

SELECTION GUIDE

Ovens



OUR MOST COMPACT, MULTIPURPOSE OVENS!



ULTRA CLEAN FOR SEMICONDUCTOR AND ELECTRONICS APPLICATIONS!



VALUE PRICES WITH OPTIMAL UNIFORMITY AND SAFETY!



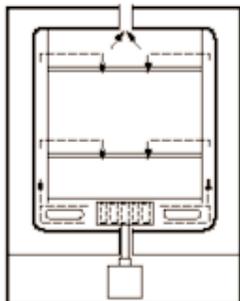
OUR MOST POPULAR, MULTIPURPOSE VACUUM OVENS!

GRAVITY AND MECHANICAL CONVECTION OVENS

	Description	Operating Temp Range °C	Chamber Volume cu. ft. (l)	Temperature Control °C	Temperature Uniformity °C	Page
OUR MOST COMPACT, MULTIPURPOSE OVENS!	Oven Incubator	AMB +5 - 140	0.9 (25.5)	±1.5 @ 37°C	±1.5 @ 37°C	239
	Hot Plate-Oven	38 - 250	0.1 (2.8)	N/A	N/A	
LARGE CAPACITY OVENS FOR GENERAL LAB APPLICATIONS!	Imperial V Gravity Convection	AMB +5 - 270	2.9 (82.1)	±1.0 @ 200°C	±6.0 @ 200°C	240
			3.8 (107.6)			
			4.8 (135.9)			
VALUE-PRICED WITH OPTIMAL UNIFORMITY AND SAFETY!	Imperial V Mechanical Convection	AMB +5 - 270	2.5 (70.8)	±1.0 @ 200°C	±2.0 @ 200°C	241
			3.5 (99.1)			
			4.4 (124.6)			
OUR PREMIUM, HIGH PERFORMANCE OVENS!	Imperial V Digital Mechanical Convection	AMB +5 - 300	2.5 (70.8)	±0.2 @ 200°C	±2.0 @ 200°C	242
			3.5 (99.1)			
			4.4 (124.6)			
OUR MOST ECONOMICAL OVENS FOR BASIC DRYING AND BAKING APPLICATIONS!	Low Cost Gravity Convection Low Cost Mechanical Convection	AMB +5 - 210	0.7 (19.8)	±9.0 @ 100°C ±4.0 @ 100°C	±5.0 @ 100°C ±7.0 @ 100°C	244
			1.7 (48.1)			
			3.1 (87.8)			
			5.7 (161.4)			
ULTRA CLEAN FOR SEMICONDUCTOR AND ELECTRONICS APPLICATIONS!	Class "100" Clean Room	AMB +5 - 250	2.6 (73.6)	±0.2 @ 200°C	±1.5 @ 200°C	246
			2.8 (79.2)			
			3.6 (101.9)			
			4.6 (161.4)			

VACUUM OVENS

	Description	Operating Temp Range °C	Chamber Volume cu. ft. (l)	Temperature Control °C @ 25"Hg	Temperature Uniformity °C @ 25"Hg	Page
OUR MOST POPULAR, MULTIPURPOSE VACUUM OVENS!	Vacuum, Hydraulic Thermostat Vacuum, Microprocessor Control	AMB +5 - 220	0.44 (12.5)	±1.5 @ 100°C ±0.2 @ 200°C	±5.0 @ 100°C ±0.6 @ 200°C	248
			0.7 (19.8)			
			2.3 (65.1)			
PERFECT FOR INERT ATMOSPHERE MOISTURE TESTING!	Moisture Determination (MDO)	AMB +5 - 150	1.1 (31.1) 1.7 (48.1)	±1.0 @ 100°C	±1.8 @ 100°C	250
IDEAL FOR ELEVATED TEMPERATURE AGING TESTS!	Hi-Temp "Squaroid" Vacuum	AMB +5 - 300	1.1 (31.1) 1.7 (48.1)	±2.5 @ 100°C	±3.0 @ 100°C	251



The Lab-Line Exclusive Mechanical Convection Air Flow System

- Constant speed induction blower motor circulates air throughout chamber.
- Heated air is forced up sides of oven chamber to openings in sidewall plenums.
- Heated air is then drawn down through center of oven chamber, reheated, and recirculated.
- Exhaust vapors are vented at top of oven.

Ovens

OVEN - INCUBATOR / HOT PLATE - OVEN

Thermolyne

Type OV19200



OUR MOST COMPACT, MULTIPURPOSE OVENS!

- — Gravity convection heating
- — Excellent temperature uniformity
- — Economical

PRODUCT DESCRIPTION

- Aluminum chamber provides excellent temperature uniformity.
- Double-pane glass window located in door permits easy viewing of samples.
- Magnetic latch assures positive door closure.
- Supplied with one removable metal shelf for maximum sample capacity, three-wire cord, and plug.

OPERATION

- Bimetallic thermostat provides time-saving rapid heat-up (56°C in nine minutes).
- Thermometer port at top of oven accommodates any partial immersion thermometer for temperature monitoring.
- Chamber is vented (1" dia. vent) through the top to allow removal of moisture and other exhaust vapors.

ORDERING INFORMATION

Model #	Electrical (50/60 Hz)			Operating Temp Range °C	Temp Control @ 37°C	Temp Uniformity @ 37°C	US List Price
	Volts	Amps	Watts				
OV19225	120	2.9	350	Ambient +5°C-140°C	±1.5°C	±1.5°C	\$788.00
OV19220-26	240	1.5	350	Ambient +5°C-140°C	±1.5°C	±1.5°C	\$788.00

*26 Models Supplied with European cord set.

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Chamber Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
OV19200	12.3 (31.1)	11.7 (29.7)	12.0 (30.5)	13.3 (33.7)	15.5 (39.3)	13.0 (33.0)	0.9 (25.5)	30 (13.6)

APPLICATIONS

- General lab drying and baking applications.
- Culture incubations.

