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## Test report No. MAIC-2010-0677

<b>Customer:</b>	HP Espanola, S.L., Spain.	
<b>Object of the test:</b>	Testing and evaluating of a digital printed paper material according to AgBB/DIBt-scheme.	
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This report comprises 5 pages.

The test report may be forwarded or duplicated only in its unchanged entirety. A publication in extracts is subject to the written consent of the Fraunhofer-Institut für Holzforschung – Wilhelm-Klauditz-Institut (WKI). The test results exclusively relate to the objects tested. The tested material was used up.

### Sample description:

WKI no.	Date of reception	Sample Name (this information is provided by the customer)	Product No.	Manufacturer-Code	Date-Stamp
P16668	22.02.2010	HP PVC-free wallpaper (54" x 100ft; 165 g/m <sup>2</sup> )	CH003A	n.a.	n.a.

(Sample P15683: PE foil/wrapped separately, wrapping ok)

Notice: Sample material will be stored for 2 months after test report date. Please contact us if an extended storage time is required or if sample material needs to be returned. Sample material for emission tests cannot be retained for repeated tests, it will only be stored for identification and documentation purposes.



### Methods:

#### Sample preparation:

After unwrapping three pieces of 0.33 m<sup>2</sup> of the sample material were mounted and fixed with low emitting aluminum tape on glass plates.

#### Chamber emission test:

For the test the sample material was positioned in the test chamber. The experiment was carried out under the conditions described in the results part. Sampling on TENAX-adsorption tubes was carried out after 3, 7 and 28 days according to the AgBB. Sampling volume was 5 – 6 liters. The adsorption tubes were analyzed in a thermal desorption GC/MS system. After separation the trapped compounds were identified mass-spectrometrically. The LCI-compounds were quantified with pure reference compounds, non-LCI substances were quantified with toluene.

The volatile aldehydes were trapped on DNPH-coated cartridges and analyzed after elution with acetonitrile by HPLC-UV.

## Results:

### Results of the chamber emission test of sample P16668 (HP PVC-free Wall paper)

RT	CAS-no.	Substance	Concentration in $\mu\text{g}/\text{m}^3$ after			Info
			3d	7d	28d	
6.76	000064-19-7	Acetic acid	11	< 2	< 2	bd
13.44	000057-55-6	1,2-Propanediol	453	367	186	b
21.81		unknown substance (Toluene)	34	24	15	
28.98	000616-45-5	2-Pyrrolidinon (Toluene)	42	35	39	
Sum of all measured compounds:			540	426	240	
Sum of all measured compounds as VVOC value (< C6):			< 2	< 2	< 2	
Sum of all measured compounds als TVOC* <small>original response value:</small>			540	426	240	
Sum of all measured compounds as TVOC <small>Toluene value:</small>			<b>162</b>	<b>125</b>	<b>91</b>	
Sum of all measured compounds as SVOC value (> C16):			< 2	< 2	< 2	

\*TVOC original response: The NIK-substances were quantified with the original response and the non-NIK substances were quantified with toluene.

### Parameters of the emission chamber test:

Chamber type: 1m<sup>3</sup>-glass chamber D

Climatic conditions: 23 °C, 50 % r.h.

