



SMO Series

SHEL LAB Mechanical Convection Laboratory Ovens
Rapid Heat-Up Time to 306°C

SMO1 • SMO3 • SMO5



Fox Scientific, Inc.

8221 East FM 917 • Alvarado, TX 76009 • Phone: (800) 369-5524 • Fax: (817) 783-3571
www.foxscientific.com • sales@foxscientific.com

Ideal for Industrial, Analytical and General Laboratory Applications

SHEL LAB SMO Series laboratory ovens are recommended for critical scientific and analytical use in laboratory and pilot plant product research. Typical applications include aging, curing, drying, baking, pre-heating, conditioning and life cycle testing. Choose from three cabinet sizes, each with forced-air circulation and reserve heating power for quick recovery after door openings.

SMO Series Features and Benefits

The SMO Series ovens are engineered for safe, accurate, and uniform performance in demanding laboratory environments.



- +** Fast ramp-up to 306°C for faster cycle times.
- +** Temperature range approximately 20°C above ambient to 306°C for multiple applications.
- 1** Advanced PID temperature control system for sensitive response.
- 2** Built-in digital timer for automatic operation following manual start.
- 3** Independent overtemperature setpoint and operational control override for additional safety.

- 4** Stainless steel interior construction for long life operation, easy cleaning.
- 5** Forced-air circulation to assure maximum temperature uniformity.
- 6** Triple-wall construction to minimize external surface temperature.
- 7** Stainless steel shelves are adjustable on 0.5" (12.7 mm) centers to provide flexible inventory options.
- 8** Rear access port, 1.75" diameter (44 mm) for independent cables, instrumentation.



- 9** Exhaust port, 3.0" diameter (76 mm), adjustable, with external connection to customer-supplied vent for effluent exhaust if required.
- +** Internationally certified CAN/CSA, UL, EN, IEC 61010, and compliant with CE.

High Temperature Performance

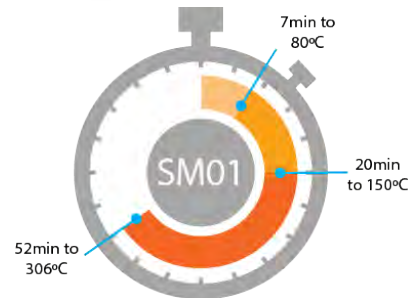
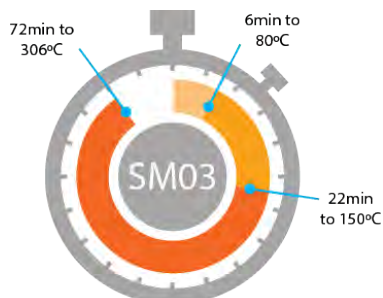
SHEL LAB SMO Series ovens are available in 110-120V, 50/60Hz or 220-240V, 50/60Hz configurations and achieve temperatures up to 306°C with fast ramp-up and recovery times.

Heat-Up Rapid heat-up times to 306°C depend on voltage selected. Published heat-up performance is based on a standard cabinet under controlled testing at a 20°C ambient temperature, line voltage $\pm 10\%$ of specified voltage.

Recovery Upper vents are closed when recovery times following door openings are tested. Published recovery performance is based on a standard cabinet under controlled testing at a $(22 \pm 3)^\circ\text{C}$ ambient temperature, line voltage $\pm 10\%$ of specified voltage.

Applications:

- Aging
- Asphalt Testing
- ASTM, UL and Life Testing
- Baking, Conditioning, Curing
- Burn-in
- Drying
- Curing
- Moisture and Stability Testing

