



FORMALDEHYDE EMISSION TEST REPORT

Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

AkzoNobel Wood Finishes and Adhesives
Casco Adhesives (Asia) Pte Ltd
Mr. Phan Dinh Thay
14 Sungei Kadut Way

Singapore 728788

Entwicklungs- und Prueflabor
Holztechnologie GmbH
Zellescher Weg 24
01217 Dresden · Germany

Phone: +49 351 4662 0
Fax: +49 351 4662 211
info@eph-dresden.de
www.eph-dresden.de

E-Mail: Dinhthay.Phan@akzonobel.com>

Ha-50
Dresden, 03 July 2015

Test Report Order no. 2515269/A3

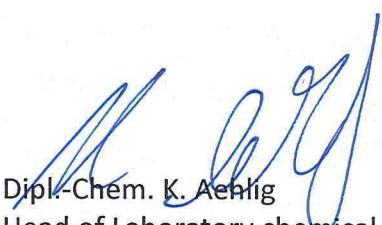
Client: AkzoNobel Wood Finishes and Adhesives
Casco Adhesives (Asia) Pte Ltd
14 Sungei Kadut Way
Singapore 728788

Date of order: 11 May 2015

Order: Determination of the formaldehyde release of 3 Layers Wood Flooring
acc. to the test chamber method DIN EN 717-1

Contractor: EPH – Laboratory Chemical Testing

Engineer in charge: Dipl.-Ing. (FH) S. Hahn



Dipl.-Chem. K. Aenlig
Head of Laboratory chemical testing

The test report contains 2 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

1 Assignment

On 11 May 2015 the laboratory chemical testing of the EPH was instructed to determine the formaldehyde release of one variant of 3 layers wood flooring according to the test chamber method DIN EN 717-1.

2 Sample material

The sample material was delivered on 11 May 2015 with the following identification:

Sample No. 1
 Sample Size [mm]: 6 Pieces LWH: 300 x 155 x 16
 Material 3 layers wood flooring
 Manufacturer: Greenlam Industries Ltd, Rajasthan, India
 Glue system: 1352/2761 and 2750

The test material is stored for 3 months.

3 Investigations carried out

The determination of the formaldehyde release was carried out under following test conditions:

| | | | |
|-----------------|-----------------------------------|-----------------------------------|---|
| Sample 1 | Test Piece Size [mm]: | 300 x 155 (4 pieces back to back) | |
| Surface Area | 0.225 m ² | Temperature: | 23°C ± 0.5 K |
| Test chamber: | KT-59 (V = 0.225 m ³) | Rel. air humidity: | 45 ± 3 % |
| Test period: | 2015/05/27 – 2015/06/22 | Air exchange ratio: | 1 ± 0.05/ h |
| Start tests: | 2015/05/28 | Loading ratio: | 1 ± 0.02 m ² /m ³ |

4 Test results

| Sample | Formaldehyde release DIN EN 717-1 | | Abort criteria acc. to DIN EN 717-1 |
|----------|--------------------------------------|-----------------------------|---|
| | [ppm] | [mg/m ³] | |
| Sample 1 | 0.08 (624 h) ⁽¹⁾ | 0.10 (624 h) ⁽¹⁾ | (1) Decrease the calculated concentration curve equal to or lower than 5% for a test period of 4 days |

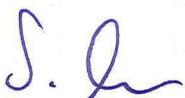
Detection limit (DL) of test method: 0.01 ppm

5 Evaluation

In accordance with the standard DIN EN 14342 "Wood flooring and Parquet - Characteristics, evaluation of conformity and marking" (Annex A) for the formaldehyde-class E1 a limit value of 0.124 mg/m³ air (0.1 ppm) is set.

The formaldehyde release determined acc. to DIN EN 717-1 of the sample 1 is 0.08 ppm.

The tested sample 1 met regarding the formaldehyde release the above mentioned limit value and fulfils the requirements to the formaldehyde-class E1.



Dipl.-Ing. (FH) S. Hahn
 Engineer in charge