

Material Testing Laboratory Products

Proven performance that's fast, accurate,
safe and environmentally friendly.



Barnstead International Material Testing Laboratory Products --

Proven performance
that's fast, accurate, safe and
environmentally friendly.

Trade-In the Old for New!

Barnstead International offers you the opportunity to trade in your old asphalt laboratory equipment (any brand) for new asphalt laboratory equipment listed within this booklet.

We Want to Hear From You

For customer service or technical service contact us at:

Phone: 563-556-2241 or 800-553-0039

Fax: 563-589-0516

E-mail: mkt@barnstead.com

Website: www.barnstead.com

How to Order

Contact us for information on how to order our products from one of the many authorized Barnstead International dealers located throughout the world. Our dealers are ready to assist in your selections, provide product delivery, and offer professional, courteous service after the sale. Contact our Customer Service Department at 800-553-0039 or 563-556-2241. To expedite your order, always specify the exact model number, word description, voltage and size.

Terms and Conditions

Company terms are net 30 days to all customers with established credit. All shipments will be F.O.B. Dubuque, Iowa, U.S.A. Prepaid and C.O.D. orders will also be honored. MASTERCARD and VISA accepted.

Design and Specifications

Due to improvements in design and/or performance, some items may differ slightly from catalog description and photography.

Warranty

The warranty period shall commence either six (6) months following the date the product is sold by Barnstead International or on the date it is purchased by the original retail consumer, whichever date occurs first. All warranty inspections and repairs must be performed by and parts obtained from an authorized Barnstead International dealer or Barnstead International. Barnstead International's sole obligation with respect to its product shall be to repair or (at its own discretion) replace the product. Under no circumstances shall it be liable for incidental or consequential damage. The warranty stated in the operation manual is the sole warranty applicable to Barnstead International products. Barnstead International expressly disclaims any and all other warranties, expressed or implied, including warranties of merchantability or fitness for use. Transportation not included.

SSDetect™ with AVM

Reproducible and repeatable Bulk Specific Gravity and Absorption values for fine aggregates.

An automated device for determining the Saturated Surface Dry condition and Absorption of fine aggregates.

Here's How it Works...

The SSDetect system utilizes a "dry to wet" method by taking a 1000 gram sample dried to a constant mass and then split into two 500 gram test samples. The first 500 gram sample is placed into a special test bowl that is mounted inside the unit. This sample is tested to determine the characteristic wetting curve of the material, called a Baseline Test. Once initiated, the unit will begin to inject water by way of a small injector mounted in the lid of the test bowl into the flow of material that is being mixed inside the bowl by way of the orbital mixing motion. It will continue to mix and add water until the material is completely water soaked as determined by an infrared signal that is continually looking at the surface of the aggregate for signs of water. Once the characteristic wetting curve has been established, the unit display will ask the user to insert the second 500 gram sample for SSD determination. The system then uses the characteristic wetting curve in the first test to determine the Saturated Surface Dry condition of the second sample.

What About High Absorptive Materials?

Because this system utilizes the "dry to wet" method, materials with different absorption characteristics need to be tested differently. The software in this system has been designed to accommodate a wide range of materials.

How Does the Software Work?

The software provides adaptability in two ways. 1) Soak times can be added to the SSD detection test, from 1 minute to 30 minutes, to allow materials to soak up their full potential of internal water. 2) Overall SSD detection test times can be programmed from 1 hour to 24 hours. The soak times occur within the overall test time.

Example... You are testing a material that has a history of being highly absorptive. To be certain you give this material ample time to absorb, you



program a 24 hour test time. During that test time, you want the unit to allow the material to "soak" for 15 minutes, so you program a 15 minute soak time. Now, every time the infrared signal indicates the SSD condition has been achieved, the unit will enter into the 15 minute soak mode. After 15 minutes has passed the infrared signal will look at the material and determine if it needs to have more water injected or not. This process will continue for the 24 hour time period that has been programmed into the unit. If the material does not require water after the "soak" time, it will go back into the "soak" mode for another 15 minutes. It will only add more water to the material if the infrared signal sees that it is required.

SSD Has Been Achieved

Once the SSD condition is achieved, the sample can be poured into the pycnometer for the under water weight measurement. This SSD weight will also allow you to determine the

absorption of the material, since you have a dry weight at the start of the test. No dry back is required.

Advantages

The "dry to wet" method provides even wetting of the material. The orbital mixing action also promotes even wetting action. All sizes of the aggregate gradation are wetted and allowed to absorb their full potential of water in an ambient environment. Unlike the "wet to dry" method which will super heat the -200 material first, driving them well past the SSD condition and compromising the test results.



Ordering Information

Model #	Dimensions Inches (cm)			Electrical Requirements	Operating Climate	Weight Lbs. (kg)
M120227 (SSDetect)	W -14.5 (36.83)	H - 14.25 (36.20)	D - 17.25 (43.82)	100-240V, 50/60 Hz 25 watts, 0.442 amps (max.)	17°C to 37°C RH= 20-80%	22 lbs. (9.97)
M134825 (AVM)	W -18.5 (46.9)	H - 11.15 (28.3)	D - 17.00 (43.1)	120V	17°C to 37°C RH= 20-80%	43 lbs. (19.5)

Accessories included: two test bowls, one 500ml volumetric flask, lab clamp and vertical stand. 500g of calibration sand
Patents pending

NCAT Asphalt Content Furnace

Proven ignition
method for
determining
asphalt content.

