

Critical Point Apparatus

Order code: **5401.1002670**



Cena bez DPH

7.390,00 Eur

Price with VAT

8.941,90 Eur

Parameters

Quantitative unit

ks

A high-precision device for studying the compression and liquefaction of a gas, determining the critical point and recording isotherms in p-V (Clapeyron) diagrams. The test gas is sulphur hexafluoride (SF₆), which has a critical temperature of 318.6 K (45.5°C) and a critical pressure of 3.76 MPa (37.6 bars), allowing for a simple experiment set-up.

The apparatus includes a transparent measuring cell that is highly resistant to leakage and compression. The volume inside the cell is changed via a finely adjustable handwheel, the change being indicated by a combination of a fixed and a rotary scale to an accuracy of 1/1000 of the maximum volume. The pressure is generated by a hydraulic system containing castor oil of medically approved quality. The measuring cell and hydraulic system are separated by a cap seal which rolls in as the volume increases. This design means the pressure gradient between the measuring cell and oil chamber is negligible. A manometer measures gas pressure instead of oil pressure without taking up any dead space inside the measuring cell. During transitions from the gaseous to the liquid phases and vice versa, it is therefore possible to observe the formation of the first drops of liquid and disappearance of the last gas bubbles.

The measuring cell is enclosed in a transparent water chamber. A circulation thermostat allows the temperature to be maintained at a highly constant value, which can be monitored by means of a thermometer.

Practical indications of the volume, pressure and temperature permit easy recording of p-V or pV-p diagrams providing qualitatively correct results. Pressure and temperature-dependent volumetric corrections also provide quantitatively accurate results comparing favourably with standard reference values.

- **Critical temperature:** 318,6 K (45,5°C)
- **Critical pressure:** 3,76 MPa (37,6 bars)
- **Critical volume:** 197,4 cm³ / mol

- **Critical density:** 0,74 g / mol
- **Temperature range:** 10 – 60°C
- **Maximum pressure:** 6,0 MPa (60 bars)
- **Maximum volume:** 15,7 cm³
- **Manometer diameter:** 160 mm
- **Bore for temperature sensor:** 6 mm dia.
- **Temperature control connections:** 7 mm dia.
- **Reducing valve connection:** 1/8" dia.
- **Standard gas connection:** 3,5 mm dia.
- **Dimensions:** 380 × 200 × 400 mm approx.
- **Weight:** 7 kg approx.

Note:

In accordance with good laboratory practice, it is advisable to obtain gas via a fixed pipeline if the critical point apparatus is used frequently. In case of occasional usage, it is more expedient to obtain the test gas from MINICAN® canisters. A MINICAN® gas connection is designed similarly to the valve on a common spray can, i.e. it is opened simply by fitting the MINICAN® on the gas connection nozzle.

Contents:

- 1 Critical point device filled with hydraulic (castor) oil but without test gas (SF₆). Includes built in safeguarded connection nozzle for MINICAN® gas canisters
- 1 Oil filling device
- 1 Angled 1.3-mm hexagonal spanner (for grub screw on rotary scale)
- 1 Plastic hose, 3 mm internal diameter
- 1 1/8" pipe screw connection (SW 11)
- 1 Grease gun

Additionally required:

- 5401.U144001 Immersion / Circulation Thermostat
- 5401.U10146 Silicone Tubing, 1 m (2×)
- 5401.U11853 Digital Quick-Response Pocket Thermometer
- 5401.U11854 Immersion Sensor, NiCr-Ni, type K, -65°C - 550°C
- Sulphur hexafluoride SF₆