Apparatus     |   |   |
| <input type="checkbox"/> Fermentation Products    |   |   |

## Laboratory Supplies

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- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Air Sampling                  | <input type="checkbox"/> Cuvettes                     | <input type="checkbox"/> Labware               |
| <input type="checkbox"/> Animal Research Products      | <input type="checkbox"/> Dialysis Products            | <input type="checkbox"/> Microbiology Products |
| <input type="checkbox"/> Bags                          | <input type="checkbox"/> Dippers                      | <input type="checkbox"/> Microplate Products   |
| <input type="checkbox"/> Beakers                       | <input type="checkbox"/> Distillation Supplies        | <input type="checkbox"/> Mortars and Pestles   |
| <input type="checkbox"/> Books and Reference Materials | <input type="checkbox"/> Flasks                       | <input type="checkbox"/> Racks                 |
| <input type="checkbox"/> Bottles and Jars              | <input type="checkbox"/> Graduated Cylinders          | <input type="checkbox"/> Sampling Wipes        |
| <input type="checkbox"/> Calculators                   | <input type="checkbox"/> Ice Buckets and ice Pans     | <input type="checkbox"/> Shippers              |
| <input type="checkbox"/> Carboys                       | <input type="checkbox"/> Lab Cleaning Products        | <input type="checkbox"/> Syringes              |
| <input type="checkbox"/> Chemistry Kits                | <input type="checkbox"/> Lab Organizers               | <input type="checkbox"/> Tubes                 |
| <input type="checkbox"/> Cleanroom Stationery          | <input type="checkbox"/> Labels and Label Printers    | <input type="checkbox"/> Vials                 |
| <input type="checkbox"/> Containers                    | <input type="checkbox"/> Laboratory Dishes            | <input type="checkbox"/> Watch Glasses         |
|  | <input type="checkbox"/> Laboratory Timers and Clocks |  |

# Lab Essentials

## Material Handling and Storage

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- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Carts                    | <input type="checkbox"/> Storage Handling | <input type="checkbox"/> Worktables and Trucks |
| <input type="checkbox"/> Hand and Platform Trucks | <input type="checkbox"/> Tanks and Drums  |  |
| <input type="checkbox"/> Stools and Ladders       | <input type="checkbox"/> Tools            |  |

## Material and Physical Testing

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- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Color and Gloss Meters       | <input type="checkbox"/> Petroleum Testing                   | <input type="checkbox"/> Surface Roughness Testers |
| <input type="checkbox"/> Density and Specific Gravity | <input type="checkbox"/> Products                            | <input type="checkbox"/> Tensiometers              |
| <input type="checkbox"/> Force and Torque             | <input type="checkbox"/> Polarimeters                        | <input type="checkbox"/> Thickness Gauges          |
| <input type="checkbox"/> Hardness Testers             | <input type="checkbox"/> Presses                             | <input type="checkbox"/> Viscometers               |
| <input type="checkbox"/> Melting Point Apparatus      | <input type="checkbox"/> Spectroscopy and Spectrophotometers | <input type="checkbox"/> Viscosity Cups            |

## Pressure & Vacuum Instruments

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- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Gauge Guards, Seals and Accessories | <input type="checkbox"/> Pressure I/P Transducers | <input type="checkbox"/> Vacuum Controllers, Gauges and Systems |
| <input type="checkbox"/> Pressure Calibrators                | <input type="checkbox"/> Pressure Regulators      |   |
| <input type="checkbox"/> Pressure Gauges                     | <input type="checkbox"/> Pressure Switches        |   |
|  | <input type="checkbox"/> Pressure Transducers     |   |

## Process Controllers

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- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Automation Control                        | <input type="checkbox"/> Ion Control            | <input type="checkbox"/> Temperature Process Controllers and Alarms |
| <input type="checkbox"/> Conductivity, Resistivity and TDS Control | <input type="checkbox"/> Multiparameter Control |   |
| <input type="checkbox"/> Dissolved Oxygen Control                  | <input type="checkbox"/> Panel Meters           |   |
|  | <input type="checkbox"/> pH/ORP Control         |   |

## Pumps

---

- |  |   |
|--|---|
| <input type="checkbox"/> Air Compressors             | <input type="checkbox"/> Pump Parts and Accessories |
| <input type="checkbox"/> Drum and Hand Pumps         | <input type="checkbox"/> Transfer Pumps             |
| <input type="checkbox"/> Positive Displacement Pumps | <input type="checkbox"/> Vacuum Pumps               |

