



# BREEAM Hea 02 Indoor Air Quality Assessment



The Building Research Establishment (BRE) established the Building Research Establishment Environmental Assessment Method (BREEAM) in 1990 to set standards for the best practice in sustainable building design, construction and operation<sup>1</sup>. BREEAM is used to reduce the environmental impact of buildings, reduce running costs, improve working and living environments, and provide a benchmark that is more stringent than current regulations. Since its inception over 562,700 developments have been certified, and almost 2,266,600 buildings have been registered in 76 countries.

BREEAM focuses on sustainable value and efficiency that is attractive for property investments, and creates environments that, most importantly, improve the occupants' well-being. The standard works to evaluate procurement, design, construction and operation of a development. Each development, rated or certified, is designated as Pass, Good, Very Good, Excellent, or Outstanding. Points are awarded for meeting criteria in categories for energy, health and well-being, innovation, land use, materials, management, pollution, transport, waste, and water.

Health and well-being deals with increasing comfort, health and safety, and enhancing the quality of life. This category is subdivided into five parts in the BREEAM standard; Hea 01 Visual Comfort, Hea 02 Indoor Air Quality, Hea 03 Thermal Comfort, Hea 04 Water Quality, Hea 05 Acoustic Performance, and Hea 06 Safety and Security.

Hea 02 Indoor Air Quality is split into two parts, each with different credit values<sup>2</sup>:

- Minimizing sources of air pollution (4 Credits)

- Potential for natural ventilation (1 Credit)

Of the four credits available for minimizing sources of air pollution there is one offered for measuring formaldehyde and TVOC (total volatile organic compounds).

Formaldehyde and TVOC concentrations are to be measured post-construction, and pre-occupancy. Formaldehyde must be less than or equal to 100µg/m<sup>3</sup> averaged over 30 minutes, and TVOC concentration must be below 300 µg/m<sup>3</sup> over 8 hours. The measured concentrations are then submitted to BREEAM to conform to criteria 10 to 12.

BREEAM calls for testing and measurements to be taken in accordance with variety of standards (BS EN ISO 16000-4: 2004, EN ISO 16000-6, BS EN ISO 16017-2: 2003, and BS EN ISO 16000-3: 2001). These methods are time consuming and can be expensive, especially if additional tests are needed when concentrations are not met initially. GrayWolf meters can be utilized as a screening tool to ensure concentrations are below prescribed levels prior to taking the required air samples. Screening prior to collecting air samples for laboratory analysis can be both efficient and economical. GrayWolf implements a photoionization detector (PID) for detecting TVOCs along with a colorimetric technique for measuring formaldehyde.



**AdvancedSense TVOC Meter (with DSII Probe)**

<sup>1</sup> <http://www.breeam.com/>

<sup>2</sup> [https://www.breeam.com/BREEAMUK2014SchemeDocument/content/05\\_health/hea02.htm](https://www.breeam.com/BREEAMUK2014SchemeDocument/content/05_health/hea02.htm)

TVOCs are easily monitored, data-logged and reported as 8-hour averages with GrayWolf manufactured instrumentation. Formaldehyde, from a choice of different meters supplied by GrayWolf, measure and log the average over 30-minute periods. These are the measurement time periods for these parameters that are called for in the BREEAM standard. In addition to monitoring TVOCs and formaldehyde, GrayWolf meters are available to simultaneously measure carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), temperature, relative humidity, particulates, and differential pressure. Other specific gases, such as nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), hydrogen sulfide (H<sub>2</sub>S) and sulfur dioxide (SO<sub>2</sub>) may also be measured. This instrumentation can be used for general indoor air quality (IAQ) applications, or in conjunction with other green building initiatives, e.g. WELL, LEED, or ASHRAE (see GrayWolf's application notes on these other green building initiatives).



**FP-31 30-Minute Formaldehyde Test Meter**

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