SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Thin Wall Cylinder | FortiTestX - 29

Category: Strength of Materials · **Country of Origin:** India

Product Overview

The Thin Wall Cylinder FortiTestX-29 is a benchtop pressure vessel testing unit for engineering laboratories investigating stress and strain in thin-walled cylinders under internal pressure. This thin wall cylinder features an aluminium cylinder (400 mm length, 84 mm outer diameter, 2 mm wall thickness) with a maximum operating pressure of 3 N/mm² (30 bar), generated by a hydraulic hand pump. Five half-bridge strain gauges at 0°, 30°, 45°, 60°, and 90° to the cylinder axis measure hoop and longitudinal strains directly via a 10 V amplifier. The unit switches between open-ended pipe and closed boiler tank configurations for comparative stress state analysis, with optional Windows-based Software FX-29 supporting data logging and Mohr's Circle visualisation.

View this product online: https://scienticoindia.com/product/thin-wall-cylinder-fortitestx-29/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Thin Wall Cylinder FortiTestX-29, Technical Specifications

Parameter	Detail
Model Reference	FortiTestX-29
Category	Strength of Materials and Structures
Cylinder Material	Aluminium
Cylinder Length	400 mm
Outer Diameter	84 mm
Inner Diameter	80 mm
Wall Thickness	2 mm
Maximum Internal Pressure	3 N/mm² (30 bar)
Pressure Gauge Range	0 to 30 bar
Pressure Generation	Hydraulic hand pump with factory-preset pressure release valve
Hydraulic System	Hermetically sealed, maintenance-free, oil-filled
Piston Control	Threaded spindle bolt, hand wheel operated
Vessel Configuration	Switchable: open-ended (pipe) or closed-ended (boiler tank)
Strain Gauge Quantity	5

Parameter	Detail
Strain Gauge Configuration	Half-bridges
Strain Gauge Angles to Vessel Axis	0°, 30°, 45°, 60°, 90°
Gauge Factor	2.00 +/- 1%
Amplifier Supply Voltage	10 V
Optional Software	Software FX-29 (Windows-based)

Technical Data

Aluminium Cylinder

Parameter	Value
Length	400 mm
Outer Diameter	84 mm
Inner Diameter	80 mm
Wall Thickness	2 mm
Maximum Internal Pressure	3 N/mm² (30 bar)

Strain Gauge System

Parameter	Value
Number of Strain Gauges	5
Configuration	Half-bridges
Angles to Vessel Axis	0°, 30°, 45°, 60°, 90°
Gauge Factor	2.00 +/- 1%
Amplifier Supply Voltage	10 V
Measurement Positions	Hoop and longitudinal stress and strain positions

Pressure System

Parameter	Value
Pressure Generation	Hydraulic hand pump
Pressure Release Valve	Factory-preset
Pressure Gauge Range	0 to 30 bar
Hydraulic Fluid	Oil
System Type	Hermetically sealed, maintenance-free

Key Features

Key Features

- Cylinder Dimensions: aluminium, 400 mm length, 84 mm outer diameter, 80 mm inner diameter, 2 mm wall thickness
- Maximum Internal Pressure: 3 N/mm² (30 bar), generated by hydraulic hand pump
- Dual Vessel Configuration: this thin wall cylinder switches between open-ended pipe and closed-ended boiler tank conditions
- Piston Control: moveable piston operated via threaded spindle and hand wheel for precise pressure sealing
- Strain Gauge Layout: 5 half-bridge gauges at 0°, 30°, 45°, 60°, and 90° to the cylinder axis
- Gauge Factor: 2.00 +/- 1%
- Amplifier Supply Voltage: 10 V, with direct digital strain readout

- Measurement Positions: hoop and longitudinal stress and strain positions on cylinder surface
- Pressure Indication: pressure gauge, 0 to 30 bar range, easy-read display
- Hydraulic System: hermetically sealed, oil-filled, maintenance-free
- Optional Software: Software FX-29, Windows-based, for data logging, graphical strain conversion, and Mohr's Circle analysis

Experiments

- Measurement of strain using strain gauges
- Application of Mohr's Circle for stress and strain analysis, determination of the principal strains
- Determination of Poisson's ratio
- Investigation of correlations between strain, pressure, and stress in the plane biaxial stress state
- Determination of principal stresses: axial and circumferential stresses in magnitude and direction on an open vessel (pipe)
- Determination of principal stresses: axial and circumferential stresses in magnitude and direction on a closed vessel (boiler tank)
- Comparison of open and closed vessel stress states

Construction and Design

The Thin Wall Cylinder FortiTestX-29 is built around an aluminium cylinder measuring 400 mm in length, 84 mm outer diameter, 80 mm inner diameter, and 2 mm wall thickness. One end of this thin wall cylinder is closed; the other is sealed by a moveable piston actuated through a threaded spindle and hand wheel. This configuration allows the unit to replicate either the uniaxial stress state of an open pipe or the biaxial stress state of a sealed pressure vessel. The cylinder interior is filled with oil, and internal pressure is generated by a hydraulic hand pump fitted with a factory-preset pressure release valve. A pressure gauge covering 0 to 30 bar displays the internal pressure. Five strain gauges bonded to the outer cylinder surface in half-bridge configuration are positioned at 0°, 30°, 45°, 60°, and 90° to the cylinder axis, covering both hoop and longitudinal measurement positions. The gauge factor is 2.00 +/- 1%, with a 10 V amplifier supply voltage. The hydraulic system is hermetically sealed and maintenance-free. Optional Software FX-29 interfaces with the amplifier via a Windows-based environment for data logging and graphical results evaluation including Mohr's Circle.

Software

Software FX-29 (Optional): Windows-based software for data logging, graphical strain conversion, and Mohr's Circle visualisation for principal strain and stress determination. Compatible with any Windows operating system.

Scope of Delivery

- 1 experimental unit
- 1 instruction manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1: What is the maximum internal pressure the Thin Wall Cylinder FortiTestX-29 can generate?
The maximum internal pressure is 3 N/mm² (30 bar), generated by the hydraulic hand pump with a factory-preset pressure release valve.

Q2: How does this thin wall cylinder switch between open-ended and closed-ended configurations?
A moveable piston controlled by a threaded spindle and hand wheel seals or opens one end of the cylinder, switching between the uniaxial stress state of an open pipe and the biaxial stress state of a closed vessel.

Q3: At what angles are the strain gauges mounted on the cylinder surface?
Five strain gauges in half-bridge configuration are bonded at 0°, 30°, 45°, 60°, and 90° to the cylinder axis, covering hoop and longitudinal stress and strain positions.

Q4: Is Mohr's Circle analysis supported by this apparatus?
Yes. Optional Software FX-29 provides graphical Mohr's Circle analysis for identifying principal strains and computing principal stresses from measured strain data.

Q5: Does the hydraulic system require maintenance?
No. The hydraulic system is hermetically sealed and maintenance-free.

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