## Safety Products

---

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Air Quality Monitors     | <input type="checkbox"/> Gloves                    | <input type="checkbox"/> Safety Apparel        |
| <input type="checkbox"/> Arc Flash Products       | <input type="checkbox"/> Hearing Protection        | <input type="checkbox"/> Safety Shields        |
| <input type="checkbox"/> Combustion Analyzers     | <input type="checkbox"/> Lockout & Tagout Products | <input type="checkbox"/> Safety Signs & Labels |
| <input type="checkbox"/> Eyewash                  | <input type="checkbox"/> Personal Monitor Badges   | <input type="checkbox"/> Solvent Safety        |
| <input type="checkbox"/> Eyewear & Safety Glasses | <input type="checkbox"/> Radiation Detectors       | <input type="checkbox"/> Sound Meters          |
| <input type="checkbox"/> Floor Mats & Matting     | <input type="checkbox"/> Refrigerant Products      | <input type="checkbox"/> Spill Control         |
| <input type="checkbox"/> Gas Detectors            | <input type="checkbox"/> Respirators and Masks     |  |

# Lab Essentials

## Temperature Measurement Products

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- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Bimetal Thermometers    | <input type="checkbox"/> Temperature Controllers       | <input type="checkbox"/> Thermal Images      |
| <input type="checkbox"/> Digital Thermometers    | <input type="checkbox"/> Temperature Labels            | <input type="checkbox"/> Thermistor Meters   |
| <input type="checkbox"/> Glass Thermometers      | <input type="checkbox"/> Temperature Probe Accessories | <input type="checkbox"/> Thermocouple Meters |
| <input type="checkbox"/> Infrared Thermometers   |  |  |
| <input type="checkbox"/> RTD Meters              | <input type="checkbox"/> Temperature Probes            |  |
| <input type="checkbox"/> Temperature Accessories | <input type="checkbox"/> Temperature Switches          |  |

## Test & Measurement Products

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- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Airflow Measurement Products | <input type="checkbox"/> Light Meters                    | <input type="checkbox"/> Stroboscopes                 |
| <input type="checkbox"/> Data Collection Products     | <input type="checkbox"/> Moisture Determination Products | <input type="checkbox"/> Tachometers                  |
| <input type="checkbox"/> Humidity Products            | <input type="checkbox"/> Moisture Meters                 | <input type="checkbox"/> Vibration Measurement        |
| <input type="checkbox"/> Hydrometers                  | <input type="checkbox"/> Penetrometers                   | <input type="checkbox"/> Weather Measurement Products |

## Tubing, Fittings and Hoses

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- |  |                                 |   |
|--|---------------------------------|---|
| <input type="checkbox"/> Fittings                    | <input type="checkbox"/> Hoses  | <input type="checkbox"/> Tubing Accessories |
| <input type="checkbox"/> Fitting Parts & Accessories | <input type="checkbox"/> Tubing |   |

## Water Quality Products

---

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Colorimeters                             | <input type="checkbox"/> Electrodes            | <input type="checkbox"/> Turbidity Meters                     |
| <input type="checkbox"/> Colorimetry Reagents                     | <input type="checkbox"/> Flocculation Testers  | <input type="checkbox"/> Water Quality Accessories            |
| <input type="checkbox"/> Conductivity, Resistivity and TDS Meters | <input type="checkbox"/> Multiparameter Meters | <input type="checkbox"/> Water Quality Standard and Solutions |
| <input type="checkbox"/> Dissolved Oxygen Meters                  | <input type="checkbox"/> pH Buffers            | <input type="checkbox"/> Water Quality Test Strips            |
| <input type="checkbox"/> Dye Tracers                              | <input type="checkbox"/> pH Meters             |   |
|   | <input type="checkbox"/> Turbidity Accessories |   |

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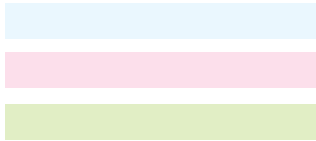
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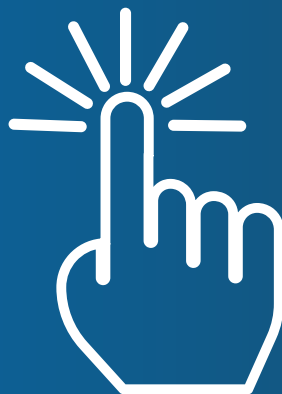
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