SHELLAB®

SMO Series

Sheldon Mechanical Convection Laboratory Ovens

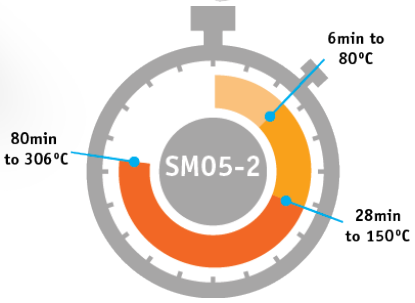
Rapid Heat-Up Time to 306°C

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.



Made in USA

- 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" (12.7mm) centers to provide flexible inventory options.
- 8 Rear access port, 1.75" diameter (44mm) for independent cables, instrumentation.
- 9 Exhaust port, 3" diameter (76mm), 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 ±10% of specified voltage.

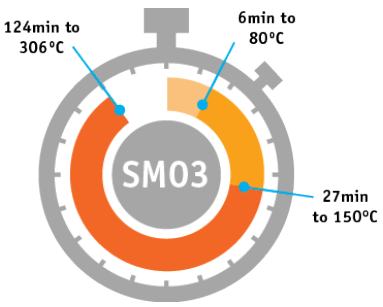
Recovery Upper vents are closed when recovery times following door openings are tested. Published recovery performance is based on a standard cabinet under controlled testing at a (22 ± 3)°C ambient temperature, line voltage ±10% of specified voltage.

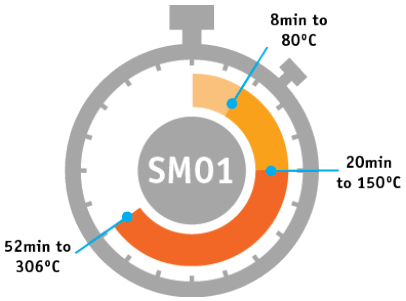
Applications:

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

SM03

SM01



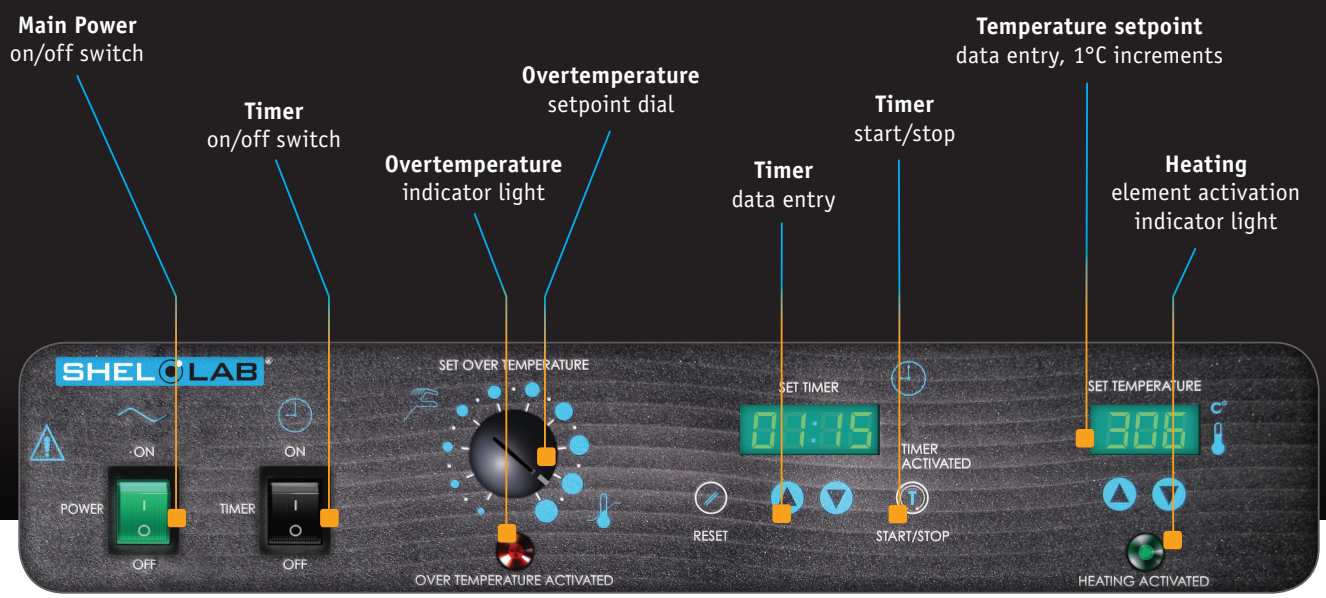


Control, Timer Program and Monitoring

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 setpoint 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

