



BOWA - Falster Træ og Finer ApS
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24-04-2007
lwf/hbs/
198665

Emission of Formaldehyde

The Danish Technological Institute has for BOWA - Falster Træ og Finer ApS analysed 2 samples for the emission of formaldehyde.

The emission of formaldehyde was determined in a climate chamber according to EN 717-1, 2004, "Wood-based panels. Determination of formaldehyde release. Part 1: Formaldehyde emission by the chamber method, Annex A3".

The concentration of formaldehyde has been recorded continuously by semi-quantitative analyses (see results given in enclosure to letter), and by manual measurements by the fluoremetrical acetyl acetone method.

Climate Chamber Conditions

Climate chamber	225 l Polished stainless steel
Temperature	23°C ± 0.5°C
Relative humidity	45% ± 3% RH
Air change	1 h ⁻¹ ± 0.05 h ⁻¹
Air velocity at the surface of the specimen	0.1 – 0.3 m/s
Material load	1.0 m ² /m ³

The emission of formaldehyde is after 12 days in the chamber:

13 mm Plywood, Teak: 0,02 mg/m³
13 mm Plywood, Khaya: 0,02 mg/m³

The results fulfil the E1 requirement (0.124 mg/m³) regarding the emission of formaldehyde.

Yours sincerely
Danish Technological Institute, Timber

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Enclosures: 2 test reports - Results in detail

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EU Notified Body

Test Report

- Material:** 13 mm Plywood, Khaya (DTI lab.no. 170229).
- Sampling:** The test material was sampled by assignor and received at the Danish Technological Institute 23-02-2007.
- Method:** EN 717-1 2004. "Wood-Based Panels – Determination of Formaldehyde Release – Part 1: Formaldehyde Emission by the Chamber Method. Annex A3".
- Period:** The testing was carried out between 21-03-2007 and 02-04-2007.
- Result:** Result of the testing: The emission of formaldehyde for the tested sample is:

0,02 mg/m³ (average of final measurements 02-04-2007).

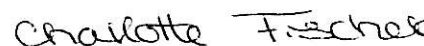
The result fulfils the E1 requirement (0.124 mg/m³) regarding the emission of formaldehyde.

- Storage:** The sample will be destroyed after 6 months, if nothing else has been agreed in writing.
- Terms:** The test has been performed according to the rear side conditions, which are according to the guidelines laid down by DANAK (The Danish Accreditation). The testing is only valid for the tested specimen. The test report may only be extracted, if the laboratory has approved the extract.

24-04-2007, Danish Technological Institute, Wood and Textile, Taastrup



Lis Winther Funch



Charlotte Fischer

Danish Technological Institute

Determination of formaldehyde emission - Chamber method EN 717-1

Client: Falster Træ og Finer ApS
 DTI Lab. No. 170229
 Order no. 198665
 Person in charge Lis Winther Funch
 Material: 13 mm Plywwod, Khaya

Date of receipt 23-02-2007
 Date of test start 21-03-2007
 Date of test end 16-04-2007

Test conditions:
 Chamber volume: 225
 Loading factor 1 m²/m³
 Temperature 23°C ± 0,5°C
 Relative humidity 45% RH ± 3% RH
 Air change 1 h⁻¹ ± 0,05 h⁻¹
 Comments:

Method of analysis: Acetylacetone (Hantzsch-reaction)

Results:

Final measurements:

