

RADON CHAMBER

RADON CALIBRATION CHAMBER



RN CHAMBER is an advanced radon calibration chamber designed to generate highly stable and precisely controlled radon atmospheres for professional calibration, research, and verification of measurement methods. Its hermetically sealed and thermally insulated construction ensures long-term environmental stability, delivering the accuracy and repeatability required in modern radiation metrology.

With uniform radon distribution and continuous monitoring of key environmental parameters, it provides an ideal environment for detector testing, technology validation, and studies of radon behaviour, making it a reliable tool for laboratories and institutions demanding precision and consistency in their measurement processes.

Benefits

- Homogeneous radon field thanks to a pair of internal fans ensuring even distribution throughout the entire volume of 1 m³.
- Stable and reproducible RVA values supported by thermally insulated construction and controlled circulation and ventilation.
- Radon dosing in two independent circuits, using precise AlphaPUMP pumps and OMRON flow meters, allowing a wide range of working concentrations.

Key figures

1 m³ Internal volume

± 10 hPa Pressure resistance

0,03 - 1 L/min Gas flow rate

Product Description

The 1m³ radon calibration chamber is designed to generate precisely defined and long-term stable radon atmospheres for calibration, research, and verification purposes. Its double-walled, thermally insulated stainless-steel construction minimizes the influence of external conditions and ensures stable temperature, pressure, and radon concentration inside the chamber.

The chamber is equipped with two independent dosing circuits that enable controlled radon generation and smooth regulation of the resulting concentration within the working volume. The internal circulation system ensures uniform mixing of radon throughout the entire chamber and supports the creation of a homogeneous atmosphere.

The ventilation system enables controlled air exchange and incorporates a delayed valve-closing mechanism to safely equalize pressure between the chamber and the surrounding environment. Integrated environmental sensors and control electronics provide continuous monitoring of temperature, humidity, pressure, and flow rates, with all measured data available for recording and further processing via the RCC Values software.

Product Specifications

Mechanical parameters

- Volume: 1 m³
- Internal dimensions: 100 × 100 × 100 cm
- Material: stainless steel, double-walled thermally insulated construction
- Pressure resistance: ±10 hPa
- Sealing: mechanical pressure seal
- Grommets: 6× flanges (5 mm stainless steel, thread cutting possible)

Dosing circuits

- Radon sources: 100 kBq and 1000 kBq Ra-226
- AlphaPUMP pumps:
 - 1.0 / 0.5 / 0.3 L/min (continuous)
 - 0.1 / 0.05 / 0.03 L/min (periodic)
- Flow meters: range 0–1 L/min

Circulation and ventilation

- 2× internal fan (radon homogenization)
- Air pump for air exchange
- Electromagnetic valves (with delayed closure ~120 s)
- Frequency converter (30–32 Hz)

Monitoring

- COMET sensors – temperature, relative humidity, atmospheric pressure
- Communication: Ethernet, MODBUS
- Software: RCCValues (graphs, tables, CSV records, LOG)

Leak testing

- The decrease in radon corresponds to the theoretical decay of Rn-222
- No additional loss due to leakage was detected

Product Applications

- Calibration of radon detectors and monitors (ionization chambers, scintillators, diffusion detectors, radon probes).
- Metrology and accreditation laboratories – creation of stable reference atmospheres.
- Research into radon dynamics: transport, distribution, influence of temperature and humidity.
- Testing of radiation protection systems – validation of instrument response.
- Development and validation of new radon measurement methods and sensors.

