



Klarskov A/S
Attn.: Ros-Mari Mattson
Ladegårdsgade 74
5610 Assens

27-05-2009
lwf/hbs/

Emission of Formaldehyde

The Danish Technological Institute has for Klarskov A/S analysed one sample 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 14 days in the chamber: 0.06 mg/m³

The result fulfils the E1 requirement (0.124 mg/m³) given in EN13986:2002 regarding the emission of formaldehyde.

Yours sincerely
Danish Technological Institute, Indoor Environment


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Enclosures:

1 test report Results in detail



DANISH
TECHNOLOGICAL
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Project 1214187-01-
Order no. 311457-44
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Initials lwf/sbc/hbs

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CE 1235
EU Notified Body

Test Report

Material: Pauline stackable stool
(DTI lab. no. 311457).

Sampling: The test material was sampled by the assignor and received at the Danish Technological Institute 05-05-2009.

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 06-05-2009 and 20-05-2009.

Result: Result of the testing: The emission of formaldehyde for the tested sample, after 14 days in the chamber, is:

0.06 mg/m³ (average of final measurements 20-05-2009).

The result fulfils the E1 requirement (0.124 mg/m³) given in EN13986:2002 regarding the emission of formaldehyde.

Storage: The test material will be destroyed after 1 month, unless otherwise agreed.

Terms: The test has been performed according to the attached 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.

27-05-2009, Danish Technological Institute, Wood and Textile, Taastrup

Test responsible

Co-reader

Danish Technological Institute

Determination of formaldehyde emission - Chamber method EN 717-1

Client: Klarskov A/S
 DTI lab. no. 311457
 Order no. 311457
 Person in charge Lis Winther Funch
 Material: Pauline stackable stool

Date of receipt 05-05-2009
 Date of test start 06-05-2009
 Date of test end 20-05-2009

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. 171

- Slope 4,001
 - Cut off 0,020

Date	Std. curve no.	Absorption wash bottle		Air Vol- ume L	Concentration		
		A	B		C[A] µg/ml	C[B] µg/ml	C mg/m ³
20-05-2009	171	0,26	0,025	20,7	0,060	0,001	0,059
20-05-2009	171	0,267	0,025	20,7	0,062	0,001	0,061



Appendix to letter

Formaldehyde concentration as function of time.

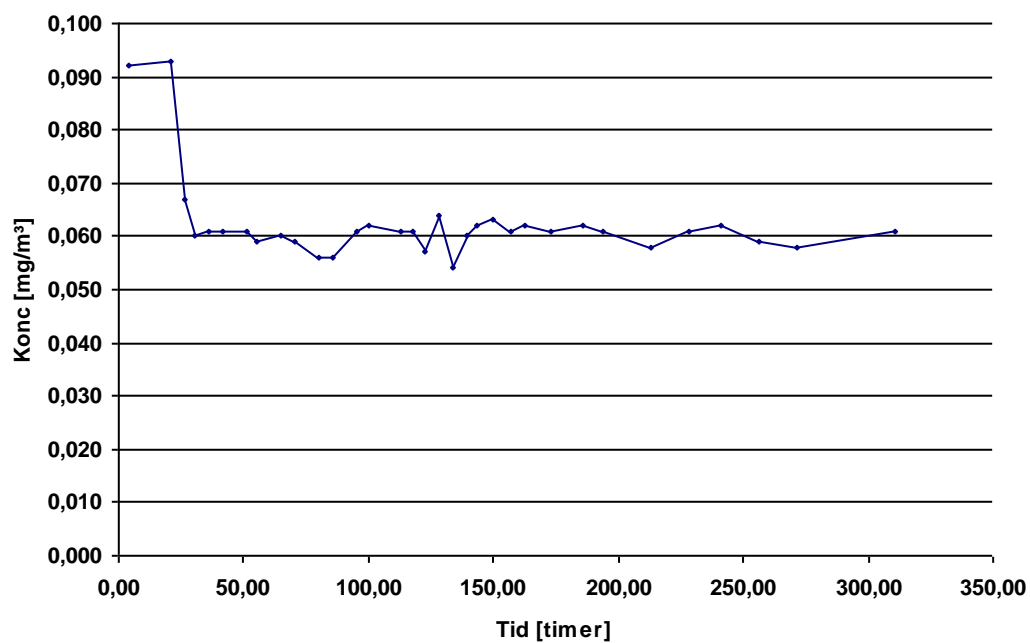
Measured by automatic analyser marked 'SKALAR'.

Method of analysis: Acetylacetone (Hantzsch-reaction) photometry analysis.

Lab. no.: 311457

Date of test start: 06-05-2009

Date of test finish: 20-05-2009



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.