Barnstead International and the National Center for Asphalt Technology have developed a fast, accurate, environmentally-friendly, and cost-effective method for determining asphalt content. For research, quality assurance or quality control, the Thermolyne NCAT Asphalt Content Furnace is for you.

A 12-lab round robin field test has been conducted exclusively with the Thermolyne NCAT Asphalt Content Furnace by NCAT. Results and proven performance are documented by NCAT.

The Thermolyne NCAT Asphalt Content Furnace has set the standard for the industry in the determination of asphalt content by the ignition method. This system was an integral part of the drafting and eventual passage of the ignition method standard, ASTM D6307 as well as AASHTO T308.

The Thermolyne NCAT Asphalt Content Furnace provides asphalt content of bituminous paving mixtures accurate to 0.11%.

• Special patented filter system greatly reduces exhaust smoke.



• Accessory baskets provide easy loading/unloading of samples (sold separately).

• Safety door lock prevents opening during critical time of process.

Time Equals Money—Why Waste It!

Ignition method reduces testing time when compared to solvent extraction. A 1200-1800 gram sample of asphalt can be tested in 30-45 minutes using the Thermolyne Asphalt Content Furnace compared to more time consuming, labor-intensive solvent extraction method.

Unit can accommodate samples up to 5000 grams! Testing larger samples reduces the total number of samples needed for testing each day and reduces your labor and costs.

With some ignition method products, the sample has to be removed from the furnace chamber and weighed externally several times during the test, wasting valuable technician time! The Thermolyne NCAT Asphalt Content Furnace has an internal scale, that automatically monitors the sample weight throughout the ignition process, saving valuable technician time and increasing productivity in the lab.

It's Easy...

Simply enter the sample weight and calibration factor for your particular mix design. Place your sample load into furnace chamber, close chamber door, and press "start." The ignition testing procedure is underway.

Once the ignition process is completed, the system will automatically end the test and print the results. A periodic "beep" will then alert the technician that the test has ended. The technician can press "stop" to unlock the chamber door to remove the sample. The sample is then allowed to cool for gradation analysis.

You Deserve the Savings... and Convenience

Utilizes a standard 30 amp electrical service as compared to competitive models that require 50 amp service, which costs more to install and operate.

The ignition method replaces the costly and time consuming solvent extraction method by eliminating the primary cost of solvent purchase and the secondary cost of solvent disposal. Cost analysis has shown that the average asphalt producer can pay for the cost of the Thermolyne NCAT Asphalt Content Furnace in as little as 26 to 32 weeks based on solvent cost savings alone!

The modular design of refractory embedded heating elements provide extended service life and inexpensive and easy replacement when compared to competitive systems that may require shipment back to the manufacturer for heating element replacement.

For Your Safety...

The Thermolyne NCAT Asphalt Content Furnace eliminates the exposure of the asphalt technician to harmful solvents.

The automatic door-lock feature prevents opening the chamber door during the critical test time. This feature provides operator safety and helps ensure testing integrity.

Protecting Our Environment...

The Thermolyne NCAT Asphalt Content Furnace is the only system on the market containing a high temperature afterburner used in conjunction with a patented ceramic filter to reduce the emissions of the ignition process by up to 95%. An independent laboratory study done in conjunction with the California Transportation Department in accordance with California EPA guidelines, showed that the emissions from the furnace during the ignition test were well within EPA parameters. A laboratory hygiene study done in accordance with OSHA guidelines also proved the system poses no health threats to the laboratory technician during proper use.

The NCAT is Sensitive to Your Requirements...

NCAT System has the capability to accept positive or negative correction factors for use with mixes containing hydrated lime. This unique furnace automatically detects endpoint within .01% of the sample weight. Stability of the sample is reached once the endpoint criterion has been met for 3 consecutive minutes during the test. Endpoint sensitivity is adjustable from .01% to 0.5%.

NCAT Furnace software allows you to choose between automatic and manual test mode. In the automatic mode, the endpoint is detected; the software ends the test, prints out the results and beeps. It will continue to beep until the user presses "stop" to unlock the door, this is in accordance with AMRL specifications. In the manual mode, the endpoint is detected; the unit begins to beep but will continue to test until the user presses "stop" to end it. Once the "stop" button has been pressed, the door will unlock and the results will be printed.

NCAT Furnace software automatically compensates for weight change due to sample and basket assembly temperature change. This compensation is computed for each sample load tested, unlike competitive models that assign a fixed number to a given range of load sizes.

Sample Test Data from Printer

Operator entered beginning HMA sample weight.

Total weight loss during test run.

System compensates for sample weight at furnace temperature.

Operator entered calibration data for specific aggregate.

Furnace chamber temperature set point.

Percentage of weight loss compared to total HMA sample weight.

Final calibrated asphalt cement content. No other calculations necessary.