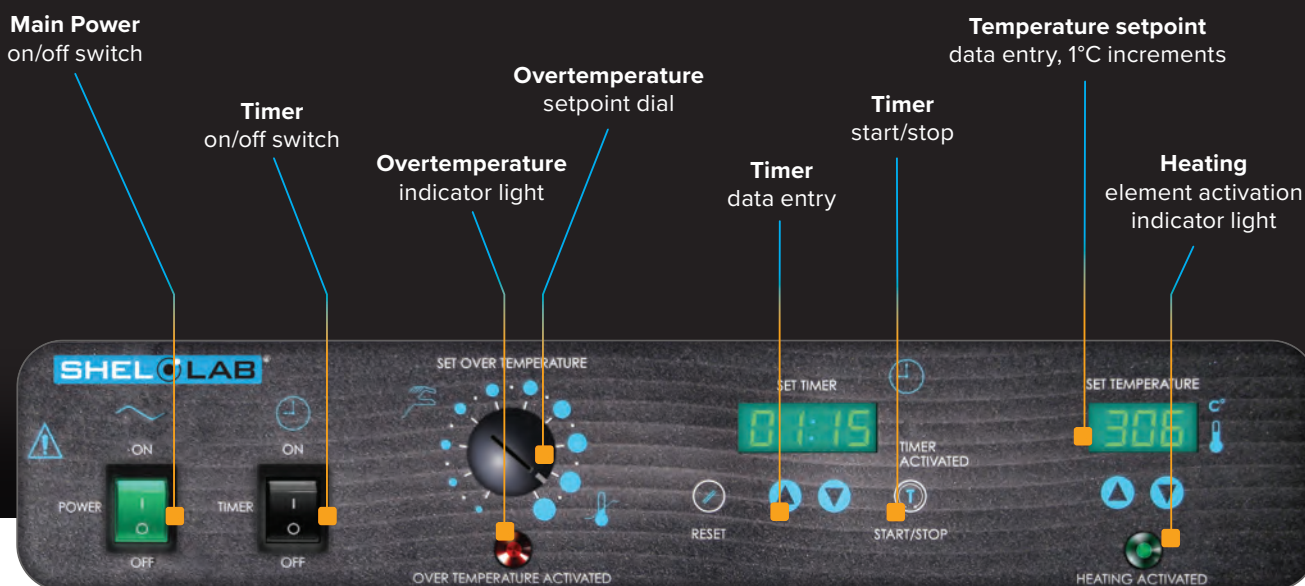


Control, Timer Program and Monitoring

The advanced loop PID (proportional, integral, derivative) controller commands proportional power to the heating element to provide the most accurate and responsive control. Each controller is matched to the oven size to assure faster response to set-point without overshoot, and quicker recovery following door openings. The on-board timer permits programmed dwell cycles with automatic shut-off for custom applications. Indicator lights are included for visual status feedback on critical functions.

Integrated Control Panel

All controls are centrally located on the main panel including manual power and timer on/off switches, independent overtemperature control, digital temperature and timer setpoint adjustments, and indicator lights for all functions.



SMO Series Oven Specification Chart

	SMO1	SMO3	SMO5
Interior Volume, Nominal	1.4 cu.ft. (39.4 liters)	3 cu.ft. (85.0 liters)	4.9 cu.ft. (138.0 liters)
Interior Dimensions W x D x H	12.1" x 13.7" x 14.5" 307 x 349 x 368 mm	16.5" x 19.5" x 16.2" 419 x 495 x 412 mm	21.0" x 19.4" x 20.7" 533 x 494 x 527 mm
Exterior Dimensions W x D x H	22.7" x 23.5" x 31.5" 577 x 596 x 800 mm	26.9" x 28.6" x 34.0" 684 x 727 x 840 mm	31.4" x 28.1" x 38.8" 798 x 714 x 986 mm
Interior Construction	430 series stainless steel	400 series stainless steel	400 series stainless steel
Exterior Construction	Painted Cold Roll Steel	Painted Cold Roll Steel	Painted Cold Roll Steel
Shelves (See Accessories)*	2 standard, 6 total	2 standard, 7 total	2 standard, 9 total
Maximum Weight Per Shelf*	50 lb / 22.6 kg	50 lb / 22.6 kg	50 lb / 22.6 kg
Permitted Total Load	100 lb / 45.3 kg	200 lb / 91 kg	200 lb / 91 kg

*Extra standard and reinforced shelves available. See Accessories.