Type OV10600



PRODUCT DESCRIPTION

- Turns your hot plate into a basic gravity convection oven.
- Includes one removable shelf to maximize sample capacity.
- Double-wall construction features baked-on enamel steel exterior and aluminum inner chamber, making the hot plate oven-durable and easy to clean.
- Thermometer port on top of unit accommodates standard laboratory thermometers.

APPLICATIONS

- Ideal for general drying, baking, preheating and curing applications.

ORDERING INFORMATION

Model #	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Maximum Temperature °C	Volume cu. ft. (l)	Shipping Weight Lb. (kg)	US List Price
	W	H	D	W	H	D				
OV10600	6.0 (15.2)	6.0 (15.2)	6.0 (15.2)	8.5 (21.5)	7.8 (19.6)	9.3 (23.4)	250°C	0.1 (2.8)	6.8 (3.0)	\$223.00

Fits the following hot plate models: HPA1910M, HPA1915B, HPA1915B-13, HP11515B, RC1910, RC1915. (Sold separately. See Hot plate section of this catalog).

48 Hour or Sooner
Express Shipping
Guaranteed!*



*see inside front cover for details

Ovens

IMPERIAL V GRAVITY CONVECTION

Lab-Line

Model 3471



LARGE CAPACITY OVENS FOR GENERAL LAB APPLICATIONS!

- — Temperature range from ambient + 5°C to 270°C
- — Over temperature safety thermostat
- — 2.9 cu.ft (82.1 l), 3.8 cu.ft (107.6 l), and 4.8 cu.ft (135.9 l) chamber capacities
- ★ — 24 Month Warranty

Includes
FREE
Thermometer
Holder



PRODUCT DESCRIPTION

- Designed for general laboratory use when precise temperature control and uniformity are not critical considerations.
- Vents (1" dia.) in oven top and floor enhance natural convection.
- 3" fiberglass insulation helps retain heat in the chamber.
- One piece silicone gasket and positive locking door latch prevent heat loss.
- Plug-style door construction guards against heat loss from the chamber.
- Drawer-style recessed control panel is protected from spills and slides out for easy maintenance.
- Two adjustable chrome-plated wire shelves included standard.
- Interior walls constructed of corrosion-resistant, easy-to-clean stainless steel.
- Heavy-duty cold-rolled steel exterior is reinforced at stress points.

OPERATION

- Dual independent hydraulic thermostats control oven temperature.
- Oven temperature can be monitored with a mercury thermometer in the top of oven (not included).

SAFETY

- Adjustable backup thermostat provides overtemperature protection in case of primary control failure.
- Indicator lights show which thermostat is controlling oven temperature.

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3471	15(38)	19.5(50)	17.2(43)	21.6(55)	35.5(90)	25.25(64)	2.9(82.1)	150 (68)
3476	20(51)	19.5(50)	17.2(43)	26.6(68)	35.5(90)	25.25(64)	3.8(107.6)	155 (70)
3478	25(64)	19.5(50)	17.2(43)	31.6(80)	35.5(90)	25.25(64)	4.8(135.9)	280 (82)

ORDERING INFORMATION

Model#	Electrical (50/60 Hertz)			Operating Temp Range °C	Rise Time (Ambient to 100°C)	Temp Control @ 200°C	Temp Uniformity @ 200°C	US List Price
	Volts	Amps	Watts					
3471	120	10	1200	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2028.00
3471-1	240	5	1200	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2028.00
3476	120	15	1800	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2163.00
3476-1	240	7.5	1800	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2163.00
3478	120	15	1800	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2293.00
3478-1	240	7.5	1800	Ambient +5° to 270°C	25 min.	±1°C	± 6°C	\$2293.00

240 volt models are not CSA certified

ACCESSORIES

Model #	Description	US List Price
3471-8	Shelf for 3471, 3471-1, brackets included	\$72.00
3476-8	Shelf for 3476, 3476-1, brackets included	\$82.00
3478-8	Shelf for 3478, 3478-1, brackets included	\$82.00
3470-2	Stacking Rack for models 3471, 3471-1	\$712.00
3475-2	Stacking Rack for models 3476, 3476-1	\$728.00

Ovens

IMPERIAL V MECHANICAL CONVECTION

Lab-Line

Model 3478M



VALUE PRICED WITH OPTIMAL UNIFORMITY AND SAFETY!

- — Temperature range from ambient +5°C to 270°C
- — Digital temperature display
- — 2.5 cu.ft. (70.8 l), 3.5 cu.ft. (99.1 l), and 4.4 cu. ft. (124.6 l) chamber capacities
- ★ — 24 Month Warranty

Includes
Two **FREE**
Shelves

PRODUCT DESCRIPTION

- Dependable hydraulic thermostat temperature control plus mechanical convection airflow system for excellent drying performance.
- Stainless steel plenums provide optimal air flow and uniformity.
- One piece silicone gasket and positive locking door latch prevent heat loss.
- 3" fiberglass insulation helps retain heat in the chamber.
- Plug-style door construction guards against heat loss from chamber.
- Drawer-style recessed control panel is protected from spills and slides out for easy maintenance.
- Two adjustable chrome-plated wire shelves included.
- Shelves, supports, and plenum remove easily for cleaning.
- Interior walls constructed of corrosion-resistant, easy-to-clean stainless steel.
- Heavy-duty cold-rolled steel exterior is reinforced at stress points.

OPERATION

- Primary hydraulic thermostat can be set temperatures from ambient +5°C to 270°C with $\pm 1.0^\circ$ control.
- Digital display for convenient temperature monitoring.

SAFETY

- Adjustable backup thermostat provides overtemperature protection in case of primary control failure.
- Indicator lights show which thermostat is controlling oven temperature.

