MARKES international

Humidifier Accessory

Supplies the Micro-Chamber/Thermal Extractor™ with humidified air or gas

The Micro-Chamber/Thermal Extractor is a dynamic headspace unit that is widely used for the screening of chemical emissions from products and materials, typically those used in buildings and vehicles. It is also increasingly being used as a research tool, particularly for odour-profiling of foods, fragranced products and biological samples.

While many of these Micro-Chamber/Thermal Extractor applications employ dry air/gas, there has been rising interest in the use of humidified air/gas. This allows the closer simulation of conditions used in some reference tests, and in real-life scenarios more generally. It also improves the recoveries of some less volatile polar compounds.

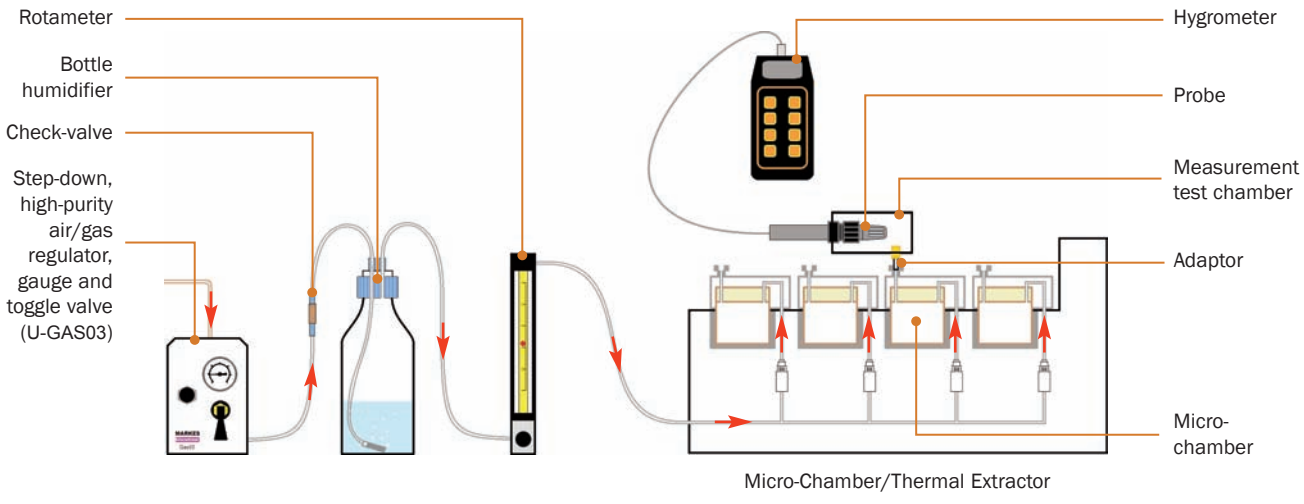
The Humidifier Accessory meets this demand by supplying the Micro-Chamber/Thermal Extractor with air/gas at up to 50% relative humidity at room temperature, improving its value as a tool for emissions testing, routine quality assurance and advanced research.

Product highlights

- Supplies air or gas to the Micro-Chamber/Thermal Extractor at up to 50% relative humidity.
- Allows closer simulation of conditions used in reference tests.
- Enhances the recovery of some less-volatile polar compounds.

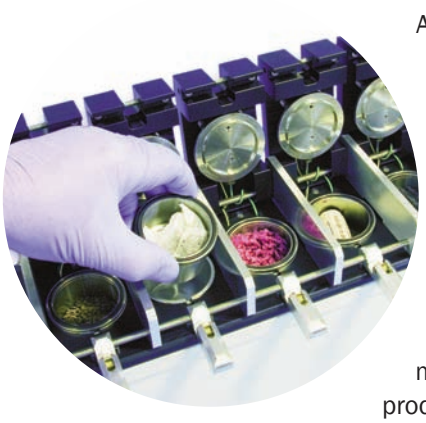
The Humidifier Accessory includes:

- Humidifier assembly, comprising:
  - Bottle humidifier.
  - Check-valve.
  - Rotameter (for control of flow rate).
- Single regulator pneumatics accessory (U-GAS03) to control air/gas supply pressure.
- Hygrometer (for humidity measurement).
- Humidity measurement test chamber.



Schematic of the Humidifier Accessory being used with a Micro-Chamber/Thermal Extractor

Markes' Micro-Chamber/Thermal Extractor



As modern buildings are made more airtight to minimise energy loss, indoor air quality has become an important public health concern. A consequence of this is that construction materials and other products used indoors now often need to be certified with respect to their chemical emission levels. Reference tests for this usually involve placing representative product samples in a test chamber (typically 100 L to 1 m^3 volume) at 23 °C under a flow of humidified air. Released vapours are then trapped on sorbent tubes and analysed using standard thermal desorption (TD)–GC–MS analytical procedures. These reference tests work well, but can take up to a month per sample.

Markes' Micro-Chamber/Thermal Extractor – low-temperature six-chamber model (left) and high-temperature four-chamber model (right)

Complementing these reference tests, Markes' Micro-Chamber/Thermal Extractor allows the quick and reliable screening of chemical emissions from products and materials. It accommodates multiple samples, and in less than an hour can generate results that correlate with those from long-term reference tests. This makes it perfect for routine quality assurance and factory production control in industrial laboratories.

To order the Humidifier Accessory, or to discuss how the Micro-Chamber/Thermal Extractor could benefit your application, talk to our technical specialists by calling +44 (0)1443 230935, or email enquiries@markes.com.

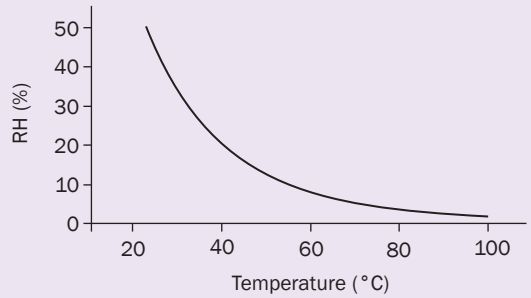
Technical specification

Part number

- M-HUMID-MCTE.

Humidity output

- At 23 °C the relative humidity (RH) output is dependent on the pressure of air/gas supplied:
  - At 14 psig, RH = 50% (±5%)
  - At 20 psig, RH = 42% (±5%)
- A minimum of 30 minutes' equilibration is required to achieve a stable humidity level.
- Relative humidity falls as the air/gas temperature increases. The graph below shows the predicted effect of increasing temperature upon the relative humidity of an air/gas stream at 50% RH and 23 °C.



Inlet gas pressures and sampling flow rates

- All Micro-Chamber/Thermal Extractor units have a low- and high-flow range setting, and can be readily connected to and disconnected from the Humidifier Accessory.
- Without the Humidifier Accessory connected:
  - Inlet air/gas pressure: Up to 60 psig
  - ⇨ Uniform flow into microchamber: 10–500 mL/min.
- With the Humidifier Accessory connected:
  - Inlet air/gas pressure: Up to 20 psig
  - ⇨ Uniform flow into microchamber: 10–90 mL/min (10–60 mL/min at 50% RH).

Dimensions

- A minimum of 325 mm × 200 mm bench space is required in addition to the Micro-Chamber/Thermal Extractor itself.

Requirements

- Air/gas: High-purity air or nitrogen supply regulated to 14–20 psig using the U-GAS03.
- Water: 350–400 mL high-purity water for the bottle humidifer. Distilled/deionised or HPLC-grade water is recommended.

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