




Cornerstone of labelling :

EMISSION TEST METHODS

The principal labelling systems today

- AgBB, Germany
 - ICL, Denmark, Norway
 - "M1", Finland
 - CESAT, France (in preparation)
-  Harmonisation of the labelling systems would be an additional value for the industry
-  the 1st phase in harmonising the labelling systems is harmonisation of testing standards
and additionally
-  CEN/TC 351 has been established by Mandate366 for harmonising emission test methods of building products

Standard test methods for volatile organic compounds, formaldehyde and other aldehydes:

- Chamber techniques: ISO 16000-9 and ISO 16000-10
- Sampling, transport, storage, test specimen preparation: ISO 16000-11
- Analysis of VOCs: 16000-6
- Analysis of formaldehyde and other aldehydes: ISO 16000-3
- Formaldehyde emission from wood based boards: EN ISO 717-1 (analytical method)

- In the principle these testing methods are used in labeling systems

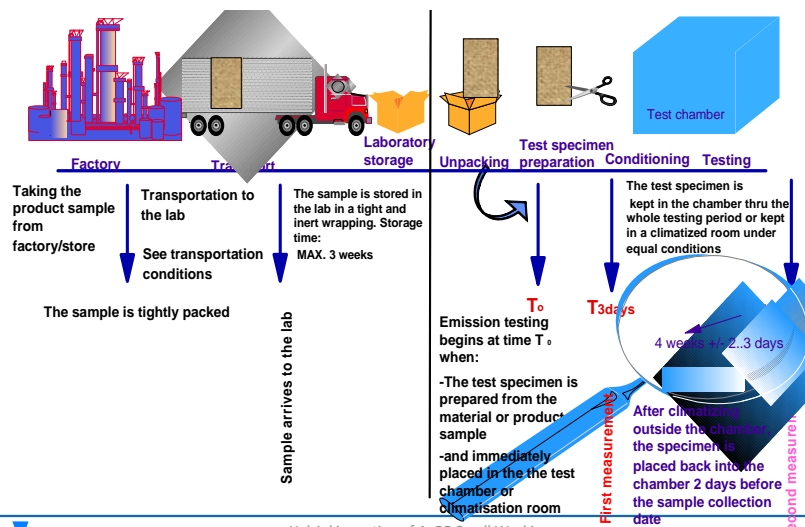
Differences in applying ISO 16000-6 in labelling systems; Finnish system

- M1 expresses the TVOC emission as detector response in toluene equivalents between C 6 - C 16
- M1 reports the single VOCs quantified as toluene equivalents. Single VOCs are however not used in in the classification
- M1 also reports the single semiVOCs quantified as toluene equivalents but they are not used in classification

It is essential in all harmonisation that emission tests in different laboratories give the same emission result, SER

EMISSION TEST METHODS INCLUDE SEVERAL STEPS

EN ISO 16000-11. Description of the complete emission testing process



Product sampling, transport and storage before testing

- The selection of the product sample to be tested is essential for obtaining a representative and as homogenous building product sample as possible.
- The material emission rate is time dependent so that the emission rate decays as a function of time, the decay speed being dependant on material properties and properties of the emitting pollutants.
- It is therefore important to define the product sampling procedure beginning from taking the product sample from the manufacturer or producer, packaging of the sample, transportation of the sample to storing of the sample in laboratory before starting the emission measurement procedure.

Test specimen preparation

- Materials emission mechanisms are complicated and therefore in a testing procedure many assumptions and compromises must be made and defined in the testing protocol in order to ensure the repeatability and comparability of test results.
- The most important examples of these are the time dependence of the emissions and the effect of substrate material when applying liquid products on different substrates.

Chamber techniques. Essential parameters affecting the emission

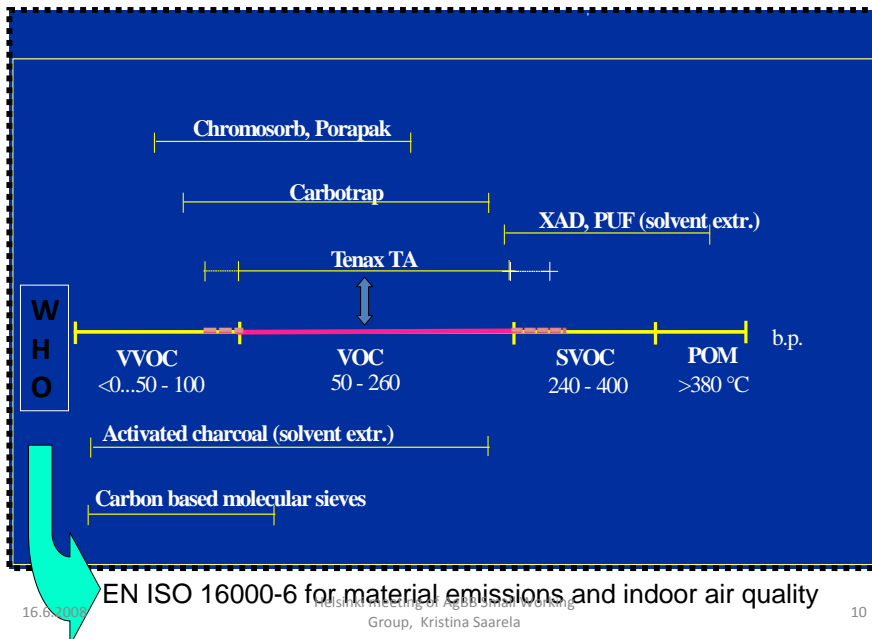
- Temperature
- Humidity
- Testing time
- Air exchange rate

16.6.2008

Helsinki meeting of AgBB Small Working Group, Kristina Saarela

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Sampling and analysis of VOCs



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Discussion on VOC determination.