System senses when weight loss is stable and ends test automatically or begins on audible signal indicating test completion.

```

Elapsed Time:      36:12
Sample Weight:    1274g
Weight Loss:      80.8g
Percent Loss:     6.34%
Temp Comp:        0.22%
Calib. Factor:    0.00%
Bitumen ratio:    6.55%
=====
Calibrated Asphalt Cnt: 6.12%
=====
34  531  80.8  6.34
33  533  80.8  6.34
32  537  80.8  6.34
31  540  80.6  6.32
30  545  80.3  6.29
29  549  79.6  6.24
28  552  78.5  6.16
27  555  77.3  6.06
26  558  75.8  5.94
-----
3   444   1.7   0.13
2   441   1.2   0.09
1   445   0.7   0.05
=====
T   TEMP  WT. LOSS %LOSS
=====
Chamber Set Pt: 540°C
Sample Weight: 1274g
Tested By _____
Mix Type _____
Sample ID _____
Time: 15:02:10
Date: 2-14-96
    
```

NCAT Furnace software computes test results as calibrated asphalt content per total weight of HMA sample or bitumen ratio per weight of dry aggregate. System contains 24-hour/7-day timer which can be programmed to preheat the furnace prior to arrival of technicians. An RS232 port provides data interface with personal computer for graphical data analysis.

Ordering Information

Model	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Weight Lbs. (kg)	Volts (phase)	Amps	Watts	Temp. Range (°C)
	W	H	D	W	H	D					
F85930'	14 (35.5)	14(35.5)	14(35.5)	21.75(55.2)	36.75(93.3)	25.75(65.4)	280(127)	240(1)	20	4879/6379	200-650
F85938'	14(35.5)	14(35.5)	14(35.5)	21.75(55.2)	36.75(93.3)	25.75(65.4)	280(127)	208(1)	23	5757	200-650
F85930-33	14(35.5)	14(35.5)	14(35.5)	21.75(55.2)	36.75(93.3)	25.75(65.4)	280(127)	208(1)	23	4879/6379	200-650

AY1087X1 4 baskets, 2 trays, 2 covers, handle, cooling cage, insulated plate, gloves, face shield, 4 rolls of printer tape, balance calibration plate and anderol oil

* Patent issued – #5,558,029. -33 model CE marked.

Heavy Duty Oven

Choose from three sizes: 8 cu. ft., 12.5 cu. ft. and 18.7 cu. ft. model LC-18.



Designed With SUPERPAVE In Mind...

These large capacity ovens are able to take on the big heavy loads. The heavy-duty shelves will hold up to 200 pounds each and beg for more! These shelves love gyratory compactor molds.

The heating elements and fans have been designed into the top of the ovens. Spill whatever you like in the bottom—these ovens don't care!

Superior Features

Digital PID controller allows for precise temperature control. As temperature nears setpoint, controller maintains maximum heat-up rate without overshoot. This type of temperature control provides the stability and uniformity necessary to meet today's demanding procedures.

Hydraulic controlled over-temperature protection ensures oven temperature will not exceed preset limits. Upon initial start-up, set digital controller to your maximum procedure limit; rotate the hi-limit control fully clockwise allowing sufficient time for chamber to stabilize; rotate the hi-limit control slowly counterclockwise until setpoint is reached and hi-limit lamp illuminates; then rotate the hi-limit knob clockwise until hi-limit lamp turns off. Continue to rotate clockwise about 5° to set hi-limit approximately 3°C above setpoint. The over-temp is now set. Simple and dependable.

240 volt, 15 amp electrical service allows for fast heat-up and recovery times. (Unit comes equipped with power cord).



This Oven Has It All!

Designed with horizontal air flow for excellent temperature uniformity and stability, the "OV128060" 18.7 cu. ft. oven by Thermolyne gives you all of the features needed for today's SUPERPAVE laboratory. Uniformity, stability, size, heavy duty shelving and now, the ability to monitor the temperature of your load! That's right, no more breakable thermometers, no more opening the oven door to check thermometers. The OV128060 lets you connect several thermocouple probes to the digital display on the control panel, by way of a selector switch. You select the probe you wish to read and the exact temperature of that load will be displayed. You never have to open the door and allow the heat to escape to read a thermometer.

7-day/24-hour timer included on LC-18 models.

All models provide temperature uniformity of $\pm 3^{\circ}\text{C}$ at 150°C and all units have a temperature range of $+10^{\circ}\text{C}$ above ambient to 250°C . You can't find that kind of performance anywhere else at these prices.

When it comes to temperature control devices, Thermolyne is the leader!

Ordering Information

Model #	Chamber Volume	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volts	Amps	Watts	Stability	Uniformity
		W	H	D	W	H	D					
OV116040	8 cu. ft.	26(66)	21(53.3)	26(66)	34.5(87.6)	35(88.9)	31(78.7)	220-240	12.5	3000	$\pm 0.2@150^{\circ}\text{C}$	$\pm 3^{\circ}@150^{\circ}\text{C}$
OV116850	12.5 cu. ft.	26(66)	32.5(82.5)	26(66)	35(88.9)	53.75(136.5)	34(86)	220-240	20.5	4900	$\pm 0.2@150^{\circ}\text{C}$	$\pm 3^{\circ}@150^{\circ}\text{C}$
OV128060	18.7 cu. ft.	26(66)	46(116.8)	26(66)	35(88.9)	75(190.5)	34(86.4)	220-240	17.1	4100		$\pm 2^{\circ}@150^{\circ}\text{C}$

Vacuum Ovens

Ideal for degassing process of binder material.



