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PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Marcet Boiler | ThermoFlux - 7047

Category: Thermodynamics Lab Equipment · **Country of Origin:** India

Product Overview

The Marcet Boiler ThermoFlux - 7047 is a benchtop thermodynamics experimental unit for demonstrating the pressure–temperature relationship of saturated steam in equilibrium with water, with the Marcet boiler saturation pressure curve determinable up to 10 bar (145 lb/in²). The stainless steel 304 pressure vessel of 5-litre capacity is fitted with three selectable 1000 W immersion heaters (1000–3000 W total), a Bourdon tube pressure gauge (−1 to 15 bar), K-type thermocouple (−100°C to 400°C), and analogue temperature sensor (0°C to 350°C). A multi-layer safety system comprising dual digital pressure switches (10 and 11 bar), a mechanical pressure relief valve (13 bar), and a temperature controller cut-off (185.0°C) protects the vessel against overpressure and overtemperature throughout all test conditions. The vessel is enclosed in an insulating jacket and fitted with a water feed port for controlled charging. Optional ThermoFlux - 7047 DAQ software, developed in National Instruments™ LabVIEW™, is available for automated data acquisition and result calculation on any Windows™ system.

View this product online: https://scienticoindia.com/product/marcet-boiler-thermoflux-7047/



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

Technical Specifications

Marcet Boiler ThermoFlux - 7047, Technical Specifications

Parameter	Details
Model	ThermoFlux - 7047
Unit Type	Benchtop standalone unit
Experiment	Saturated steam pressure–temperature relationship
Maximum Operating Pressure	9 bar
Design Pressure	20 bar
Saturation Curve Range	Up to 10 bar (145 lb/in²)
Pressure Vessel Capacity	5 litres
Pressure Vessel Material	Stainless Steel 304
Insulation	Insulating jacket on pressure vessel
Water Feed	Water feed port for vessel charging

Technical Data

a) Pressure Vessel

Parameter	Value
Capacity	5 litres
Material	Stainless Steel 304
Design Pressure	20 bar
Operating Pressure	9 bar

b) Pressure Gauge

Parameter	Value
Type	Bourdon Tube
Range	−1 to 15 bar

c) Electrical Heater

Parameter	Value
Power	1000 W to 3000 W (3 heaters of 1000 W each, selectable in 3 stages)
Type	Immersion type
High Temperature Cut-Off	Via temperature controller
High Pressure Cut-Off	Via digital pressure switch
High Pressure Relief	Via pressure safety valve

d) Temperature Sensor

Type	Range
Thermocouple, K Type	−100°C to 400°C
Analogue sensor	0°C to 350°C

e) Safety Features

Safety Device	Setting
Pressure Switch 1	Set at 10 bar
Pressure Switch 2	Set at 11 bar
Pressure Relief Valve	Set at 13 bar
Temperature Controller (cut-off)	Set at 185.0°C

Key Features

Key Features

- **Unit type:** Benchtop standalone thermodynamics demonstration unit with insulating jacket on pressure vessel
- **Experiment:** Determination of the saturated steam pressure–temperature relationship and vapour pressure curve of water in a closed system
- **Pressure vessel:** 5-litre capacity; Stainless Steel 304; design pressure 20 bar; operating pressure 9 bar
- **Electrical heater:** Immersion type; 1000 W to 3000 W total; three heaters of 1000 W each; independently selectable in 3 stages via heater selector
- **Pressure gauge:** Bourdon tube type; range −1 to 15 bar
- **Pressure measurement:** Two digital pressure switches for monitoring and cut-off; digital display on control panel
- **Temperature measurement:** K-type thermocouple, −100°C to 400°C; analogue sensor, 0°C to 350°C; digital temperature display
- **Vapour pressure curve:** Saturation pressure curve determinable within 10 bar (145 lb/in²)

