

Air cleaning by plate surfaces and coatings? Indoor air contaminants reduction - performance tests

A number of wall paints, ceiling plates, carpet fibres and wallpapers are sold with the promise to reduce air contaminants and to improve indoor air quality. Performance evaluation needs monitoring during an extended time period because it is easy to show a short-term effect while it is difficult to guarantee long-term performance.

Improvement of indoor air quality by reduction of air contamination normally is achieved by using low emitting products for construction and interior finishing, and / or by applying sufficient ventilation. A number of voluntary low emission rating schemes are in use, such as EMICODE, BlueAngel, M1, GUT, FloorScore, BIFMA, and many more. Floor coverings need official approval of low VOC emissions into indoor air before they are allowed to be used in Germany.

Even in rooms with low material emissions, impaired air quality may occur, e.g. due to tobacco smoking. This may be disturbing in hotels and in restaurants. On the market now you can find plates, wallpapers and textiles promising to reduce air contamination when you apply these into a contaminated room. Some of these are using UV light and photocatalytic reactions for oxidation of contaminants when these touch the surface.

Evaluation of air improvement performance is meaningful only if performed under realistic conditions. While it is easy to show reduction of contaminants within some few hours, it is much more difficult to guarantee air contamination reduction over several weeks or even longer periods - but the consumer may be interested in continuous performance only.



Air cleaning by plate surfaces and coatings?

Indoor air contaminants reduction - performance tests

Documentation

Eurofins dynamic test chambers allow documentation of air contamination reduction in indoor air during what ever test period and for several substances that may be toxicologically relevant or just sources of bad odour. Examples of tested substances are formaldehyde, nicotine, ammonia, triethylamine. Testing conditions will follow ISO 16000-9 with 23 °C air temperature and 50 % relative humidity and ½ air change per hour. The loading factor in test chamber will depend on whether the product is used as wall, ceiling or flooring.

Well specified amount of the tested substance is injected into the test chamber continuously. Dosage techniques may include motor-driven syringe injection or permeation tubes, diffusion tubes, or a certified spiked test gas. Reduction performance is documented by comparison of

one chamber with tested material, and another test chamber either empty, or with untreated reference material. Comparison of air concentration at chamber inlet and chamber outlet is another option.

Air sampling, analysis and evaluation will follow ISO 16000 standards and its parts 3, 6, 9 and 11 - or the new parts under development for reduction performance documentation, ISO 16000 parts 23 and 24.

Approval

In case of satisfactory performance, Eurofins Product Testing A/S can issue an approval document showing whether and to which extent reduction of air contamination has been observed such that the product may be expected to support improvement of impaired air quality. Repeated testing in certain intervals then may confirm that this effect is seen not only with a development sample but

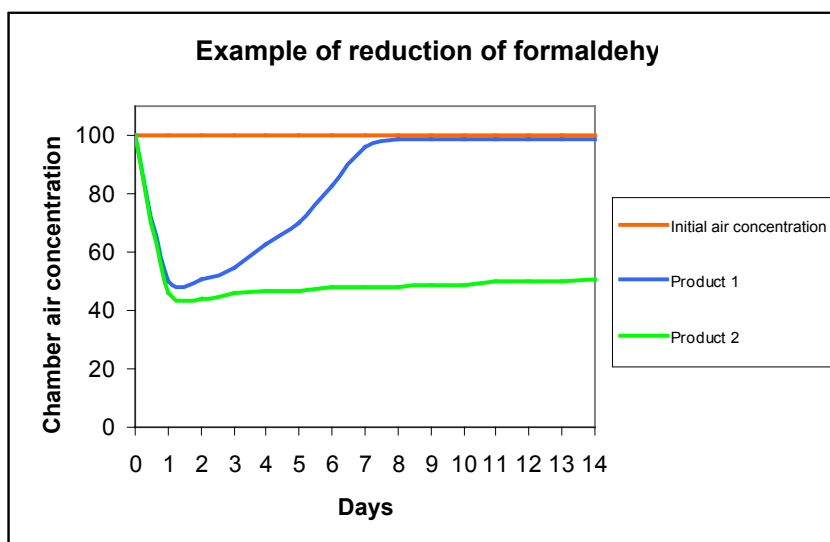


also with the products from normal manufacture.

Eurofins services

Eurofins Product Testing A/S is the world-wide market leader for testing VOC emissions from products, operating more than 70 test chambers. Eurofins is approved by many labels and can provide combined testing in one run of e.g. EMICODE, M1, GUT, AgBB, Blue Angel, AFSSET, FloorScore, BIFMA - thus saving significant costs by comparison with the separate performance of these tests. Also several studies of air contamination reduction have been carried out - sometimes showing significant effect, sometimes not.

The analytical procedures used by Eurofins for emission testing are accredited by the Danish accreditation body DANAK according to ISO 17025. This accreditation is valid world-wide by mutual recognition system ILAC. Eurofins is showing outstanding performance in many inter-laboratory comparisons.



Testing laboratory:

Eurofins Product Testing A/S

- Smedeskovvej 38, 8464 Galten, Denmark, Phone +45 7022 4276
- 2200 Rittenhouse St., Suite 150, Des Moines, IA 50321, USA Phone +1-515-362-5937

Contact our offices in

China (Shanghai, Shenzhen) - Denmark - France - Germany - Hong Kong - Italy - Netherlands - Thailand - UK - USA

via our common email address

voc@eurofins.com