Vacuum Oven

3606 PAV vacuum oven is designed for use in the degassing process of the binder material that has been removed from the Pressure Aging Vessel in accordance with AASHTO PP1-98. Immediately following the degassing process, the material can then be tested in the Bending Beam Rheometer, the Dynamic Shear Rheometer or the Direct Tension device. Degassing of the material prior to these tests ensures that the material does not contain air bubbles. Entrapped air can compromise the integrity of the binder material, thus causing false failures in the previously mentioned test devices.

All The Features You Have Come To Expect From Thermolyne

- Powder coated heavy gauge steel exterior for longevity.
- Easy-to-clean stainless steel chamber interior for ease of use.
- Exclusive polycarbonate safety shield protects door glass.
- Silicone door gasket and positive-latch door maintain seal at all vacuum levels for accurate results.
- Two removable aluminum shelves included standard with each unit.
- Radiant warm wall heating provides uniformity and preserves working chamber space.
- 3" glass wool insulation prevents heat loss from working chamber.
- Digital P.I.D. temperature controller provides excellent temperature control for consistent results.
- Top mounted independent evacuation and venting vacuum fittings are unique from all other models which feature front-mounted three-way valve for evacuation, venting, and purging of inert gasses with vacuum fittings.
- Vacuum Fittings Require 1/2" I.D.Tubing.
- Vacuum levels are displayed on gauges in inches of mercury.
- All controls conveniently located on side mounted panel for easy operation.
- Maximum temperature 220°C.
- Two-year warranty.

Ordering Information

Model #	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Weight Lbs. (kg)	Volts (phase)	Amps Display	Watts	Temperature
	W	H	D	W	H	D					
3606PAV	8(20)	8(20)	12 (30)	17(43)	17.375(44)	16(41)	57(26)	120	5.0	600	digital
3606-1PAV	8(20)	8(20)	12 (30)	17(43)	17.375(44)	16(41)	57(26)	240	2.5	600	digital

Pyro-Clean Trace Glassware Cleaning System

Critical glassware cleaning for trace level chemistry!

Thermal Cleaning is Today's Alternative to Chemical and Solvent Cleaning...

Chemical and solvent cleaning can be time consuming, often requiring multiple solvent rinses or acid soaking to adequately clean to ultra trace levels.

Save Time and Money...

Glassware washers can be expensive to purchase and repair, require regular maintenance, as well as high cost consumables and cleaning agents, and may not deliver adequate performance for trace level organic cleaning.

Remove Organic Contamination without Hazardous Chemicals...

Pyro-Clean Trace is a better way to remove organic contamination without hazardous chemicals or expensive consumables.

Cleaning is as easy as loading your dirty glassware and pressing start. Cleaning is performed automatically, leaving the operator free to move on to more important duties. Glassware is heated to 750-900°F for 30-60 minutes.

Rugged Construction...

All Pyro-Clean systems are constructed with 304 stainless steel continuous weld interiors with a double gasket door system for an airtight seal.

Safety Matters...

Each Pyro-Clean operates under negative pressure to assure that no exhaust escapes into the lab. Space age insulation is used as part of a cool exterior wall system. Over Temperature Protection, Electric Door Interlock and Pressure Release Systems are standard safety features.



Applications

- Glassware preparation for drinking water
- Wastewater analysis
- Pesticide/herbicide analysis
- QC Laboratories
 - Biomedical
 - Pharmaceutical
 - agricultural
 - biotechnology
 - industrial

Features

Cleaning Temp. (°F):	750-900°F
Temperature Controller:	Digital 0-950°F
Timer:	Digital 0-999 hours
Operating Controls:	Main Power, Start, Stop Reset
Power Requirements:	240V Single Phase 4.25KW (18 amps)
Venting Requirements:	To the outdoors or central exhaust

Suitable for glassware preparation for the following EPA methods:

300E	502.1	504.1
505	506	507
508	508.1	509
515.1	515.2	525
550	550.1	608
624	625	3510
3535	3545	3550
6610	8015	8260

Ordering Information

Model #	Capacity	Description
OV134510-33	3 cu. ft.	Standard 220-240 Volt. No oxidizer
OV134610-33	5 cu. ft.	Standard 220-240 Volt. No oxidizer
OV134710-33	7 cu. ft.	Standard 220-240 Volt. No oxidizer

Pyro-Clean Heavy-Residue Thermal Cleaning System

Solvent-Free Cleaning of Laboratory Glassware and Metal Tooling!

Solvent-Free Cleaning Technology Eliminates High Labor Costs and Safety Hazards Common in Solvent Method Cleaning...

Cleaning with solvents often does not work when the residue is a relatively inert material such as polymers. The process can be too slow when large amounts of organic residues are present.

The Pyro-Clean cleaning technique uses an automated three-stage process to safely clean while saving valuable labor hours for more important projects. The oven can be loaded with all types, sizes and shapes of glassware and metal parts and then be left unattended as contaminants are removed. Only a final rinsing with water is necessary to remove any residual traces of inorganic ash.

Additional Pyro-Clean Benefits...

Electrical door interlocks prevent doors from being accidentally opened until the cleaning cycle is finished.

