

Hague 7000

^{14}C Air Sampler



The Hague 7000 ^{14}C sampler from SDEC is the perfect instrument for measuring low levels of ^{14}C in air.

- Trapping yield of 99% by bubbling air through sodium hydroxide solution.
- Both gaseous and organic ^{14}C forms can be collected with the catalytic oven.
- Reduced evaporation due to the cooled trapping system, allowing weekly collection.
- Easy-to-use, with instant opening cabinet for sample retrieval.
- Accurate – electronic, COFRAC accredited airflow meter.

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Hague 7000

The Hague 7000 is widely used and recognised within the international nuclear industry, and in particular; nuclear power plants, nuclear research centres, radioactive waste treatment facilities and isotope laboratories.

The bubbler has been specifically designed with efficient ^{14}C capture in mind, using a series of four vials, a cooling system and a catalytic oven to collect carbon in both gaseous (CO_2 and CO) and organic (C) forms.

The ^{14}C activity in the collected sample can be measured with a liquid scintillation counter on a daily, weekly or monthly basis, and can then be used in combination with the sampled air volume to calculate the ^{14}C -in-air concentration. This provides an efficient method of monitoring ^{14}C levels with a much higher sensitivity than even the most sophisticated real-time monitor.

Airflow process

A pre-filter paper in the inlet (\varnothing 45 mm) prevents dust intake and the electronic flow meter is protected by Gortex® filters. The airflow passes into glass vials (250 ml capacity) through stainless steel air tubing. The air flow can be set from 10 to 50 litres per hour, regulated by a certified airflow meter.

Oxidation oven

Stainless steel tubular oven equipped with palladium alumina catalyst pellets. The oven temperature can be set between +200°C and +500°C.

Cooling system of the collection vials

The sampler is fitted with a condenser cooling block, which allows the vials to be cooled to between +5°C and +15°C (depending on the ambient temperature). A pump ensures flow of the cooling liquid and a level gauge allows the direct control of the liquid level in the circuit. All tubing is made of stainless steel.

Alarms and defaults

- Alarm buzzer for all detected defaults.
- Memory and recovery of the last 8 defaults via RS-232.

Efficiency

CO_2 trapping yield	96% \pm 4%
Oven conversion yield	93% \pm 7%
Reproducibility of the airflow	\pm 0.8%
Airflow accuracy	\pm 1%

No response to other radioactive elements.

Options

- Condensation collector tray (recommended).
- Sampling circuit cleaning pump.
- Alarm state relay.
- J-bus protocol for remote control.
- External pressure regulator.
- Flashing light alarm signal.

Specification

Display	LCD display featuring: Oven temperature, cooling liquid temperature. Instant air flow and total volume. Duration of sampling and alarm.
Front Panel	Scratch proof lexan cover.
Frame	Monocoque in aluminium alloy. Decontamination compliant housing plant.
Power Supply	230 V / 50Hz or 120 V / 60 Hz IEC plug.
Power	700 Watts max.
Regulation	Electronic control of the airflow, oven temperature, cool temperature.
Electrical Protection	Differential circuit breaker (sensitivity = 30 mA).
Inlet Connections	Flexible plastic tube inner diameter 6 mm with fastenings.
Temp. (Operating)	+ 2°C to + 45°C
Temp. (Storage)	-5°C to + 70°C
Dimensions	27.5" x 10" x 10.5" (700 x 265 x 270 mm)
Required Space	39" x 23.5" x 20.5" (1000 x 600 x 530 mm)
Weight	64 lbs (29 kg)

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Certificate No: 10926
ISO 9001

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