

Microchamber

- an important tool for fast emission testing

Emission testing of products in test chambers is a standard technique and widely applied. Due to its sophisticated operation, faster and cheaper methods are highly appreciated. One of these is the Microchamber

Background

Emission testing of product samples is performed in stainless steel or glass test chambers that simulate actual climate and ventilation in apartments, offices, schools etc. Temperature, humidity, room loading (area of product per room volume) and ventilation are defined in ISO 16000-9 for a model room.

A chemical emission test is performed by placing all or part of a product in a stain-

less steel test chamber. The chamber is flushed with clean, humidified and temperature controlled air. Outlet air passes through adsorption media in which released chemical vapours are sampled.

Analyses for VOC, SVOC, formaldehyde, acetaldehyde, solvents, terpenes, glycols, amines, isocyanates, and many more are available. These test procedures are all quality accredited in accordance with ISO 17025.



Computerised calculations may be used to convert the results into contribution to predicted airborne concentrations in either real or model rooms, or for showing the decay of emissions with time.

Odour thresholds may be determined in our accredited odour laboratory.

Typically, the test chambers have a volume between 20 and 1000 litres. Eurofins is operating mostly 120 litres chambers, but also large-scale chambers for testing whole items of furniture, complete offices, or large machines in operation. There is also a mobile emission cell "FLEC" (ISO 16000-10), mainly in use for field measurements, with a volume of 35 millilitres, testing only the surface of a flat test piece.

Microchamber

The Microchamber is a stainless steel pot with 40 ml volume, 4.5 cm diameter and two operation modes. In the cell mode, the whole test piece is tested, with all

surfaces. In the FLEC mode, only the upper surface is tested while back and edges are isolated from the ventilation stream.

The pot is mounted into a rack and can be operated at room temperature or at elevated temperature (up to 120°C). Testing duration, air sampling, and chemical analyses are the same as for the other chamber types. But due to the small test piece, handling is much more easy.

Ventilation is strong, and emission equilibrium is reached very fast. Thus reliable early determination of emission is possible, while a normal chamber may need 4 hours for reaching equilibrium.

The small test piece in a Microchamber has two drawbacks. Small source means low absolute amounts of emissions, and this may give problems with both inhomogeneous products, and with sensitivity and reproducibility of the analytical technique.

Therefore Microchamber never will substitute normal chamber test. But Microchamber test is definitely reliable enough for comparative testing. Some applications are:

- Comparative testing of similar products from a portfolio for identifying those with highest emissions.
- Survey analyses for identifying the most relevant emitted chemicals and the order of magnitude of their emissions
- Batch control for documentation that low emissions are also true for next batches
- Semi-quantitative testing of ageing by heating the product - the more volatile substances will disappear and the long-term emission profile will be seen after only few days already.

Eurofins is using the Microchamber technique to a large extent and foresees increasing importance of this approach.

Eurofins is one of Europe's leading test houses offering testing of pollutant emissions from all kinds of products and for various emission-related labels.

You are welcome to contact your national Eurofins contact person, or directly the testing laboratory, for a specific quotation.

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