- **Safety, pressure switch 1:** Digital pressure switch set at 10 bar for high-pressure cut-off
- **Safety, pressure switch 2:** Digital pressure switch set at 11 bar for secondary high-pressure cut-off
- **Safety, pressure relief valve:** Mechanical pressure relief valve set at 13 bar for steam discharge under overpressure
- **Safety, temperature controller:** High-temperature cut-off via temperature controller set at 185.0°C, a critical **Marcet boiler** safety feature
- **Water feed:** Water feed port installed for controlled vessel charging
- **Software:** Optional ThermoFlux - 7047SW DAQ software developed in National Instruments™ LabVIEW™; compatible with all Windows™ environments

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Experiments

- Demonstration of the relationship between the pressure and temperature of saturated steam in equilibrium with water in a closed system
- Measuring a vapour pressure curve for saturated vapour
- Recording the vapour pressure curve of water
- Demonstration of the vapour pressure curve

Construction and Design

The **Marcet Boiler ThermoFlux - 7047** is built around a 5-litre stainless steel 304 pressure vessel rated to a design pressure of 20 bar and an operating pressure of 9 bar, enclosed within an insulating jacket to maintain stable thermal boundary conditions during **Marcet boiler** experiments. Three 1000 W immersion-type electrical heaters are installed within the vessel, selectable individually or in combination via a heater selector switch to provide 1000 W, 2000 W, or 3000 W of heating power. A Bourdon tube pressure gauge (−1 to 15 bar) provides direct analogue pressure indication, supported by two digital pressure switches set at 10 and 11 bar for automated high-pressure cut-off. A mechanical pressure safety relief valve set at 13 bar provides the final overpressure protection layer for steam discharge. Temperature is monitored via a K-type thermocouple (−100°C to 400°C) and an analogue temperature sensor (0°C to 350°C), with a temperature controller set at 185.0°C providing high-temperature cut-off protection. A digital indicator displays both temperature and pressure readings on the control panel. A water feed port is installed on the vessel to allow controlled water charging prior to experimental runs. The complete safety architecture, dual pressure switches, mechanical relief valve, and temperature controller, ensures the system remains protected against overpressure and overtemperature across all operating conditions.

Software

ThermoFlux - 7047 (Optional)

- DAQ software specifically developed for the ThermoFlux - 7047 apparatus
- Developed in the National Instruments™ LabVIEW™ environment
- Measures and calculates results directly from apparatus sensors
- Compatible with all Windows™ operating environments
- When software option is selected, a set of electronic sensors is included

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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 primary experiment performed on the ThermoFlux - 7047?
The ThermoFlux - 7047 is used to demonstrate and record the relationship between the pressure and temperature of saturated steam in equilibrium with water in a closed system. Students can determine the saturation pressure curve of water at pressures within 10 bar (145 lb/in²).

Q2: What safety devices are fitted to the ThermoFlux - 7047?
The unit incorporates three independent safety devices: two digital pressure switches set at 10 bar and 11 bar respectively for high-

pressure cut-off, a mechanical pressure relief valve set at 13 bar for emergency steam discharge, and a temperature controller set at 185.0°C for high-temperature cut-off.

Q3: What is the heating capacity of the ThermoFlux - 7047, and can it be adjusted?
The unit is fitted with three immersion-type heaters of 1000 W each, providing a total capacity of 3000 W. Heater power is selectable in three stages, 1000 W, 2000 W, or 3000 W, via a heater selector switch on the control panel.

Q4: What pressure and temperature measurement instruments are provided?
Pressure is measured using a Bourdon tube gauge (−1 to 15 bar) and two digital pressure switches. Temperature is measured using a K-type thermocouple (−100°C to 400°C) and an analogue sensor (0°C to 350°C), with a digital temperature display on the control panel.

Q5: Is the DAQ software included as standard with the ThermoFlux - 7047?
No. The ThermoFlux - 7047 DAQ software is an optional accessory developed in the National Instruments™ LabVIEW™ environment. It is compatible with all Windows™ operating systems, and a set of electronic sensors is included when the software option is selected.

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