SMO Series Oven Selection Chart

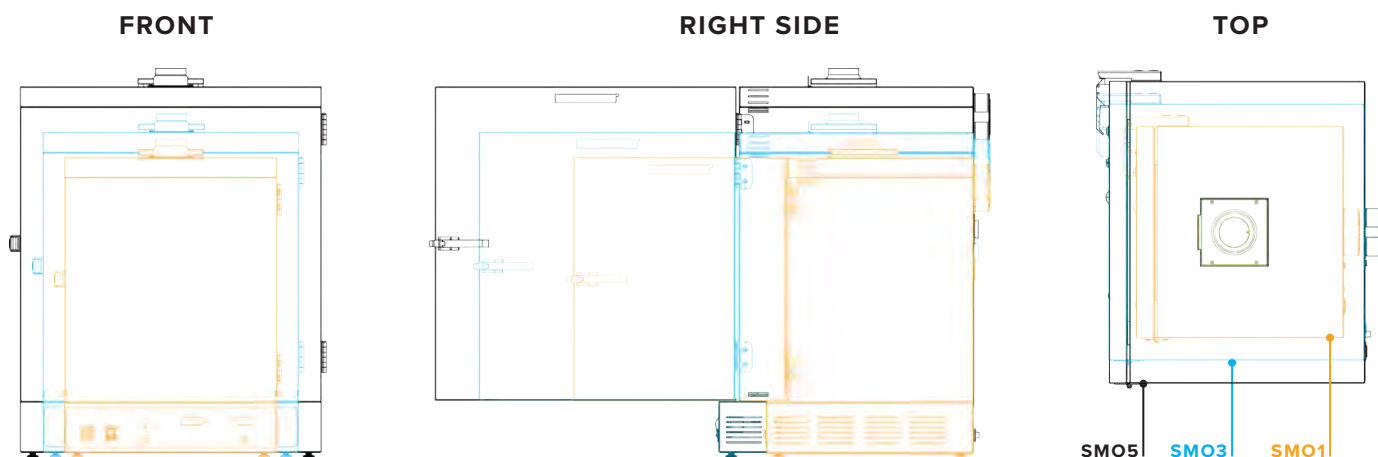
	SMO1		SMO3		SMO5	
Order Model Number, Voltage Specific	SMO1	SMO1-2	SMO3	SMO3-2	SMO5	SMO5-2
Electrical, 50/60Hz, AC, 1Ø						
Voltage	110V-120V	220V-240V	110V-120V	220V-240V	110V-120V	220V-240V
Full Load Amps	12	8	14	10	14	10
Nominal Power (watts @150°C)	650	650	675	675	700	725
Plug Supplied	NEMA 5-15P	EU 6-15P*	NEMA 5-15P	EU1-16P	NEMA 5-15P	EU1-16P
Energy Consumption (kWh/day)						
At 80°C	6.5	5.7	7.2	6.5	7.5	6.7
At 150°C	12.4	11.8	13.1	12.2	13.5	12.7
At 306°C	19.8	18.8	23.5	22.1	23.8	22.7
Temperature Range 20°C above ambient to 306°C						
Heat-Up to Ambient — Minutes to 80°C	8	8	6	6	9	6
Heat-Up to Ambient — Minutes to 150°C	20	20	27	15	28	28
Heat-Up to °C Ambient — Minutes to 306°C	52	52	124	57	130	80
Recovery after Door Opening (30 sec.) — Minutes to 80°C	1.5	2.5	1.5	1	2	2
Recovery after Door Opening (30 sec.) — Minutes to 150°C	4.5	3.5	2	1.5	4	3
Recovery after Door Opening (30 sec.) — Minutes to 306°C	14	7	18	5.5	45	20
Recovery after Door Opening (60 sec.) — Minutes to 80°C	4	3	2	2	3.5	3
Recovery after Door Opening (60 sec.) — Minutes to 150°C	6	4.5	4.5	3.5	6	5.5
Recovery after Door Opening (60 sec.) — Minutes to 306°C	20	9	36	11	57	26
Temperature Uniformity						
At 80°C	1.00°C	0.75°C	1.00°C	0.75°C	0.75°C	0.75°C
At 150°C	2.30°C	1.80°C	1.80°C	2.50°C	1.80°C	1.50°C
At 306°C	4.70°C	4.00°C	5.00°C	5.00°C	4.50°C	3.50°C
Ventilation						
Air Changes Per Hr at Max	330	330	225	225	180	180
Max CFM	5.6	5.6	11.3	11.3	15.2	15.2
Velocity	125	125	140	140	145	145

*Both NEMA 6-15P, 2.5M and CEE7/7 (EU1-16P), 2.5M are supplied with 220V-240V models.

DIN 12880 Compliance

SHEL LAB SMO Series ovens are designed to meet or exceed the performance criteria established through DIN 12880:2007:05 and ASTM E145-94 (Reapproved 2006.) These criteria set common standards for laboratory oven performance in heat-up, temperature uniformity and door-open recovery time. Confirmation of temporal and spatial performance is achieved by testing with multi-point temperature probes strategically positioned throughout the oven chamber interior, including center point positions where stability, equilibrium and setpoint control are required.

Note: DIN 12880 is an international standard for measuring the performance of electrical laboratory ovens and incubators based on Deutsches Institut Fur Normung E.V. (German National Standard), 05/01/2007.



Site Preparation and Installation Guides

	SMO1	SMO3	SMO5
Door Swing Clearance (Nominal)	23.0" (585 mm)	27.0" (686 mm)	32.0" (813 mm)
Wall Clearance, Sides	6.0" (152 mm)	6.0" (152 mm)	6.0" (152 mm)
Wall Clearance, Rear	12.0" (305 mm)	12.0" (305 mm)	12.0" (305 mm)
Wall Clearance, Top	24.0" (610 mm)	24.0" (610 mm)	24.0" (610 mm)
Shipping Weight	167.0 lb (77.0 kg)	216.0 lb (98.0 kg)	258.0 lb (117.0 kg)

SMO Oven Options and Accessories

	SMO1	SMO3	SMO5
Sliding Shelf Option Includes 1 Shelves, 2 Slides	9751371	9751370	9751366
Caster Platform	N/A	9000597	9000594
Extra Shelf, Standard, Max. Weight 50 lb (22kg); Includes Brackets	9751227	9751228	9751229
Extra Shelf, Reinforced, Max. Weight 75 lb (34kg); Includes Brackets	Contact Our Sales Team For More Details		

Options must be specified when ordering. Contact SHEL LAB for additional information.



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Sheldon Manufacturing, Inc.

300 N. 26th Avenue • PO Box 627 • Cornelius, OR 97113 USA
+1-503-640-3000 • sheldonmanufacturing.com • sales@sheldonmfg.com

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