Over-temperature protection shuts down heaters should the oven overheat.

A special high temperature oxidation chamber reduces the gasses generated during the cleaning process to safe levels.

The Pyro-Clean system can be ordered with a nitrogen purge option that allows the cleaning chamber to be saturated with nitrogen gas and rendered entirely inert. This is a necessary option for volatile cleaning loads that may ignite below 400°F. The Barnstead technical sales group can assist you in this decision.

The stainless steel chamber is fully insulated to maintain cool wall temperatures.

All-welded interior, dual high temperature gaskets and top-mounted pressure relief door ensure high quality and safe-cleaning environment.



Before After

Glassware coated with asphalt and cleaned by the Pyro-Clean Heavy-Residue Thermal Cleaning System

Ordering Information

Model #	Capacity	Description
OV134210-33	3 cu. ft.	Standard 220-240 Volt w/ oxidizer
OV134310-33	5 cu. ft.	Standard 220-240 Volt w/ oxidizer
OV134410-33	7 cu. ft.	Standard 220-240 Volt w/ oxidizer

Benchtop Muffle Furnaces

Ideal for soils ashing, L.O.I. testing and for cleaning small labware, such as pans and glassware.

Product Description

- Two chamber sizes: Type F47900 offers 120 cubic inches of heating area.
- Type F48000 provides 350 cubic inches of heating area; a ceramic shelf is included to double furnace load capacity (SH480X1).
- Open coil heating elements on both sides of chamber assure fast heat-up, with minimum temperature gradient.
- Maximum energy efficiency is achieved by surrounding the chamber with thermal-efficient ceramic insulation.
- The rear of the chamber incorporates a 0.38" (0.95 cm) diameter port for injecting special atmospheres or monitoring chamber temperature with independent measuring device.

Operation

- Built-in venting system removes undesirable contaminant's and moisture; extends the life span of the element and unit.
- Four temperature controller models: Control A) Analog Control holds accurately at one temperature. A single digital display indicates chamber temperature or setpoint. Control B) Single setpoint, digital control reduces overshoot. Includes OTP alarm. Control C) 8 segment programmable control. Allows programming the rate of temperature increase and decrease (ramp), and the length of time the temperature holds at specific levels (dwell). Control D) 16 segment programmable control that includes a RS232 communications port for connecting to printer or computer. Stores up to four programs.
- All units include a thermocouple, grounded three-wire cord, and plug.
- For Calibration Verification System, see Pyrometers on page 14.



SH480X1 - Ceramic shelf for Type F48000 Furnace

Safety

- Increased operator safety is achieved with a switch that disconnects power to heating elements upon opening the door during operation.
- For safety, an open circuit will trigger the sensor break protection and remove power to heating elements eliminating run-away conditions.

Applications

- Organic and inorganic ashing, gravimetric analysis, sintering, quantitative analysis and L. O. I. testing.

Ordering Information

Model #	Electrical (50/60 Hertz)			Operating Range Temperature		Temperature Control Group
	Volts	Amps	Watts	°C	°F	
F47915	120	8.3	1000	100-1200	212-2192	A
F47910	240	4.2	1000	100-1200	212-2192	A
F47910-33	240	4.2	1000	100-1200	212-2192	A
F47925	120	8.3	1000	100-1200	212-2192	B
F47920	240	4.2	1000	100-1200	212-2192	B
F47920-33	240	4.2	1000	100-1200	212-2192	B
F47925-80	120	8.3	1000	100-1200	212-2192	C
F47920-80	240	4.2	1000	100-1200	212-2192	C
F47920-33-80	240	4.2	1000	100-1200	212-2192	C
F47955	120	8.3	1000	100-1200	212-2192	D
F47950	240	4.2	1000	100-1200	212-2192	D
F47950-33	240	4.2	1000	100-1200	212-2192	D
F48015	120	15.0	1800	100-1200	212-2192	A
F48015-60	120	15.0	1800	100-1200	212-2192	A
F48018	208	7.5	1560	100-1200	212-2192	A
F48010	240	7.5	1800	100-1200	212-2192	A
F48010-33	240	6.5	1560	100-1200	212-2192	A
F48025*	120	15.0	1800	100-1200	212-2192	B
F48028	208	7.5	1560	100-1200	212-2192	B
F48020	240	7.5	1800	100-1200	212-2192	B
F48020-33	240	6.5	1560	100-1200	212-2192	B
F48025-60	120	15.0	1800	100-1200	212-2192	B
F48025-80	120	15.0	1800	100-1200	212-2192	C
F48025-60-80	120	15.0	1800	100-1200	212-2192	C
F48028-80	208	7.5	1560	100-1200	212-2192	C
F48020-80	240	7.5	1800	100-1200	212-2192	C
F48020-33-80	240	6.5	1560	100-1200	212-2192	C
F48055	120	15.0	1800	100-1200	212-2192	D
F48055-60	120	15.0	1800	100-1200	212-2192	D
F48058	208	7.5	1560	100-1200	212-2192	D
F48050	240	7.5	1800	100-1200	212-2192	D
F48050-33	240	6.5	1560	100-1200	212-2192	D

-33 Models CE marked.