PRODUCT SPECIFICATIONS



Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3471M	13 (33)	19.5 (50)	17.2 (43)	21.6 (55)	35.5 (90)	25.25 (64)	2.5 (70.8)	150 (68)
3476M	18 (46)	19.5 (50)	17.2 (43)	26.6 (68)	35.5 (90)	25.25 (64)	3.5 (99.1)	170 (77)
3478M	23 (58)	19.5 (50)	17.2 (43)	31.6 (80)	35.5 (90)	25.25 (64)	4.4 (124.6)	185 (84)

OPERATING SPECIFICATIONS

Operating Temp Range °C	Rise Time (Ambient to 200°C)	Control @100°C	Uniformity @100°C	Control @200°C	Uniformity @200°C
Ambient +5°C to 270°C	60 minutes	$\pm 1.0^\circ\text{C}$	$\pm 1.5^\circ\text{C}$	$\pm 1.0^\circ\text{C}$	$\pm 2.0^\circ\text{C}$

ORDERING INFORMATION

Model #	Description	Volts	Electrical (50/60 Hertz)		US List Price
			Amps	Watts	
3471M	Imperial V Mechanical Oven	120	10.8	1300	\$2366.00
3471M-1	Imperial V Mechanical Oven	240	5.4	1300	\$2366.00
3476M	Imperial V Mechanical Oven	120	15.8	1900	\$2527.00
3476M-1	Imperial V Mechanical Oven	240	7.9	1900	\$2527.00
3478M	Imperial V Mechanical Oven	120	15.8	1900	\$2657.00
3478M-1	Imperial V Mechanical Oven	240	7.9	1900	\$2657.00

240 volt models are not CSA certified

ACCESSORIES

Model #	Description	US List Price
3471M-8	Shelf for 3471M, 3471M-1, brackets included	\$80.00
3476M-8	Shelf for 3476M, 3476M-1, brackets included	\$82.00
3478M-8	Shelf for 3478M, 3478M-1, brackets included	\$82.00
3470-2	Stacking Rack for models 3471M, 3471M-1	\$712.00
3475-2	Stacking Rack for models 3476M, 3476M-1	\$728.00

Ovens

IMPERIAL V DIGITAL MECHANICAL

Lab-Line

Model 3486M



OUR PREMIUM, HIGH PERFORMANCE OVENS!

- — P.I.D. Microprocessor temperature control
- — Digital display and temperature settings
- — Over temperature protection
- ★ — 24 Month Warranty

PRODUCT DESCRIPTION

- P.I.D. microprocessor control and mechanical convection provide superior accuracy, uniformity and recovery times for the most stringent drying and conditioning applications.
- Stainless steel corrosion resistant plenums designed for optimal air flow and uniformity.
- Plug-style door construction guards against heat loss.
- One piece silicone gasket and positive locking door latch prevent heat loss.
- 3" fiberglass insulation helps retain heat in oven chamber.
- Drawer-style recessed control panel is protected from spills and slides out for easy maintenance.
- Shelves, supports, and plenum remove easily for cleaning.
- Two adjustable chrome-plated wire shelves included.
- Heavy-duty cold-rolled steel exterior is reinforced at stress points.

OPERATION

- Primary P.I.D. controller allows operator to digitally set oven temperature for best repeatability.
- Choice of two microprocessor control options (see opposite page):
a) Single set point with 24 hour timer or b) programmable-four programs, each with eight ramps and eight dwells.
- Controller options allow simultaneous viewing of set point and actual temperature on an easy-to-read LED display.
- Platinum RTD temperature sensor reacts instantly to changes in oven environment for true reading of chamber temperature.

SAFETY

- Independent adjustable hydraulic high limit safety thermostat maintains temperature a few degrees above set point in the event of controller failure.
- Control panel indicator light warns operator when backup thermostat is controlling the oven.

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3481M	13 (33)	19.5 (50)	17.2 (43)	21.6 (55)	35.5 (90)	25.25 (64)	2.5 (70.8)	150 (68)
3486M	18 (46)	19.5 (50)	17.2 (43)	26.6 (68)	35.5 (90)	25.25 (64)	3.5 (99.1)	170 (77)
3488M	23 (58)	19.5 (50)	17.2 (43)	31.6 (80)	35.5 (90)	25.25 (64)	4.4 (124.6)	180 (82)

OPERATING SPECIFICATIONS

Operating Temp Range °C	Rise Time (Ambient to 200°C)	Control @100°C	Uniformity @100°C	Control @200°C	Uniformity @200°C
Ambient +5°C to 300°C	40 minutes	±0.1°C	±1.0°C	±0.2°C	±2.0°C

ORDERING INFORMATION

Model #	Description	Volts	Electrical (50/60 Hertz) Amps	Watts	US List Price
3481M	Imperial V Digital Mechanical	120	10.8	1300	\$2805.00
3481M-1	Imperial V Digital Mechanical	240	5.4	1300	\$2805.00
3486M	Imperial V Digital Mechanical	120	15.8	1900	\$3037.00
3486M-1	Imperial V Digital Mechanical	240	8.0	1900	\$3037.00
3488M	Imperial V Digital Mechanical	120	15.8	1900	\$3312.00
3488M-1	Imperial V Digital Mechanical	240	8.0	1900	\$3312.00

ACCESSORIES

Model #	Description	US List Price
3471M-8	Shelf for models 3481M, 3481M-1, brackets included	\$80.00
3476M-8	Shelf for models 3486M, 3486M-1, brackets included	\$82.00
3478M-8	Shelf for models 3488M, 3488M-1, brackets included	\$82.00
3480-2	Stacking Rack for models 3481M, 3481M-1	\$515.00
3485-2	Stacking Rack for models 3486M, 3486M-1	\$546.00

Ovens

IMPERIAL V CONTROLLERS

Lab-Line

ACCESSORIES

Controller Model*	Description	US List Price
B	Single program controller with 1 program, 2 ramps and 2 dwells. Timer allows you to ramp in minutes and dwell in minutes.	\$1960.00
C	Four program controller with 4 programs; each program has 8 ramps and 8 dwells. Timer allows you to ramp in minutes and dwell in hours.	\$2375.00
D	Four program controller with 4 programs; each program has 8 ramps and 8 dwells. Timer allows you to ramp in minutes and dwell in minutes.	\$2375.00
T	24 hour timer (not for use with B, C or D options) for use with single set point controller (120V/60Hz only).	\$115.00
H	24 hour timer (not for use with B, C or D options) for use with single set point controller (240V/50Hz only).	\$115.00
I	24 hour timer (not for use with B, C or D options) for use with single set point controller (240V/60Hz only).	\$115.00

*A model 3488M with a single program controller which ramps in minutes and dwells in minutes would be ordered as 3488MB. Controller price must be added to the oven price.
The US List price for a 3488MB : \$3312.00 + \$1960.00 = \$5272.00

Single Set Point Controller



SINGLE SET POINT CONTROLLER

- Simultaneous display of set temperature and actual measured temperature.
- Adjustable high limit safety thermostat.