	SM01	SM03	SM05
Interior Volume, Nominal	1.39 cu.ft. (39.4 liters)	3 cu.ft. (85 liters)	4.9 cu.ft. (138 liters)
Interior Dimensions W x H x D	12.1" x 14.5" x 13.75" 30.7 x 36.8 x 39.4cm	16.5" x 16.25" x 19.5" 41.9 x 41.2 x 49.5cm	21" x 20.75" x 19.44" 53.3 x 52.7 x 49.4cm
Exterior Dimensions W x H x D	22.7" x 31.5" x 23.5" 57.7 x 80.0 x 59.6cm	26.9" x 34" x 28.6" 68.4 x 86.4 x 72.7cm	31.4" x 38.8" x 28.1" 79.8 x 98.5 x 71.4cm
Interior Construction	400 series stainless steel	400 series stainless steel	400 series stainless steel
Exterior Construction	20 gauge steel, powder coated	20 gauge steel, powder coated	20 gauge steel, powder coated
Shelves (See Accessories)*	2 standard, 6 total	2 standard, 7 total	2 standard, 9 total
Maximum Weight Per Shelf*	50 lbs/22.7kg	50 lbs/22.7kg	50 lbs/22.7kg
Permitted Total Load	100 lbs/45kg	200 lbs/91kg	200 lbs/91kg

*Extra standard and reinforced shelves available. See Accessories.

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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
Recommended Breaker, Amps	15	15	15	15	15	15
NEMA Plug Supplied	5-15P	6-15P*	5-15P	6-15P*	5-15P	6-15P*
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 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	2.25°C	1.75°C	1.75°C	2.50°C	1.750°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/Hr @80°C	330	330	225	225	180	180
Velocity	5.6 cfm	5.6 cfm	11.3 cfm	11.3 cfm	15.2 cfm	15.2 cfm

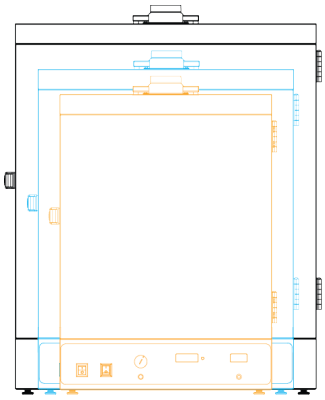
* Both NEMA 6-15P, 2.5M and CEE7/7 (EU1-16P), 2.5M are supplied with 220V-240V models.

DIN 12880 Compliance

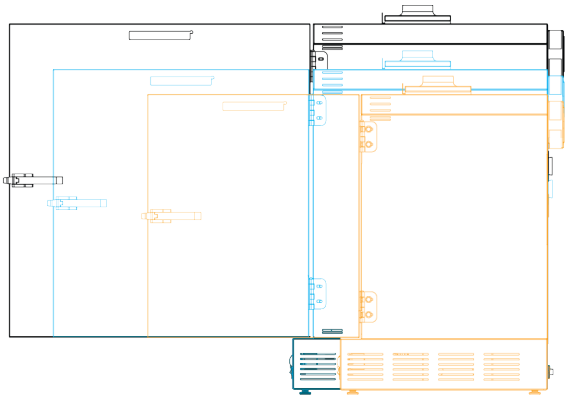
SHEL LAB SMO Series ovens are designed to meet or exceed the performance criteria established through DIN 12880:2007:05 and ASTM E145-94 (Reapproved 2006.) These criteria set common standards for laboratory oven performance in heat-up, temperature uniformity and door-open recovery time. Confirmation 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.

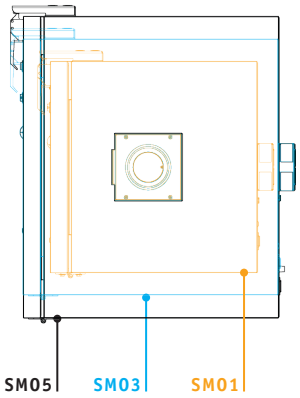
FRONT



RIGHT SIDE



TOP



Site Preparation and Installation Guides

	SM01	SM03	SM05
Door Swing Clearance (Nominal)	23" (58.5cm)	27" (68.6cm)	32" (81.3cm)
Wall Clearance, Sides	4" (10.0cm)	4" (10.0cm)	4" (10.0cm)
Wall Clearance, Rear	6" (15.2cm)	6" (15.2cm)	6" (15.2cm)
Exhaust Duct (Outer Diameter)	3" (7.62cm)	3" (7.62cm)	3" (7.62cm)
Net Weight Empty (with Standard Shelves)	126.5 lbs (57.4kg)	170.5 lbs (77.3kg)	208 lbs (94.3kg)
Shipping Weight	166.5 lbs (76.5kg)	215.6 lbs (97.8kg)	258 lbs (117kg)

SMO Series Oven Options and Accessories

	SM01	SM03	SM05
Reverse Door	907-952-0016	907-952-0017	907-952-0018
3" Access Port	907-958-0001	907-958-0002	907-958-0003
Caster Platform	N/A	9000597	9000594
Powered Exhaust, 110V	9990802	9990802	9990802
Powered Exhaust, 220V	9990803	9990803	9990803
Extra Shelf, Standard, Max. Weight 50 lbs (22kg); Includes Brackets	9751227	9751228	9751229
Extra Shelf, Reinforced, Max. Weight 75 lbs (34kg); Includes Brackets	907-975-0001	907-975-0002	907-975-0003

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

SHEL LAB®
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SHEL LAB SMO Series ovens are tested for use within an ambient air pressure range of 22.14 – 31.3 inHg (75 – 106 kPa), with no flammable, volatile or combustible materials being heated.

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