

# HAGUE 3000 - CARBONE 14 SAMPLER

Gas and Organic Carbon 14 monitoring, in compliance with NF M60-812-1 & NF M60-822-1 standards

The HAGUE 3000 14C sampler is the perfect instrument for measuring low levels of Carbon 14 in air in its gas and organic forms. Particular applications include sampling of air from stacks, hoods, rooms and the environment.



HAGUE 3000 - carbon 14 sampler

## OPERATING PRINCIPLE

The HAGUE series carbone 14 samplers are widely used and recognised within the international nuclear industry, and in particular, nuclear power plants, nuclear research centers, 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 furnace to collect carbon in both gaseous (CO<sub>2</sub> and CO) and organic (C) forms.

The 14C activity is measured in the collected sample on a daily, weekly or monthly basis with a liquid scintillation counter, and related to the sampled volume of air in order to calculate the 14C-in-air concentration. This gives an efficient way to monitor carbone 14 levels with a much higher sensitivity than even the most sophisticated real-time 14C monitor.

## MAIN FEATURES

- Reduced evaporation due to the cooling system, allowing weekly collection
- Flow rate regulated
- Membran air pump (long life time)
- Inlet particle filter
- Aeraulic circuit made of stainless steel
- Display of flow rate and sampled air volume in real time
- Alarms report (optional)
- Defect reporting function
- Low required space

## TRAPPING YIELD

- CO<sub>2</sub> : 100%
- Furnace efficiency : 94 % (CH<sub>4</sub> > CO<sub>2</sub> conversion)

Tests report GEA 12-2005

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## AIRFLOW PROCESS

A pre-filter paper in the inlet ( $\varnothing$  45 mm) prevents dust intake and the electronic flow meter is protected by Goretex® filters. The airflow passes into the vials filled with sodium hydroxide solution (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 FURNACE

Stainless steel tubular furnace equipped with Pt alumina catalyst pellets. The furnace temperature can be set between +200°C to +500°C.

## TECHNICAL SPECIFICATIONS

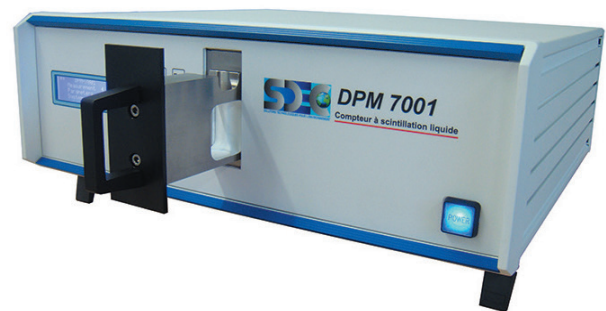
- **Dimensions:** W x H x D = 680 x 430 x 270 mm
- **Required space:** W x H x D = 1000 x 700 x 530 mm
- **Weight :** 29 kg
- **Power :** 700 Watts max
- **Power supply :** 230 V / 50 Hz IEC plug (or 120 V / 60 Hz IEC plug)
- **Inlet and outlet :**  $\varnothing$  6,4 mm
- **Temp (Operating) :** +2°C to +45°C
- **Temp (Storage) :** -5°C to +70°C
- **Electrical protection :** 6,3 A time delay fuse
- **Frame :** monocoque in aluminium alloy
- **Housing paint compliant with decontamination**
- **Glass bottles**
- **Delivered with power supply cable, four bottles with caps, calibration certificates and user guide in english**
- **Optional cleaning bypass (for use when trapping with NaOH)**

## COOLING SYSTEM OF THE COLLECTING BOTTLES

The sampler is fitted with a condenser cooling block, which allows the vials to be cooled to between +7°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. Tubing is made of stainless steel.

## LCD DISPLAY

- Furnace temperature
- Cooling liquid temperature
- Instant air flow and total volume
- Duration of sampling
- Alarms



*For quick activity measurement on the field check our portable liquid scintillation counter: **DPM 7001** with dual photomultiplier*

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