Product Specifications

Model #	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Chamber Cubic Inches (liters)	Weight Lb. (kg)
	W	H	D	W	H	D		
F47900	5 (13.7)	4 (10)	6 (15)	11.3 (28.5)	18.5 (47)	15.5 (39)	120 (2.0)	41 (18.5)
F48000	7 (18)	5 (13)	10 (25)	13.3 (34)	19 (49)	19.5 (50)	350 (5.8)	60 (27.2)
				Uniformity at 1000°C			Stability at 1000°C	
F47900 (chamber)				± 4.8°C			±0.4°C	
F48000 (chamber)				± 3.6°C			±0.2°C	

Accessories

Model #	Description	Overall Dimensions Inches (cm)		
		W	H	D
SH480X1	Ceramic Shelf for Type F48000 Furnace			
PH479X1	Hearth Tray for F47900	5 (13)	.38 (.95)	6 (15.2)
PH480X1	Hearth Tray for F48000	7 (18)	.38 (.95)	10 (25.4)

For Calibration Verification System, see pyrometers on page 14.

Industrial Hot Plates

Built for the rugged use the asphalt lab demands!

In the asphalt lab, there is always something that requires heating! Whether it's lab tools or small containers of liquid asphalt. built for the rugged use the asphalt lab demands!

Cast Iron Top Hot Plates

- Stainless-steel case for structural strength to support heavy loads of up to 25 lb.(11.3 kg).
- All models supplied with three-wire cord and plug.
- A choice of standard built-in or remote control models.
- Cast-iron top resists physical abuse, most corrosives and thermal shock.
- Embedded heating elements transfer heat across the entire top plate surface.
- Temperature uniformity at 150°C (300°F): ±10°C (± 18°F).
- Temperature stability at 150°C (300°F): ±1°C (±1.8°F).
- Maximum operating temperature of 482°C (900°F).
- Up to 1080 watts of heating power to handle large scale heating requirements.
- Standard HP2600 units offer: Four position temperature switch for low, medium low, medium and high settings.
- Remote control RC2600 units offer: Five feet of extension cord allows control to be placed outside of corrosive fumehood environments.
- Infinite adjustable temperature control supplies power to the heating elements a certain percentage of time, depending on the dial setting.
- Top plate has thermometer well to accommodate optional thermometer.

Cast Iron Top



Aluminum Top

- Thermostatic temperature control 'senses' and maintains hot plate temperature, provides excellent stability.
- Solid state relay and electronically controlled circuitry in 12 x 24" (30.5 x 60.9 cm) hot plate ensures safety and reliability for your high wattage applications.
- Embedded heating elements transfer heat evenly to top plate, provides uniform temperature.
- Cycle light indicates when power is being supplied to heating element.
- Stainless steel case provides optimal strength for heavy loads.
- 12 x 24" (30.5 x 60.9 cm) hot plate case is painted with epoxy paint for increased chemical resistance in corrosive environments.

- High wattage input is ideal for sizable heating tasks.
- Large 12 x 12" (30.5 x 30.5 cm) and 12 x 24" (30.5 x 60.9 cm) top plate surfaces accommodate up to 40 lb (18.2 kg) loads.
- Recommended for use with glass vessels only.

Outstanding Aluminum Top

Aluminum top plate outperforms other materials; provides superior temperature uniformity and stability.

Uniformity at 100°C (212°F):

HPA2235M ±4.0°C (7.2°F)

HPA2235M ±3.0°C (5.4°F)

Stability at 100°C (212°F):

HPA2245M ±10.0°C (18.0°F)

HPA2245M ±3.5°C (6.3°F)

Product Specifications

Model #	Heating Surface Inches (cm)			Overall Dimensions Inches (cm)		Weight Lb. (kg)
	W	D	W	H	D	
HP2600	9.0 (22.9)	9.0 (22.9)	9.0 (22.9)	6.25 (15.87)	10.0 (25.4)	17.0 (7.7)
RC2600	9.0 (22.9)	9.0 (22.9)	9.0 (22.9)	6.25 (15.87)	10.0 (25.4)	18.0 (8.2)
HP223	12 (30.5)	12 (30.5)	12 (30.5)	6.13 (15.6)	13 (33)	21 (21 (9.5)
HP224	24 (60.9)	12 (30.5)	24 (60.9)	6.25 (15.9)	13.75 (34.9)	43 (19.5)

Ordering Information

Cast Iron Top						Aluminum Top					
Model #	Electrical (50/60 Hertz)			Operating Temp Range		Model #	Electrical (50/60 Hz)			Operating Temp	
	Volts	Amps	Watts	°C	°F		Volts	Amps	Watts	°C	°F
HP2625R	120	9.0	1080	218-482	425-900	HPA2235M*	120	13.3	1600	38-371	100-700
HP2620R	240	4.5	1080	218-482	425-900	HPA2238M	208	7.7	1600	38-371	100-700
RC2625R	120	9.0	1080	100-482	212-900	HPA2230M*	240	6.7	1600	38-371	100-700
RC2620R	240	4.5	1080	100-482	212-900	HPA2245M*	120	26.6	3200	38-371	100-700
						HPA2248M	208	15.4	3200	38-371	100-700
						HPA2240M*	240	13.3	3200	38-371	100-700

* UL and CSA listed.