Single Set Point Controller With Optional Timer



SINGLE SET POINT CONTROLLER WITH OPTIONAL TIMER

- Same features as single set point controller with additional 24 hour timer.
- Timer can be set for 24 hours in 15 minute increments.

Single Program Controller



SINGLE PROGRAM CONTROLLER

- Programmable—one program with two ramps and two dwells.
- Ramp adjustable from as low as 0.01°C per minute.
- Adjustable high limit safety thermostat.

Four Program Controller



FOUR PROGRAM CONTROLLER

- Programmable—four programs, each with eight ramps and eight dwells.
- Option "C"—ramp from as low as 1°C per minute, dwell from 0 to 999.9 hours.
- Option "D"—ramp from as low as 1°C per minute, dwell from 0 to 999.9 minutes
- Adjustable high limit safety thermostat.

Stacking rack



STACKING RACKS

- Allows two ovens the same size to be stacked and operated safely. Fan removes heat generated by bottom unit, preventing damage to top oven.

Ovens

LOW COST

Lab-Line

Model 3515M



OUR MOST ECONOMICAL OVENS FOR BASIC DRYING AND BAKING APPLICATIONS!

- — Gravity or mechanical convection models
- — 0.7 cu.ft. (19.8 l) to 5.7 cu. ft. (161.4 l) chamber volumes
- — High limit safety thermostat
- ★ — 24 Month Warranty

Includes
Two FREE
Shelves



PRODUCT DESCRIPTION

- Economical gravity or mechanical convection models designed for the budget-conscious laboratory.
- Gravity and convection models feature aluminum and stainless steel interiors respectively.
- Compact size of type 3510 oven conserves valuable bench top space.
- Model 3513 oven is a large capacity two door unit.
- Double wall interior with 1" (2.5 cm) silica-based insulation.
- One fixed, two adjustable chrome-plated wire shelves are included.
- Durable powder coated cold-rolled steel exterior.
- 120 volt models have 3-wire cord and plug; 240 volt models have 3-wire line cord only.

OPERATION

- Gravity convection models utilize a bimetallic thermostat to control temperature from ambient +5°C to 210°C. (thermometer required for temperature monitoring).
- Mechanical convection models utilize a hydraulic thermostat to control temperature from ambient +5°C to 210°C and include an LED temperature display.

SAFETY

- Pre-set high temperature limit safety thermostat standard on all models.
- All models feature a pilot light to indicate oven operation status.

APPLICATIONS

- Drying glassware.
- Drying and/or baking non-flammable crystalline chemicals.
- Pre-heating crucibles or other containers.
- Drying filter paper strips or rounds.

Ovens

LOW COST

Lab-Line

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3510	10 (25)	11.3 (29)	11.5 (29)	12.5 (32)	18 (46)	13.5 (34)	0.7 (19.8)	35 (16)
3511	16 (41)	16.2 (41)	11.5 (29)	18.5 (47)	22.5 (57)	13.5 (34)	1.7 (48.1)	57 (26)
3512	18 (46)	22 (56)	13.5 (34)	20.5 (52)	28.5 (72)	15.75 (40)	3.1 (87.8)	80 (36)
3513	28 (71)	22 (56)	18 (46)	31.6 (79)	28.8 (73)	20.6 (52)	5.7 (161.4)	140 (64)
3515M	16 (41)	16 (41)	11.5 (29)	18.4 (47)	25 (64)	15.6 (40)	1.7 (48.1)	80 (36)
3516M	18 (46)	22 (56)	13.5 (34)	20.4 (52)	31(78)	17.7 (45)	3.1 (87.8)	105 (48)

OPERATING SPECIFICATIONS

	Operating Temp Range °C	Rise Time (Ambient to 200°C)	Control @100°C	Uniformity @100°C
Gravity Convection	Ambient +5°C-210°C	52 minutes	±9°C	±5°C
Mechanical Convection	Ambient +5°C-210°C	30 minutes	±4°C	±7°C

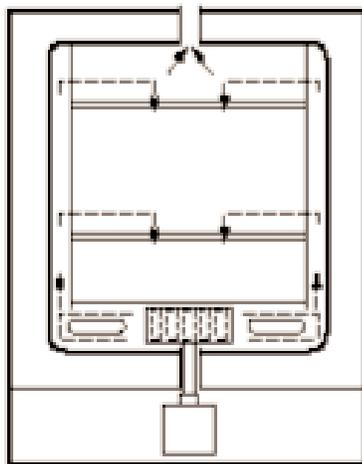
ORDERING INFORMATION

Model #	Volts	Electrical (50/60 Hz) Amps	Watts	US List Price
Gravity Convection				
3510	120	4.2	500	\$450.00
3510-1	240	2.1	500	\$450.00
3511	120	6.7	800	\$560.00
3511-1	240	3.3	800	\$560.00
3512	120	6.7	800	\$735.00
3512-1	240	3.3	800	\$735.00
3513	120	13.3	1600	\$1394.00
3513-1	240	6.7	1600	\$1394.00
Mechanical Convection				
3515M	120	10.0	1200	\$1383.00
3515M-1	240	5.0	1200	\$1383.00
3516M	120	10.0	1200	\$1612.00
3516M-1	240	5.0	1200	\$1612.00

Models 3515M and 3516M are UL listed only.
240 Volt Models are not UL listed or CSA certified.