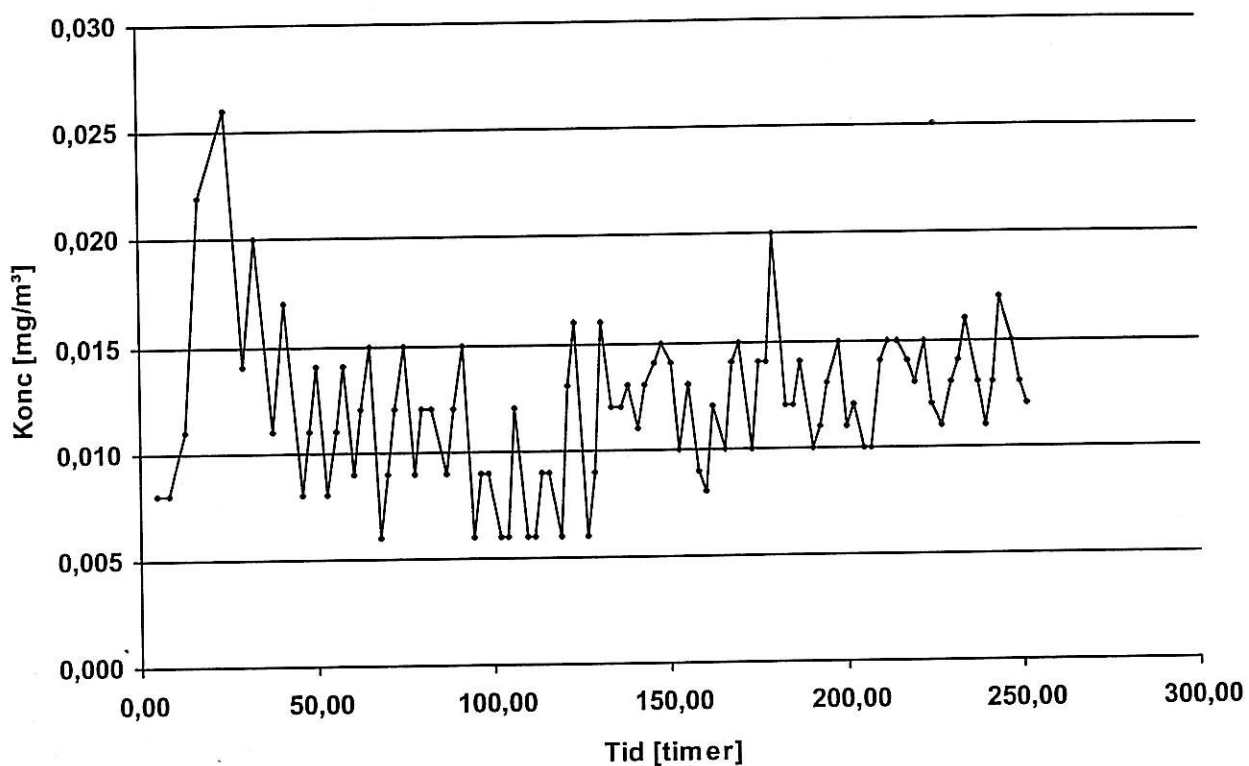
Standard curve no. 44
 - Slope 3,448
 - Cut off -0,020

Date	Std. curve no.	Absorption wash bottle		Air Volume L	Concentration		
		A	B		C[A] µg/ml	C[B] µg/ml	C mg/m ³
02-04-2007	44	0,03	0,01	23	0,015	0,009	0,020
02-04-2007	44	0,03	0,01	24	0,015	0,009	0,019

Lis Winther Funch

Appendix to letter

Formaldehyde concentration as function of time.
Measured by automatic analyser marked 'SKALAR'.
Method of analysis: Acetylacetone (Hantzsch-reaction) photometry analysis.
Lab. no.: 170229
Date of test start: 21-03-2007
Date of test finish: 02-04-2007



The general conditions pertaining to assignments accepted by Danish Technological Institute shall apply in full to the technical testing and calibration at Danish Technological Institute and to the completion of test reports and calibration certificates within the relevant field.

Danish Accreditation (DANAK)

DANAK was established in 1991 in pursuance of the Danish Act No. 394 of 13 June 1990 on the promotion of Trade and Industry.

The requirements to be met by accredited laboratories are laid down in the "Danish Agency for Trade and Industry's ("Erhvervsfremme Styrelsens") Statutory Order on accreditation of laboratories to perform testing etc. and GLP inspection. The statutory order refers to other documents, where the criteria for accreditation are specified further.

The standards DS/EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" and DS/EN 45002 "General criteria for the assessment of testing laboratories" describe fundamental criteria for accreditation. DANAK uses guidance documents to clarify the requirements in the standards, where this is considered to be necessary. These will mainly be drawn up by the "European co-operation of Accreditation (EA)" or the "International Laboratory Accreditation Co-operation (ILAC)" with the purpose of obtaining uniform criteria for accreditation. In addition, DANAK draws up Technical Regulations with specific requirements for accreditation that are not contained in the standards.

In order for a laboratory to be accredited it is, among other things, required:

- that the laboratory and its personnel are not subject to any commercial, financial or other pressures, which might influence their technical judgement

- that the laboratory operates a documented quality system
- that the laboratory has at its disposal all items of equipment, facilities and premises required for correct performance of the service that it is accredited to perform
- that the laboratory management and personnel have technical competence and practical experience in performing the service that they are accredited to perform
- that the laboratory has procedures for traceability and uncertainty calculations
- that accredited testing or calibration is performed in accordance with fully validated and documented methods
- that the laboratory keeps records, which contain sufficient information to permit repetition of the accredited test or calibration
- that the laboratory is subject to surveillance by DANAK on a regular basis
- that the laboratory shall take out an insurance, which covers liability in connection with the performance of accredited services

Reports carrying DANAK's logo are used, when reporting accredited services and show that these have been performed in accordance with the rules for accreditation.