Explosion Proof Hot Plate

Perform solvent based extractions with the security of the HP 11515B Hot Plate.

Product Description

- UL listed explosion-proof for Class I, Group C and D atmospheres. Contact Barnstead International customer service department for a complete list of applicable atmospheres, 1-800-553-0039.
- Thermostatic safety is set at 243°C for added secondary protection.
- Thermostatic temperature control senses hot plate temperature and maintains heat stability within $\pm 5.5^{\circ}\text{C}$ (9.9°F).
- Optional dial thermometer, MEX126, to monitor surface temperature.
- Corrosion resistant steel case is easily cleaned and maintained.
- Cast aluminum top plate provides maximum heat transfer for excellent temperature uniformity ($\pm 6.5^{\circ}\text{C}$ or 11.7°F).
- Accommodates up to 25 lb (11.3 kg) loads.
- Sealed aluminum housing contains and protects controls from explosive atmospheres.
- Accommodates metal vessels/containers.

Application

- Recrystallizations utilizing hazardous organic solvents
- Dry/heat-treat silicon wafers
- Turn your type OV10600 hot plate oven into an explosion-proof oven. Features a 216 cubic-inch (3511.8 cubic cm) aluminum heating chamber; ideal for drying, baking, pretreating, and curing applications.



Optional dial thermometer used to monitor top plate temperature on explosion-proof hot plate. 1.0" (2.5 cm) dia. face, .250" (.635 cm) diameter stem x 2.5" (6.4 cm) length. 0-300°C scale range.

Product Specifications

Model #	Heating Surface Inches (cm)		Overall Dimensions Inches (cm)			Weight Lb. (kg)
	W	D	W	H	D	
HP11500	6.13 (15.6)	6.13 (15.6)	7 (17.8)	3.25 (8.3)	7.63 (19.4)	9.5 (4)

Ordering Information

Accessories

Model #	Electrical (50/60 Hertz)			Operating Temp Range		Model #	Description
	Volts	Amps	Watts	°C	°F		
HP11515B	120	5	600	38-220	100-428	MEX126	Optional Dial Thermometer

Digital Pyrometers & Kwik-Set® Lab-Chron® Timers

Additional useful tools for Material Testing.

The Thermolyne PM20700 hand-held digital pyrometer is the QC/QA Managers best friend!

What is the temperature of the mat? Hand held infrared devices are fun to play with, but if you really want to know what the temperature of the mat is behind the breakdown roller, you need to get into the center of the lift. The PM20700 with a type "K" immersion probe will allow you to check the actual temperature of the lift. Simply push the immersion probe to the center of the lift and read the display. Infrared guns will indicate the surface temperature, but once the roller has passed and deposited water on the surface, the temperatures will vary widely.

Verify temperatures of ovens and furnaces in the lab. Numerous types of thermocouple probes can be attached to the pyrometer to verify oven and furnace temperatures in the lab. Only pay for calibration services when and if they are needed. This device will allow you to verify your own equipment.



Digital Pyrometer

Kwik-Set® Lab-Chron® Timer

A Digital Pyrometer That's Right for You

Choose from five different accessory probes to measure the temperature of liquids, solids or gases. "Hold function" stores measured temperature in memory. "RCD" records maximum and minimum values or held values. "Read" allows operator to read recorded values. "Range Select" automatically adjusts display resolution from 0.1°C to 1°C. "REL" displays the difference between initial measured value and succeeding measured values.

450 hours of dependable, continuous operation with automatic power OFF function (battery supplied with pyrometer).

Pyrometer indicates open thermocouple or low battery conditions.

Applications

Product temperature measurement testing. Temperature measurement for research and development. Frozen product quality control. Temperature measurement in production processes. Used by members of the United States Olympic Luge Team to measure the temperature of the sled runners during Olympic luge races.

Kwik-Set Lab-Chron Timers

Large illuminated start-stop switch facilitates sequential timing. Five-digit sealed counter with large, easy-to-read numbers. High torque synchronous motor for instant starts. Timing is accurate— independent of voltage fluctuations or

electrical line load. Electric brake for instantaneous stops without overshoot. Compact, light-weight and portable. Non-skid rubber feet. Heavy duty line cord.

Applications

Ideal for timing growth processes, rates of chemical reactions, flow of liquids and gases and histological preparations. Can be used in viscosity testing and a wide range of other industrial applications.

Ordering Information

Digital Pyrometer								
Model #	Overall Dimensions Inches (cm)			Ambient Temp Limits °C		Read-out Scale	Range	Weight Lb. (kg)
	W	H	L	Operating	Storage			
PM20700	2.6 (6.6)	1.4 (3.5)	7.7 (19.5)	0-50	-35-60	°C & °F	K: -160 (-256) to +1372 (2502)	1.0 (0.4)

Calibration Verification System for Furnaces or Ovens	
Model #	Description
AY589X1	Pyrometer/probe, Calibration Verification System for Furnaces or Ovens includes: PM20700 pyrometer, TC405X2 10" probe, C5000 calibration certification of compliance to NIST standards. If no calibration setpoints are specified the default values will be fixed at 100°C (212°F), 500°C (932°F) and 800°C (1472°F). Maximum setpoint is 1000°C.
<ul style="list-style-type: none"> • Accuracy: $T = \text{temperature in } ^\circ\text{C}; T < 0: + (0.002-1); 0 < 200: + (0.001T + 0.7); T > 200: + (0.002T + 1)$ • Precision: $T < 200: 0.1^\circ\text{C}; T > 200: 0.1^\circ\text{C}$ 	

Kwik-Set® Lab-Chron® Timer							
Model #	Overall Dimensions Inches (cm)			Electrical		Time Range (Increments)	Weight Lb. (kg)
	W	H	D	Volts	Hz		
1405	7.37 (18.7)	4.37 (11.1)	4 (10.2)	120	60	0.1 to 9999.9 sec. (0.1 sec.)	5 (2.3)

General Purpose Water Baths

Top performance for today's SUPERPAVE lab.