ACCESSORIES

Model #	Description	US List Price
3510-8	Shelf for models 3510, 3510-1	\$11.00
3511-8	Shelf for models 3511, 3511-1, 3515M, 3515M-1	\$14.00
3512-8	Shelf for models 3512, 3512-1, 3516M, 3516M-1	\$16.00
3513-8	Shelf for models 3513, 3513-1	\$12.00



THE LAB-LINE EXCLUSIVE MECHANICAL CONVECTION AIR FLOW SYSTEM

- Constant speed induction blower motor circulates air throughout chamber.
- Heated air is forced up sides of oven chamber to openings in sidewall plenums.
- Heated air is then drawn down through center of oven chamber, reheated, and recirculated.
- Exhaust vapors are vented at top of oven.

Ovens

CLASS "100" CLEAN ROOM

Lab-Line

Model 3496M



ULTRA CLEAN FOR SEMICONDUCTOR AND ELECTRONICS APPLICATIONS!

- — Meets or exceeds Class "100" air standards
- — Rapid temperature rise and recovery times
- — Excellent temperature control and uniformity
- — Choose from models with or without HEPA filter

PRODUCT DESCRIPTION

- HEPA filter models available for maximum contamination protection.
- Rapid rise and recovery times, plus excellent uniformity and precise temperature control.
- Features our exclusive mechanical convection air flow system.
- 3" (7.6 cm) of silica-based insulation between oven chamber and exterior walls minimizes heat radiation to surrounding environment.
- Drawer-style control panel is protected from spills and easily pulls out for access.
- Corrosion-resistant stainless steel interior construction.
- Shelves, supports, and plenums are easily removed for cleaning.
- Four adjustable perforated stainless steel shelves included.
- Durable exterior construction of cold-rolled steel with a white powder coat finish.

SAFETY

- Adjustable high limit hydraulic safety thermostat with indicator lamp maintains temperature a few degrees above set point in the event of primary control failure and prevents overtemperature conditions.
- Fused electrical system provides overload safeguards.

STACKING RACKS

- Safely stack two ovens of the same size.
- Fan removes heat generated by bottom oven, preventing damage to top unit.
- Available only for 3490M, 3492M, 3494M-1, and 3495M-1 series clean room ovens (120V; 50/60 Hz).

OPERATION

- User-friendly PID microprocessor temperature control allows operator to repeatably set operating temperature in the range of ambient +5°C to 250°C.
- Single program controller comes standard—two ramps and two dwells, ramp adjustable from as low as 0.01°C per minute, dwell from 0 to 9999 minutes.
- Four program controller offers eight ramps and eight dwells, ramp from as low as 1°C per minute, dwell from 0.0 to 999.9 minutes.
- Platinum RTD sensor accurately measures actual chamber temperature.
- Adjustable door hinge, lever-actuated positive door latch and silicone gasket prevent heat loss through door seal.
- Adjustable 2" (5.1 cm) diameter exhaust port with damper control.
- 1/8" (3mm) N.P.T. fitting for introducing inert gas or house air into the oven chamber.
- Flowmeter and 0.3 micron filter for purging with nitrogen available on units with HEPA filters only.

OPTIONS

- Model 3491—2" O.D. x 9" H x 3" D (5.1 x 23 x 7.6 cm) stainless steel exhaust vent with adjustable air control.
- Recorder output—type K thermocouple with sub-miniature connector on back of oven (TCK suffix for oven model number).

Ovens

CLASS "100" CLEAN ROOM

Lab-Line

PRODUCT SPECIFICATIONS

Single Program Controller	Four Program Controller	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
		W	H	D	W	H	D		
3490M	3492M	13 (33)	19.5 (50)	18 (46)	21.6 (55)	35 (89)	24.25 (62)	2.6 (73.6)	205 (93)
3490M-1	3492M-1	13 (33)	19.5 (50)	18 (46)	21.6 (55)	35 (89)	24.25 (62)	2.6 (73.6)	205 (93)
3490M-3	3492M-3	13 (33)	19.5 (50)	18 (46)	21.6 (55)	35 (89)	24.25 (62)	2.6 (73.6)	205 (93)
3495M-1	3494M-1	18 (68)	19.5 (50)	18 (46)	26.6 (68)	35 (89)	24.25 (62)	3.6 (101.9)	240 (109)
3495M-3	3494M-3	18 (68)	19.5 (50)	18 (46)	26.6 (68)	35 (89)	24.25 (62)	3.6 (101.9)	240 (109)
3497M-1	3496M-1	14 (36)	19.5 (50)	18 (46)	26.6 (68)	35 (89)	24.25 (62)	2.8 (79.2)	235 (107)
3497M-3	3496M-3	14 (36)	19.5 (50)	18 (46)	26.6 (68)	35 (89)	24.25 (62)	2.8 (79.2)	235 (107)
3499M-1	3498M-1	23 (58)	19.5 (50)	18 (46)	31.6 (80)	35 (89)	24.25 (62)	4.6 (130.2)	264 (120)
3499M-3	3498M-3	23 (58)	19.5 (50)	18 (46)	31.6 (80)	35 (89)	24.25 (62)	4.6 (130.2)	264 (120)

Model 3491



OPERATING SPECIFICATIONS

Units Without Hepa Filters

Chamber Volume cu. ft. (l)	Rise Time (Ambient to 200°C)	Load Temp. Rise Time @ 150°C	Maximum Temp °C	Temperature Control @100°C	Temperature Uniformity @100°C	Temperature Control @200°C	Temperature Uniformity @200°C
2.6 (73.6)	22 minutes	8 minutes	250°C	±0.1°C	±1.0°C	±0.2°C	±1.5°C
3.6 (101.9)	18 minutes	4 minutes	250°C	±0.1°C	±1.0°C	±0.2°C	±1.5°C
4.6 (130.2)	20 minutes	7 minutes	250°C	±0.1°C	±1.0°C	±0.2°C	±1.5°C

