



ROLLING THIN FILM OVEN

1. Available Variants

1. **Rolling Thin Film Oven – Complete Stainless Steel**
2. **Rolling Thin Film Oven – Complete S.S. With PLC And HMI**
3. **Rolling Thin Film Oven – ASTM D2872, AASHTO T240, IS 15799**
4. **Automatic Rolling Thin Film Oven – Programmable**

2. Common Details

Application

Determination of the resistance of bituminous binder to hardening under the influence of heat and air : Rolling Thin Film Oven Test.

Introduction

This unit simulates the hardening that affects binder during its mixture with aggregates in the plant and during the finishing & rolling of the bituminous layers (Short Term Ageing). Provides the binder sample ready for change in mass determination and for other tests that characterize the binder about the resistance to short term ageing.

Salient Features

1. Double walled electrically heated conventional type oven with high glass wool density insulation to prevent thermal loss.
2. Over temperature automatic switch.
3. Automatic switch that switches off the oven in case of accidental opening of the door during the test.
4. Spy lamp and alarm for door open with fan still running.
5. Magnetothermic switch.
6. Thermal insulation with high quality material.
7. Door with high resistance glass separated by an air space offering uninterrupted view of inside of the oven.
8. Armored heating resistance to safety requirement.
9. Transmission of movement of the vertical carriage and of the squirrel cage - type fan by toothed belt, to grant constant speed.
10. Digital electronic thermo regulator operating in PID mode. By this way it is assured that the test temperature recovery time is complying with the specifications, that is 10 minutes after 1 minute with door open (estimated time necessary for the positioning of the glass containers with sample into the vertical carriage).
11. Cooling fan operating all over the test to protect the movement transmission of the squirrel cage fan and of the vertical carriage.

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Calibration Laboratory:

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GST TIN No. : 24AABCE4018L1ZU
I.T. PAN No. : AABCE 4018L
IEC No. : 0813026598 Dt. 04/03/2014
CIN No. : U29199GJ2004PTC045078
TAN No. : AHME00572F



12. Rotating shelf constructed such that it offers minimum resistance to air circulation for better heat distribution while sample container are in place.
13. Complete with pilot indicating lamps, 2 meter cord wire and power plug.

Details Of Apparatus

The entire test method comprises one each of Hot Air oven, Rotating Shelf (Vertical circular carriage), Sample Containers and Thermometer as per following descriptions.

Rotating Shelf

1. Single metal Vertical circular carriage having diameter of 304.8mm as per ASTM D2872.
2. Shelf construction is such that it provides a flat surface for support of the containers without blocking air circulation through the shelf when the containers are in place.
3. Shelf is suspended by a Horizontal shaft and centered with respect to the vertical interior dimensions of the oven.
4. Can accommodate four (8) no glass sample containers.

Sample Containers

Sample Containers: (8 Nos.)

1. Inside Diameter : 64 mm $\pm$ 1.2 mm
2. Depth : 139.7 mm
3. Flat bottom design
4. Made of clear, transparent, heat resistant glass material

At Extra Cost

1. Analytical balance capable of measurements to within 0.001 grams if determining mass loss during testing.
2. Laboratory gloves suitable for handling hot glassware.
3. A suitable rack for cooling of the sample jars after aging.
4. A scraper suitable for removing the binder residue from the sample containers for further preparation and testing after aging.
5. Digital Stop Watch for various stages of the aging process.
6. ASTM 13C thermometer.
7. Calibration certificate with traceability to National Standards as per - IEC/ISO 17025.

3. Variant Details

3.1 Rolling Thin Film Oven – Complete Stainless Steel

Complies with following International Standards:

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ASTM D2872; AASHTO T240 ; CNR N.54; EN 12607 - 1, IS 15799-2008

Additional Salient Features:

1. Double walled, inner chamber S.S.304, Outer S.S.304.
2. Flow meter (Rota meter), with air flow regulator.
3. Rotating shelf is rotated by electric motor at a speed of 15 ± 0.2 RPM as per ASTM D2872.
4. Cooling fan operating all over the test to protect the movement transmission of the squirrel cage fan and of the vertical carriage.

3.2 Rolling Thin Film Oven – Complete S.S. With PLC And HMI

Complies with following International Standards:

ASTM D2872, AASHTO T240, EN 12607-1

Vertical Circular Carriage:

1. Diameter: 12 inches
2. Shaft: Diameter 0.75 inches, RPM range 14.8 to 15.2

Door Window:

1. Size: Width 305-330 mm, Height 203-229 mm
2. Construction: Two sheets of heat-resistant glass with an air space for unobstructed viewing

Air Plenum:

1. Depth: 1.5 inches (38.1 mm) from walls and ceiling

Fan Specifications:

1. Type: Squirrel cage
2. Speed: 1725 RPM

Oven Details:

1. Temperature Range: 162.5°C to 163.5°C
2. Time to Reach Temperature: Maximum 8 minutes
3. Flow Meter Display: Digital, adjustable from 0.1 to 10000 mL/min, accurate at 4000 ± 200 mL/min
4. Exterior Material: Stainless steel with linen pattern
5. Controls: Touchscreen graphical color display; includes over-temperature switch, door switch, lamp and alarm for door operation, magneto-thermic switch
6. Accessories: Eight class bottles (standard dimensions)

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Pump Specifications:

1. Type: Diaphragm
2. Free Air Displacement: 6 L/min
3. Max Pressure (as air compressor): 2.4 bar
4. Ultimate Vacuum (as vacuum pump): 100 mbar
5. Voltage: 110-230 V, 50-60 Hz, 1 phase

Rack Details:

1. Material: Stainless steel or aluminum
2. Clearance: Minimum 1 inch between containers or surfaces

3.3 Rolling Thin Film Oven – ASTM D2872, AASHTO T240, IS 15799

Complies with following International Standards:

ASTM D2872; AASHTO T240 ; CNR N.54; EN 12607 - 1, IS 15799-2008

Additional Salient Features:

1. Double walled, inner chamber S.S.304, Outer CRC Powder coated.
2. Flow meter (Rota meter), with air flow regulator.

3.4 Automatic Rolling Thin Film Oven – Programmable

Complies with following International Standards:

ASTM D2872; AASHTO T240 ; CNR N.54; EN 12607 - 1, IS 15799-2008

Additional Salient Features:

1. Double walled, inner chamber S.S.304, Outer CRC Powder coated.
2. **Digital Flow meter, with air flow regulator.**

Rotating Shelf:

1. Shelf is rotated by electric motor at a variable speed of 5-60 RPM as per ASTM D2872.

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4. Common Specifications

Specification	Details
Working Size	483 x 445 x 381mm (W x D x H)
Volume	82 Liters
Rating	2.0 KW
Temperature Range	50 °C - 300 °C
Temperature Control	Microprocessor based Auto-Tuning Digital PID temperature controller cum indicator
Temperature Display	LED Digital display
Temperature Sensor	PT-100 sensor
Temperature Resolution	0.1 °C
Temperature Accuracy	± 1 °C or better
Shaft	Rotating Vertical Circular carriage for sample containers as mentioned in ASTM D2872 standard
Carriage Rotation	Rotated by electric motor at 15 ± 0.2 RPM as per ASTM D2872
Electric Motor	Of reputed make
Glass Container	Clear, transparent, Heat resistant glass containers to be held in Circular carriage
No. Of Glass Containers	08 Nos
Air Jet Orifice	1.016 mm diameter
Copper Tubing Dimensions	7.6 meter length and 8 mm outside diameter
Construction	Tripple walled construction
Inner Chamber	Made of Stainless Steel S.S. 304 - mirror polished material

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Specification	Details
Insulation	High density glass wool insulation - (2.5") in all sides of chamber to offer minimum heat loss
Heating Element	Heating elements placed at the bottom of the oven Floor as per ASTM D2872
Blower	Suspended vertically from the ceiling of the oven for uniform heat distribution inside the working chamber
Door Lock	Special heavy duty Stainless steel lock and door hinges with spring and roller mechanism
Observation Window	With two sheets of glass separated by an air space, 11" x 13" (H x W)
Ventilation	Adjustable air ventilation mounted at top and bottom for dissipation of expended volatile from specimen as per ASTM D2872
Rate Of Air Flow	Calibrated flow meter measuring range 0 - 4000 ml/min
Operation On	230 volts, 50 hz, Single phase, AC Supply
Internal Circuitry Wires	As per CE Compliance
Design	CE CERTIFIED Design criteria

5. Variant Specifications

5.1 Rolling Thin Film Oven – Complete Stainless Steel

Specification	Details
Exterior Body	Made of Stainless Steel S.S. 304 - mirror polished material
Overall Dimensions	1160 X 700 X 960 MM

5.2 Rolling Thin Film Oven – Complete S.S. With PLC And HMI

Specification	Details
Working Size	483 x 445 x 381cm (W x D x H)
Exterior Body	Made of Stainless Steel S.S. 304

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Specification	Details
Vertical Circular Carriage Diameter	12 inches
Shaft Diameter	0.75 inches
RPM Range	14.8 to 15.2
Door Window Size	Width 305-330 mm, Height 203-229 mm
Air Plenum Depth	1.5 inches (38.1 mm) from walls and ceiling
Fan Type	Squirrel cage
Fan Speed	1725 RPM
Temperature Range	162.5°C to 163.5°C
Time To Reach Temperature	Maximum 8 minutes
Flow Meter Display	Digital, adjustable from 0.1 to 10000 mL/min, accurate at 4000 ± 200 mL/min
Exterior Material	Stainless steel with linen pattern
Controls	Touchscreen graphical color display; includes over-temperature switch, door switch, lamp and alarm for door operation, magneto-thermic switch
Pump Type	Diaphragm
Free Air Displacement	6 L/min
Max Pressure (as air compressor)	2.4 bar
Ultimate Vacuum (as vacuum pump)	100 mbar
Pump Voltage	110-230 V, 50-60 Hz, 1 phase
Rack Material	Stainless steel or aluminum
Rack Clearance	Minimum 1 inch between containers or surfaces

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5.3 Rolling Thin Film Oven – ASTM D2872, AASHTO T240, IS 15799

Specification

Details

Exterior Body Made of mild steel material, which is powder coated in attractive shades

Overall Dimensions 1160 X 700 X 960 MM

Weight (Approx.) 112 kg

5.4 Automatic Rolling Thin Film Oven – Programmable

Specification

Details

Exterior Body Made of mild steel material, which is powder coated in attractive shades

Overall Dimensions 1160 X 700 X 960 MM

Weight (Approx.) 112 kg

Rotating Shelf Speed Variable speed of 5-60 RPM as per ASTM D2872

Flow Meter Digital Flow meter, with air flow regulator

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