Product Description

- Hinged cover lifts to 90° stay-open position or can be removed completely.
- Dual thermostats prevent overheating.
- Unit's exterior remains cool to the touch to prevent accidental burns, even after extended use.
- Temperature resistant plastic rim fits over seamless stainless steel reservoir for leak-free seal.
- All models include clear acrylic gable cover; stainless steel covers are available as an accessory.
- Dual-chamber baths available with independent controls for each compartment.
- Rounded, seamless stainless steel reservoir and sample tray resist rust and contamination.

Operation

- PID control on digital models provides $\pm 0.24^{\circ}\text{C}$ uniformity, $\pm 0.5^{\circ}\text{C}$ stability, and $\pm 0.1^{\circ}\text{C}$ control at 37°C .
- Analog models feature temperature uniformity of $\pm 0.2^{\circ}\text{C}$ at 37°C .
- Temperature range from ambient to 100°C .
- Independent high-limit thermostat provides over-temperature protection.



Applications

- Multitude of chemical, research, and industrial laboratory applications.
- Effects of water on compressive strength of compacted bituminous mixtures ASTM D1075-96.

Ordering Information

Model #	Electrical (50/60 Hertz)		Chamber Capacity Liters	Overall Dimensions Inches (cm)			Overall Reservoir Dimensions Inches (cm)			Weight Lb. (kg)
	Volts	Watts		L	W	H	L	W	D	
Digital Water Baths										
18052AQ ³	120	300	2	9.9 (25)	10.8 (27)	7.6 (19)	5.3 (13)	5.9 (13)	6 (15)	7 (3.3)
18022AQ ³	120	300	2 shallow	10.5 (27)	14.5 (37)	7.6 (19)	5.9 (15)	11.8 (30)	2.5 (6)	9 (4.0)
18002AQ ³	120	500	5	10.5 (27)	14.5 (37)	7.6 (19)	5.9 (15)	11.8 (30)	6 (15)	10 (4.5)
18007AQ ³	120	500	10	16.4 (42)	15.4 (39)	8.9 (23)	12.9 (33)	11.8 (30)	6 (15)	16.5 (7.5)
18802AQ ³	120	1000	5/10	16.4 (42)	24.4 (62)	8.9 (23)	11.8 (30)	5.9 (15)	6 (15)	24.5 (11.1)
							11.8 (30)	12.9 (33)	6 (15)	
18102AQ ³	120	1500	20	16.4 (42)	24.4 (62)	8.9 (23)	11.8 (30)	19.8 (50)	6 (15)	22.3 (10.1)
18902AQ ³	120	1000	28	16.4 (42)	24.4 (62)	10.9 (28)	11.7 (30)	19.7 (50)	8 (20)	26 (12)
18012Q ^{1,2,3}	120	1500	44	19.6 (50)	31.6 (80)	9 (23)	16 (41)	28 (71)	6 (15)	78 (35.4)
Basic Water Baths										
18050AQ ³	120	300	2	9.9 (25)	10.8 (27)	7.6 (19)	5.3 (13)	5.9 (13)	6 (15)	7 (3.3)
18020AQ ³	120	300	2 Shallow	10.5 (27)	14.5 (37)	7.6 (19)	5.9 (15)	11.8 (30)	2.5 (6)	9 (4.0)
18000AQ ³	120	500	5	10.5 (27)	14.5 (37)	7.6 (19)	5.9 (15)	11.8 (30)	6 (15)	10 (4.5)
18005AQ ³	120	500	10	16.4 (42)	15.4 (39)	8.9 (23)	12.9 (33)	11.8 (30)	6 (15)	16.5 (7.5)
18800AQ ³	120	1000	5/10	16.4 (42)	24.4 (62)	8.9 (23)	11.8 (30)	5.9 (15)	6 (15)	24.5 (11.1)
							11.8 (30)	12.9 (33)	6 (15)	
18100AQ ³	120	1500	20	16.4 (42)	24.4 (62)	8.9 (23)	11.8 (30)	19.8 (50)	6 (15)	22.3 (10.1)
18900AQ ³	120	1000	28	16.4 (42)	24.4 (62)	10.9 (28)	11.7 (30)	19.7 (50)	8 (20)	26 (12)
18010Q ^{1,2,3}	120	1500	44	19.6 (50)	31.6 (80)	9 (23)	16 (41)	28 (71)	6 (15)	78 (35.4)

¹ UL, ² CUL, ³ CSA



*For more information on
Material Testing Laboratory Products
or to order, contact*

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