Units With Hepa Filters

Chamber Volume cu. ft. (l)	Rise Time (Ambient to 90°C)	Recovery Time @ 90°C	Maximum Temp °C	Temperature Control @ 90°C	Temperature Uniformity @ 90°C
2.8 (79.2)	11 minutes	22 seconds	250°C	±0.2°C	±1.5°C

Performance specification were measured under controlled laboratory conditions. Actual performance may vary, depending on the application. Load temperature rise time was determined at 150°C. Oven was loaded with nine 4" wafer boats. A thermocouple placed in a centrally located boat was used to measure wafer temperature. Recovery time was measured after door was opened 90 degrees for 1 minute.

ORDERING INFORMATION

Model #	Volts	Electrical (50/60 Hertz) Amps	Watts	US List Price
3490M	120	15.8	1900	\$5325.00
3490M-1	240	7.9	1900	\$5325.00
3490M-3	208	10.1	2100	\$5325.00
3492M	120	15.8	1900	\$5510.00
3492M-1	240	7.9	1900	\$5510.00
3492M-3	208	10.1	2100	\$5510.00
3495M-1	240	12.9	3100	\$6015.00
3495M-3	208	14.9	3100	\$6015.00
3494M-1	240	12.9	3100	\$6175.00
3494M-3	208	14.9	3100	\$6175.00
3497M-1	240	12.9	3100	\$7545.00
3497M-3	208	14.9	3100	\$7545.00
3496M-1	240	12.9	3100	\$7620.00
3496M-3	208	14.9	3100	\$7620.00
3499M-1	240	12.9	3100	\$6750.00
3499M-3	208	14.9	3100	\$6750.00
3498M-1	240	12.9	3100	\$6875.00
3498M-3	208	14.9	3100	\$6875.00

ACCESSORIES

Model #	Description	US List Price
3497	Replacement HEPA filter for models 3496M-1, 3496M-3, 3497M-1, and 3497M-3	\$950.00
3490M-8	Shelves for models 3490M, 3490M-1, 3490M-3, 3492M, 3492M-1, 3492M-3 brackets included.	\$123.00
3495M-8	Shelves for models 3495M-1, 3495M-3, 3494M-1, 3494M-3 brackets included.	\$149.00
3499M-8	Shelves for models 3499M-1, 3499M-3, 3498M-1, 3498M-3 brackets included.	\$170.00
3497M-8	Shelves for models 3497M-1, 3497M-3, 3496M-1, 3496M-3 brackets included.	\$117.00
TCK*	Type K Thermocouple with subminiature connector on back of oven	\$175.00
3491	Exhaust chimney for ultra clean ovens	\$106.00
3480-2	Stacking rack for oven models 3490M, 3490M-1, 3490M-3, 3492M, 3492M-1, 3492M-3	\$515.00
3485-2	Stacking rack for oven models 3495M-1, 3495M-3, 3494M-1, 3494M-3	\$546.00

*Add TCK suffix to oven model number for this option.

Ovens

VACUUM

Lab-Line

Model 3608-5



OUR MOST POPULAR, MULTIPURPOSE VACUUM OVENS!

- — 220°C (428°F) Maximum temperature
- — Two control configurations and display options
- — 0.44 cu. ft. (12.5 l), 0.7 cu. ft. (19.8 l) and 2.3 cu. ft. (65.l) chamber volumes
- ★ — 24 Month Warranty

FREE
Dial
Thermometer
with select
models



PRODUCT DESCRIPTION

- Radiant warm wall heating system provides optimal uniformity and conserves chamber space for drying, curing, vacuum embedding, and plating applications.
- 3" (7.6 cm) glass wool insulation prevents heat loss from working chamber.
- Silicone door gasket and positive latch door maintain seal at all vacuum levels.
- Exclusive polycarbonate safety shield protects door glass.
- Vacuum fittings require .25" (.6 cm) I.D. tubing.
- Easy-to-clean #304 stainless steel chamber interior.
- Vacuum and air lines constructed with corrosion-resistant stainless steel tubing for optimum chamber cleanliness and long term performance.
- Two removable stacking aluminum shelves included standard.
- Powder coated heavy gauge steel exterior construction.

OPERATION

- Operating temperature range from ambient +5°C to 220°C (428°.)
- Vacuum level displayed on gauges from 0 to 30" Hg (76.2 cm).
- Type 3606, 3608 and 3618 Vacuum Ovens feature a hydraulic thermostat to control temperature to $\pm 1.5^{\circ}\text{C}$ with a uniformity of $\pm 5^{\circ}\text{C}$ (@ 100°C; 25" Hg) and built-in overtemperature protection.
- Type 3618P Vacuum Ovens feature programmable microprocessor-based P.I.D. temperature control that regulates to within $\pm 0.2^{\circ}\text{C}$ with a uniformity of $\pm 2.4^{\circ}\text{C}$ (@ 100°C; 25" Hg).
- The programmable microprocessor-based temperature control on Type 3618P Vacuum Ovens run at a single set point or utilize a 24-step program of ramps and dwells. These vacuum ovens feature independent vacuum and purge needle values.
- Models 3606 and 3606-1 have top-mounted independent evacuation and venting vacuum fittings; all other models feature front-mounted three-way valve for evacuation, venting, and purging of inert gases (e.g. Nitrogen or Argon) with vacuum fittings on front of unit.