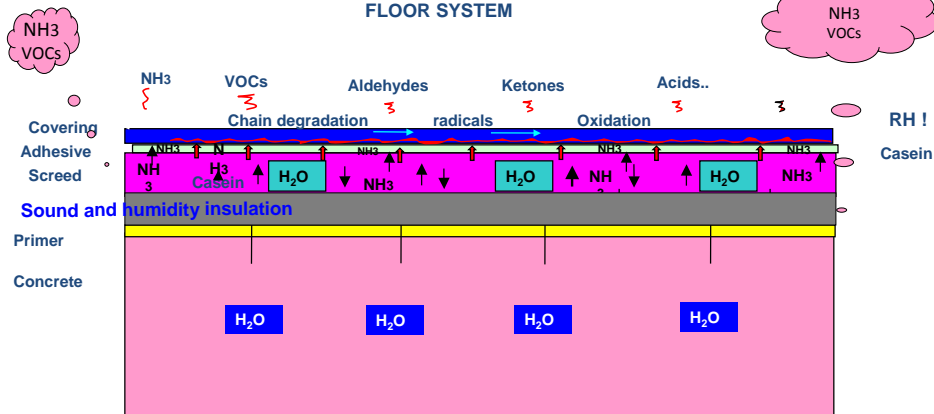
- ISO 16000-6 has been on revision.
- There are two opinions of renewing it:
- Make a broader choice of GC columns suitable for different types of building products. Consequence: Different column for each product group
- expensive!
- Restrict the use of the GC column to one specified type in order to decrease the variation of test results of different laboratories. Consequence:
- compromise of quality in detecting of emissions.

Sensory testing

- Sensory testing of material emissions is a complementary method to chemical testing in detection of emissions. The sensitivity of human nose is in many cases better than instrumental methods. Moreover it is one of the methods with which consumers experience the quality of materials. The purpose of the sensory testing of building materials is to enhance the development and use of building materials with low odour emissions in order to improve indoor air quality.
- Sensory testing is included in M1 and ICL and is under development in AgBB.
- A working group ISO/TC 146/SC 6/WG 14 has been established for developing a standard for sensory testing.

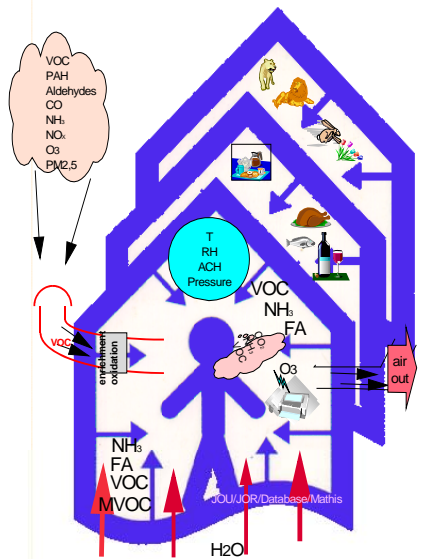
Material emissions from structures. A matter of discussion in CEN/TC 351

NOTE: In M1 system materials are tested as single building products taken from the production. In buildings several products are used inside of the structures. VTT's experience shows, that emissions from materials even deep inside the structures are transported to indoor air due to diffusion processes and leakages and subsequently we test and evaluate them as the "surface materials"



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INDOOR AIR QUALITY
SOURCES+SINKS+VENTILATION = IAQ

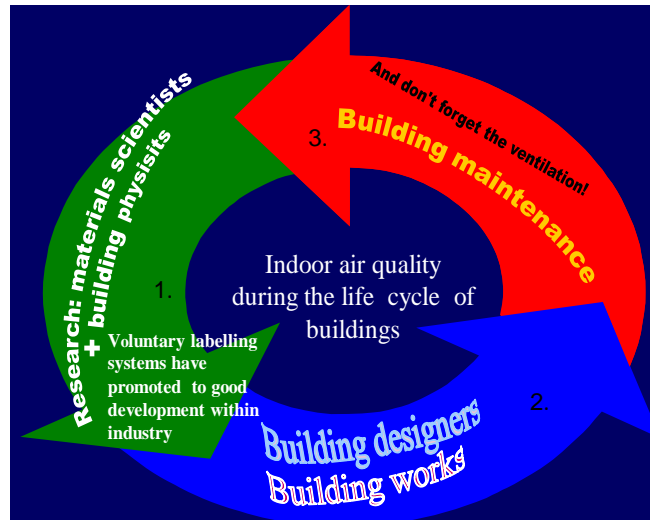


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Indoor air quality depends on several chemical sources, processes and physical factors of structures all having an impact on the final air quality in the building. Ventilation efficiency has a major role in "adjusting" the final IAQ level in the space.

The exact content and concentrations of indoor air in different spaces cannot be modelled on beforehand but we have experimental data of the positive impact of labelled materials on indoor air quality. See e.g.: <http://www.vtt.fi/publications/index.jsp>

Good indoor air quality is provided by building product industry, the technical designers of the building, careful building works and maintenance of the building



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