

Airborne and organic forms ¹⁴C sampling device

The Hague 7000 ¹⁴C sampler from SDEC is the perfect instrument for measuring low levels of ¹⁴C in air. Particular applications include sampling of air from stacks, hoods, rooms and the environment.

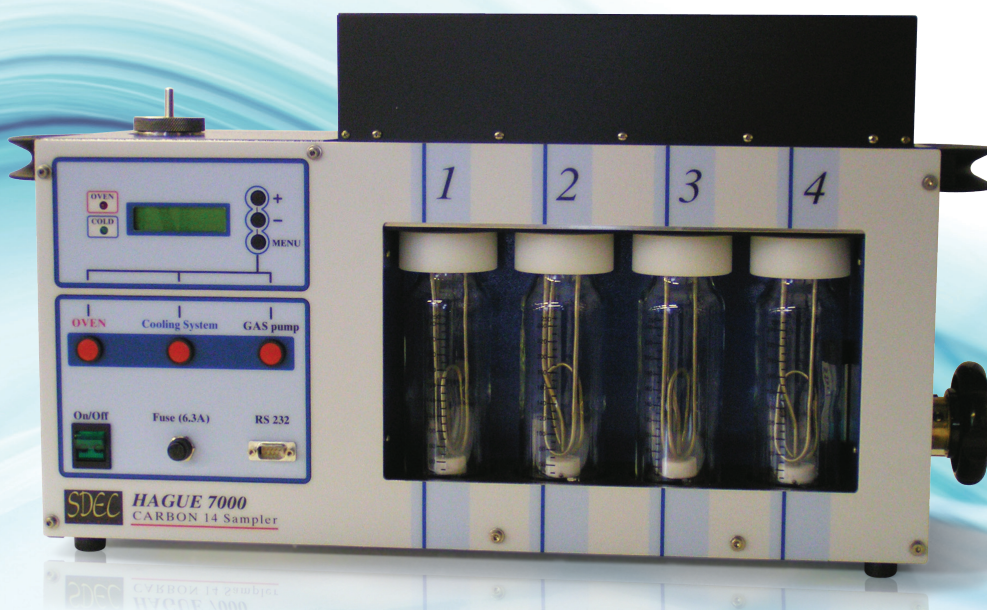
The Hague 7000 is widely used and recognised within the international nuclear industry, and in particular; nuclear power plants, nuclear research centres, radioactive waste treatment facilities and isotope laboratories.

The bubbler has been specifically designed with efficient ¹⁴C capture in mind, using a series of four vials, a cooling system and a catalytic oven to collect carbon in both gaseous (CO₂ and CO) and organic (C) forms.

The ¹⁴C 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 ¹⁴C-in-air concentration. This gives an efficient way to monitor ¹⁴C levels with a much higher sensitivity than even the most sophisticated real-time monitor.

FEATURES

- Trapping yield of 99% by bubbling air through sodium hydroxide solution
- Both gaseous and organic ¹⁴C 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, accredited airflow meter COFRAC (equiv. UKAS) accredited



AIRFLOW PROCESS

A pre-filter paper in the inlet (Ø45 mm) prevents dust intake and the electronic flow meter is protected by Gortex® filters. The airflow passes into the 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 Pt alumina catalyst pellets. The oven temperature can be set between +200°C and +500°C.

COOLING SYSTEM OF THE COLLECTING 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% ±4%
Oven conversion yield	93% ±7%
Reproducibility of the airflow	±0.8%
Airflow accuracy	±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: <ul style="list-style-type: none">• 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 / 50 Hz 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 = 30mA)
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	700 x 265 x 270 mm
Required Space	1000 x 600 x 530 mm
Weight	29 kg



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