Ovens

VACUUM

Lab-Line

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Chamber Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3606	8 (20)	8 (20)	12 (30)	17 (43)	17.4 (44)	16 (41)	0.44 (12.5)	110 (50)
3608	10 (25)	10 (25)	12 (30)	19.8 (50)	16.25 (41)	16 (40)	0.7 (19.8)	130 (59)
3618	14 (36)	14 (36)	20 (51)	25 (64)	22 (56)	25 (64)	2.3 (65.1)	295 (134)
3618P	14 (36)	14 (36)	20 (51)	25 (64)	22 (56)	25 (64)	2.3 (65.1)	300 (136)

OPERATING SPECIFICATIONS

Type	Operating Temp Range °C	Rise Time (Ambient to 100°C)	Control @100°C 25" Hg	Uniformity @100°C 25" Hg	Vacuum Range
3606	Ambient ±5°C to 220°C	100 min.	±1.5°C	±2.2°C	0-3" Hg (762 mm)
3608	Ambient ±5°C to 220°C	4 hours*	±1.0°C*	±4.0°C*	0-30" Hg (762 mm)
3618	Ambient ±5°C to 220°C	2 hours	±1.0°C	±5.0°C	0-30" Hg (762 mm)
3618P	Ambient ±5°C to 220°C	2.4 hours	±0.2°C	±2.4°C	0-30" Hg (762 mm)

*Type 3608 specifications determined at 150°C.

ORDERING INFORMATION

Model #	Description	Volts	Electrical (50/60 Hertz) Amps	Watts	US List Price
Hydraulic Thermostat Control					
3606	Vacuum oven, dial	120	5.0	600	\$1830.00
3606-1CE	Vacuum oven, dial	240	2.5	600	\$1830.00
3608	Vacuum oven, dial	120	5.0	600	\$2090.00
3608-1CE	Vacuum oven, dial	240	2.5	600	\$2090.00
3608-5	Vacuum oven, LED	120	5.0	600	\$2390.00
3608-6CE	Vacuum oven, LED	240	2.5	600	\$2475.00
3618	Vacuum oven, dial	120	13.3	1600	\$3775.00
3618-1CE	Vacuum oven, dial	240	6.7	1600	\$3870.00
3618-5	Vacuum oven, LED	120	13.3	1600	\$4010.00
3618-6CE	Vacuum oven, LED	240	6.7	1600	\$4115.00
Programmable Microprocessor Temperature					
3618P	Vacuum oven, LED	120	13.3	1600	\$4990.00
3618P-1	Vacuum oven, LED	240	6.7	1600	\$5090.00

Models 3608-5 and 3618 are CSA certified.

OPTIONAL VACUUM READOUTS—MODELS 3618P, 3618P-1

Model #	Description	US List Price
DM	Digital Units in Microns	\$880.00
DT	Digital Units in Torr	\$880.00

If ordering 3618P or 3618P-1 with a digital readout in microns, please order 3618PDM or 3618PDM-1

Ovens

MOISTURE DETERMINATION

Lab-Line

Model 3624



PERFECT FOR INERT ATMOSPHERE MOISTURE TESTING!

- — 150°C (302°F) maximum temperature
- — P.I.D. microprocessor controls temperature to $\pm 1.0^\circ\text{C}$
- — 1.1 cu. Ft. (31.1 l) or 1.7 cu. ft. (48.1 l) chamber capacity
- ★ — 24 Month Warranty



PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight Lb. (kg)
	W	H	D	W	H	D		
3623	12 (30)	12 (30)	13.5 (34)	20 (51)	27 (69)	18 (46)	1.1 (31.1)	230 (104)
3624	12 (30)	12 (30)	20 (51)	20 (51)	27 (69)	26 (66)	1.7 (48.1)	270 (122)

OPERATING SPECIFICATIONS

Type	Operating Temp Range °C	Rise Time (Ambient to 100°C)	Control @100°C 25" Hg	Uniformity @100°C 25" Hg	Vacuum Range
3623	Ambient +5°C to 150°C	5 hours	$\pm 0.5^\circ\text{C}$	$\pm 1.7^\circ\text{C}$	0-30" Hg (76.2 cm)
3624	Ambient +5°C to 150°C	6 hours	$\pm 1.0^\circ\text{C}$	$\pm 1.8^\circ\text{C}$	0-30" Hg (76.2 cm)

ORDERING INFORMATION

Model #	Description	Volts	Electrical (50/60 Hertz) Amps	Watts	US List Price
3623	Moisture Determination	120	5.0	600	\$6250.00
3623-1	Moisture Determination	240	2.5	600	\$6250.00
3624	Moisture Determination	120	5.0	600	\$6335.00
3624-1	Moisture Determination	240	2.5	600	\$6420.00

240 volt models are not CSA certified.

ACCESSORIES FOR OPTIONAL TYPE-K THERMOCOUPLES

Model Suffix	Description	US List Price
A	Flexible (mount under upper or lower shelf)	\$218.00
B	Rigid (Upper Shelf)	\$140.00
C	Rigid (Lower Shelf)	\$140.00

When ordering, oven model number should precede thermocouple model—e.g., 3623A

SAFETY

- Adjustable backup high-limit hydraulic thermostat protects samples in case of primary system failure.
- Pilot light warns operator when high-limit temperature has been reached and the high-limit thermostat is controlling the oven temperature.

PRODUCT DESCRIPTION

- P.I.D. microprocessor temperature controller, radiant warm wall heating design, and manifold airflow system provides controlled conditions for optimal consistency and reproducibility in moisture analysis.
- Solid, insulated door with silicone chamber gasket minimizes heat loss.
- Front-mounted three-way flow pump control valve, vacuum control valve, and air inlet valve for easy operation.
- Three removable perforated aluminum shelves included.
- Corrosion-resistant stainless steel chamber construction.
- Vacuum and air lines constructed with corrosion-resistant stainless steel tubing for optimum chamber cleanliness and long term performance.
- Durable heavy gauge steel cabinet with powder coated finish.