**Air exchange: 0.5 h<sup>-1</sup>**

**Loading factor: 1.0 m<sup>2</sup>/m<sup>3</sup>**

Test started: 04.03.2010 05:44:58

Sampling: Tenax TA, DNPH

Analysis: Thermal desorption GC/MS, HPLC/UV

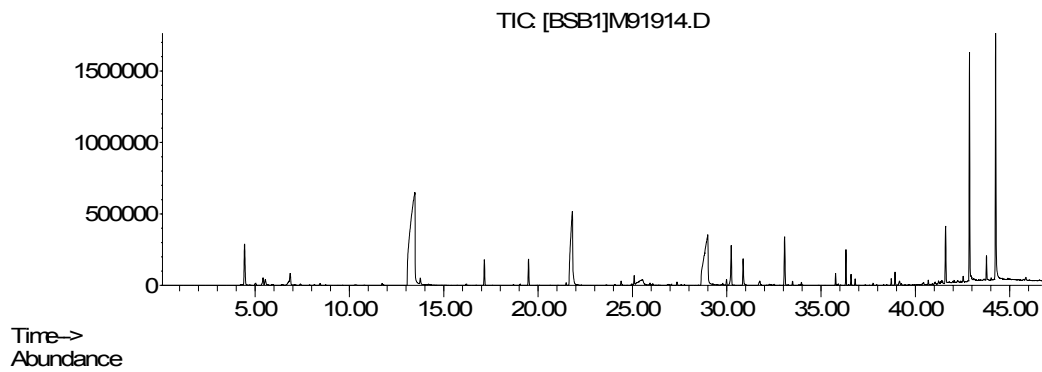


### Lower aldehyde results of sample P16668 (HP PVC-free Wall paper)

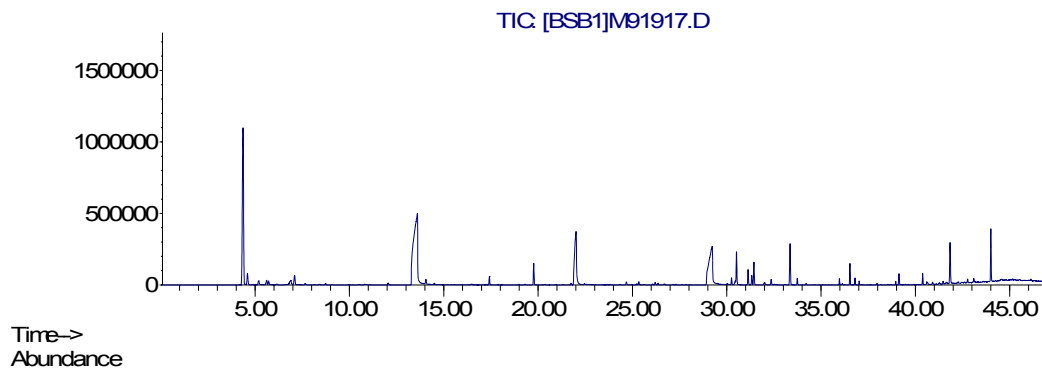
CAS-No.	Substance	Concentration in $\mu\text{g}/\text{m}^3$			Limit of detection [ $\mu\text{g}/\text{m}^3$ ]
		3d	7d	28d	
50-00-0	Formaldehyde	4	4	4	1
75-07-0	Acetaldehyde	2	1	< 1	1
123-38-6	Propanal	< 1	< 1	< 1	1
123-72-8	Butanal	< 2	< 2	< 2	2

**Chromatograms of the chamber emission test of sample P16668 (HP PVC-free Wall paper)**

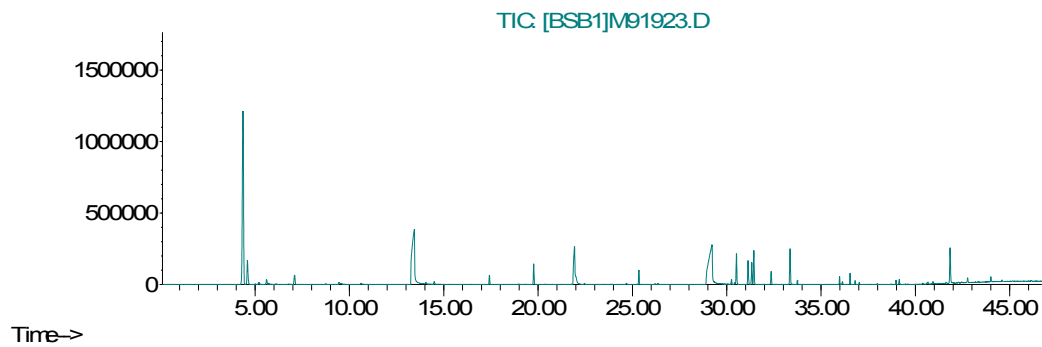
Abundance



**3 day  
measurement**



**7 day  
measurement**



**28 day  
measurement**

**Evaluation according to the AgBB/DIBt-scheme**

<b>Probenbezeichnung</b> Marking of the sample	A6325/P16668						
<b>Aktenzeichen beim DIBt</b> File number of DIBt	0						
<b>Prüfinstitut</b> Testing laboratory	Wilhelm-Klauditz-Institut						
<b>Ergebnisüberblick</b> General view of the results <small>ADAM_2008_04_Urversion</small>	<b>3 Tage (days)</b>			<b>7 Tage (days)</b>		<b>28 Tage (days)</b>	
	<small>Ergebnisse results</small>	<small>AgBB Anforderungen requirements</small>	<small>Abbruchkriterien break-off criteria</small>	<small>Ergebnisse results</small>	<small>Abbruchkriterien break-off criteria</small>	<small>Ergebnisse results</small>	<small>AgBB Anforderungen requirements</small>
	<small>µg/m³</small>	<small>mg/m³</small>	<small>mg/m³</small>	<small>µg/m³</small>	<small>mg/m³</small>	<small>µg/m³</small>	<small>mg/m³</small>
[A] <b>TVOC (C<sub>6</sub> - C<sub>16</sub>)</b>	540	1 ≤ 10 mg/m³	0,5 !! ≤ 0,3 mg/m³	426	0,4 ≤ 0,5 mg/m³	240	0,2 ≤ 1,0 mg/m³
[B] <b>Σ SVOC (C<sub>16</sub> - C<sub>22</sub>)</b>	0	keine none	0,00 ≤ 0,03 mg/m³	0	0,00 ≤ 0,05 mg/m³	0	0,0 ≤ 0,1 mg/m³
[C] <b>R (dimensionlos/dimensionless)</b>	1,438	keine none	1,4 !! ≤ 0,5	1,147	1,1 !! ≤ 0,5	0,581	1 ≤ 1
[D] <b>Σ VOC o. NIK without LCI</b>	76	keine none	0,08 !! ≤ 0,05 mg/m³	59	0,06 !! ≤ 0,05 mg/m³	54	0,1 ≤ 0,1 mg/m³
[E] <b>Σ Cancerogene</b>	0	0,00 ≤ 0,01 mg/m³	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³
<small>Dieser Block liefert zusätzliche Information This part gives some additional information</small>							
[F] <b>VVOC (&lt; C<sub>6</sub>)</b>	0			0		0	
[G] <b>VOC (C<sub>6</sub> - C<sub>16</sub>) als Toluoläquivalent as toluene equivalent</b>	162	Wert manuell eingeben! <i>Enter value manually!</i>		125	Wert manuell eingeben! <i>Enter value manually!</i>	91	Wert manuell eingeben! <i>Enter value manually!</i>

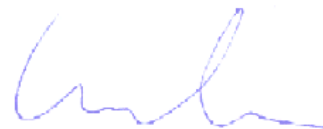
**Remarks:** The sample material was a weak source of volatile organic compounds. Carcinogenic compounds and semi volatile organic compounds could not be detected (detection limit = 1 µg/m³). The sample P16668 fulfills the requirements of the AgBB/DIBt-scheme "Health-related evaluation for Volatile Organic Compound Emissions (VOC and SVOC) from Building Products" (AgBB-Scheme 2008, LCI-List 2009).

Officer in Charge



A. Omelan

For the department



Dr. E. Uhde