OPERATION

- P.I.D. microprocessor temperature controller regulates temperature from ambient +5°C to 150°C (302°F) with $\pm 1.0^\circ\text{C}$ control or better and $\pm 1.8^\circ\text{C}$ uniformity.
- Standard Type-K sheathed thermocouple under center chamber shelf monitors actual chamber temperature.
- Convenient LED temperature display shows set point and actual temperature.
- Vacuum gauge displays regulated chamber vacuum levels between 0 and 30" Hg (76.2 cm).
- Optional rigid and/or flexible Type-K thermocouple probes can be used to sense internal temperature on the upper and lower shelves.
- Nitrogen, CO₂, desiccated air and other inert, non-flammable gases can be used in the oven to achieve a controlled atmosphere.

Ovens

HI-TEMP "SQUAROID" VACUUM

Lab-Line

Model 3625



Includes
FREE
Dial
Thermometer

IDEAL FOR ELEVATED TEMPERATURE AGING TESTS!

- — 300°C (572°F) Maximum temperature
- — 1.1 cu. ft. (31.3 l) or 1.7 cu.ft. (48.1 l) chamber capacity
- — Over temperature protection
- ★ — 24 Month Warranty



PRODUCT DESCRIPTION

- Designed for desiccation, vacuum embedding, plating, process control, and inert atmosphere applications.
- Radiant warm wall heaters mounted outside of chamber to conserve chamber working space and eliminate the hazards of open wire heaters.
- 3" (7.6 cm) glass wool insulation minimizes heat loss from chamber.
- Two piece aluminum shelf system improves heat conduction to samples and is easily removed for cleaning.
- Corrosion-resistant #304 stainless steel interior.
- Tempered glass window in door allows viewing of samples.
- Vacuum and air lines constructed with corrosion-resistant stainless steel tubing for optimum chamber cleanliness and long term performance.
- Durable powder coated heavy gauge steel exterior.

OPERATION

- Primary hydraulic thermostat controls temperature from ambient +5°C to 300°C (572°F).
- Dial thermometer in working chamber displays actual temperature.
- Precise vacuum control to 30" Hg (76.2 cm) displayed on analog gauge.
- Secure door latch and continuous gaskets on vacuum chamber provide a tight seal and maintain a vacuum leak rate of less than 1 inch Hg per 24 hour period.
- Vacuum control and relief valves located on front of unit for convenient monitoring.
- Compression fittings on rear wall of oven accept .25" (.6 cm) O.D. hard tubing for pump and air connections.

PRODUCT SPECIFICATIONS

Type	Chamber Dimensions Inches (cm)			Overall Dimensions Inches (cm)			Volume cu. ft. (l)	Shipping Weight) Lb. (kg)
	W	H	D	W	H	D		
3625	12 (30)	13.5 (34)	12 (30)	20 (51)	18 (46)	27 (69)	1.1 (31.3)	200 (91)
3628	12 (30)	20 (51)	12 (30)	20 (51)	26 (66)	27 (69)	1.7 (48.1)	270 (122)

OPERATING SPECIFICATIONS

Type	Operating Temp Range °C	Control @100°C	Uniformity @100°C	Vacuum Range
3625	Ambient +5°C to 300°C	±2.5°C	±2.0°C	0-30" Hg (76.2 cm)
3628	Ambient +5°C to 300°C	±2.5°C	±3.0°C	0-30" Hg (76.2 cm)

ORDERING INFORMATION

Model #	Description	Volts	Electrical (50/60 Hz) Amps	Watts	US List Price
3625	Hi-Temp Squaroid Vacuum	120	10.0	1200	\$4940.00
3625-1	Hi-Temp Squaroid Vacuum	240	5.0	1200	\$5038.00
3628	Hi-Temp Squaroid Vacuum	120	12.0	1400	\$5075.00
3628-1	Hi-Temp Squaroid Vacuum	240	6.0	1400	\$5175.00

240 volt models are not CSA certified.

SAFETY

- Adjustable high-limit safety thermostat for over temperature protection.
- Individual control and high limit thermostat pilot lights indicate which thermostat is controlling the oven temperature.

Ovens

CHEM-DRY® INTEGRATED VACUUM DRYING

Electrothermal

Model 2002



COMPACT, LOW-COST VACUUM DRYING!

- — Drying using heat, vacuum and desiccant
- — Glass viewing window lets user see the sample
- — Digital control panel



PRODUCT DESCRIPTION

- CHEM-DRY will: dry primary standards for preparation of standard solutions; remove trace solvents from compounds before micro-analysis; perform "loss and drying" tests; and dry samples prior to melting point determination.
- The patented CHEM-DRY uses heat, vacuum and desiccant to remove moisture from samples.
- Modular design permits removal and storage of dried samples in sealed drying tubes, process samples in rapid succession or service multiple users.
- A glass viewing window allows user to see when sample is dry.
- Drying tube features jam-proof O-ring joints.
- Vacuum hose connects to threaded fitting so hose can be easily separated from drying tube.
- Three-way stopcock permits gentle venting without sample disruption.
- Control panel simultaneously displays the oven temperature and set temperature to 1°C.
- Press the up or down key to set the oven temperature.
- Temperature fluctuation is no more than $\pm 1^\circ\text{C}$ at all operating temperatures.
- A sealed electric heater eliminates the need for volatile refluxing fluids.
- Control relay is solid-state to eliminate sparks and provide long life.
- Integrated safety guard protects user from heated components.

PRODUCT SPECIFICATIONS

Operating Temperature Range °C:	ambient to 175°C
Sample Chamber:	3.2 cm inside diameter x 16.0 cm long
Dimensions W x H x D:	9" x 4" x 8.6" (24 x 11 x 22 cm)
Shipping Weight:	9 lb. (4.1 kg) without drying tube .2 lb. (0.9 kg) per drying tube
Vacuum Requirements:	vacuum pump (not included)

ORDERING INFORMATION

Model #	Description	Electrical (50/60 Hertz)		US List
		Volts	Watts	Price
2001D	CHEM DRY® Vacuum Oven	120	200	\$1148.00
2002	CHEM DRY® Vacuum Oven	230	200	\$1148.00