

Institut für Holztechnologie Dresden · Zellescher Weg 24 · 01217 Dresden · Germany

ADLER-Werk Lackfabrik  
Johann Berghofer GmbH & CO. KG  
Bergwerkstraße 22

A 6130 Schwaz

Institut für Holztechnologie Dresden  
gemeinnützige GmbH  
Zellescher Weg 24  
01217 Dresden  
Phone.: +49 351 4662 0  
Fax: +49 351 4662 211  
info@ihd-dresden.de  
www.ihd-dresden.de

Dresden, 06/12/2021  
50-ku/br

**Test report**  
**Order no. 157010/2**

Translation of test report 157010/2 dated 27/07/2007

**Client:** ADLER-Werk Lackfabrik  
Johann Berghofer GmbH & Co. KG  
Bergwerkstraße 22  
A-6130 Schwaz

**Date of Order:** 06/06/2007

**Order:** Determination of emission of coated wood surfaces according to RAL-  
UZ 38, evaluation according to AgBB-Scheme  
**ADLER Legnopur**

**Contractor:** IHD – Unit Chemistry / Environment

**Engineer in charge:** Dipl.-Ing. Martina Broege



Prof. Dr. habil. Mario Beyer  
Head of Unit Chemistry/Environment

The test report contains 4 pages and 1 annex. Any duplication of extracts requires the written permission of IHD. The test results refer exclusively to the material tested.

## 1 Task

Of a coated surface the VOC and formaldehyde emission are to determine according to RAL-UZ 38. Further, an evaluation according to AgBB-Scheme is to carry out.

## 2 Sample material

Test sample:	2 pieces, onside coated board
Substrate:	Beech veneer, backside and edges: HPL
Coating:	ADLER Legnopur G3026213 # 704718 130 g/m <sup>2</sup> base coated 120 g/m <sup>2</sup> top coated 2K-PUR clear varnish
Test sample dimension:	1000 x 5000
Sample receipt:	18/06/2007

## 3 Performed Tests

### Chamber test

The test piece was placed into a test chamber under the following conditions:

Temperature:	23 °C ± 1 K
Air humidity:	45 % ± 5 %
Air exchange rate:	1.0 / h ± 0.1 /h
Chamber volume:	1 m <sup>3</sup>
Storage:	20/06/2007

### Determination methods

#### *Volatile organic compounds (VOC)*

The determination of the VOC was carried out by gaschromatography after previous adsorption on tenax and following thermodesorption with cryo focussion (GC-MS).

Sample air volume: 1 – 4 l

- |                |            |                      |
|----------------|------------|----------------------|
| 1. Measurement | after 24 h | double determination |
| 2. Measurement | after 7 d  | double determination |
| 3. Measurement | after 28 d | double determination |

#### *Formaldehyde*

The determination of formaldehyde and other aldehydes was carried out by DNPH-method.

Sample air volume: 120 l

1. Measurement after 24 h double determination
2. Measurement after 7 d double determination
3. Measurement after 28 d double determination

#### 4 Results

##### Volatile organic compounds (VOC) – test chamber concentration

Compound	Concentration in $\mu\text{g}/\text{m}^3$		
	24 h	7 d	28 d
<i>Compounds with boiling point 50 – 250 °C</i>			
2-Methylpropylacetate	38	18	15
Butylacetate	482	167	87
1-Methoxy-2-Propylacetate	35	16	7
Ethyl-3-Ethoxypropionat*	2	2	1
Decane	4	1	< 1
Undecane	4	1	< 1
Decanal	1	< 1	< 1
6-Ethylheptyl-2-propensäureester*	1	1	< 1
Not identified compounds	< 1	< 1	< 1
<b>Total (TVOC)</b>	<b>567</b>	<b>206</b>	<b>110</b>
<i>Compounds with boiling point &gt; 250 °C</i>			
	< 1	< 1	< 1
<b>Total (TSVOC)</b>	<b>&lt; 1</b>	<b>&lt; 1</b>	<b>&lt; 1</b>
<i>CMT substances</i>			
	< 1	< 1	< 1
<b>Total</b>	<b>&lt; 1</b>	<b>&lt; 1</b>	<b>&lt; 1</b>

CMT-substances carcinogenic compounds category 1 and 2

\* compounds not clear identified

##### Formaldehyde

Measurement	Concentration	Concentration
	$\text{mg}/\text{m}^3$	ppm
1	< 0.01	< 0.01
2	< 0.01	< 0.01
3	< 0.01	< 0.01
4	< 0.01	< 0.01

## 5 Evaluation

### Volatile organic compounds (VOC) and formaldehyde

Requirements according to RAL-UZ 38 table b (Furniture and other three-dimensional components)

Substance	Start value (24 ± 2 h)	Final value (28. d)
Formaldehyde	-	0.05 ppm
Organic compounds Boiling point 50 – 250 °C	-	600 µg/m <sup>3</sup>
Organic compounds Boiling point > 250 °C	-	100 µg/m <sup>3</sup>
CMT substance	< 1 µg/m <sup>3</sup>	< 1 µg/m <sup>3</sup>

### **AgBB-Evaluation**

The evaluation as attached as annex.

Results:

TVOC:	115 µg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
SVOC:	n.d.	0.0 mg/m <sup>3</sup>
R-value:	0.020	0
VOC without LCI:	20 µg/m <sup>3</sup>	0.0 mg/m <sup>3</sup>
Carcinogenic:	n.d.	0.000 mg/m <sup>3</sup>

n.d. not detectable

The surface coated with ADLER Legnopur fulfills the requirements regarding VOC and formaldehyde emission according to RAL-UZ 38. After 28 d test time the requirements of the AgBB-Scheme are fulfilled.



Dipl.-Ing. Martina Broege  
Engineer in charge

<b>Probenbezeichnung</b> name of the sample	Legnopur											
<b>Aktenzeichen beim DIBt</b> file number of DIBt	0											
<b>Prüfinstitut</b> testing laboratory	IHD											
<b>Ergebnisüberblick</b> general view of the results  Version: ADAM_2006_06_Inst	<b>3 Tage (days)</b> Keine Daten vorhanden no data available					<b>7 Tage (days)</b> Keine Daten vorhanden no data available			<b>28 Tage (days)</b>			
	Ergebnisse results	AgBB Anforderungen requirements		Abbruchkriterien break-off criteria		Ergebnisse results	Abbruchkriterien break-off criteria		Ergebnisse results	AgBB Anforderungen requirements		
	µg/m³	mg/m³		mg/m³		µg/m³	mg/m³		µg/m³	mg/m³		
[A] TVOC (C <sub>6</sub> - C <sub>16</sub> )	0	0	≤ 10 mg/m³		0,0	≤ 0,3 mg/m³		0	0,0	≤ 0,5 mg/m³		
[B] Σ SVOC (C <sub>16</sub> - C <sub>22</sub> )	0	keine none		0,00 ≤ 0,03 mg/m³		0	0,00 ≤ 0,05 mg/m³		0	0,0	≤ 0,1 mg/m³	
[C] R (dimensionslos/dimensionless)	0,000	keine none		0,0 ≤ 0,5		0,000	0,0 ≤ 0,5		0,020	0	≤ 1	
[D] Σ VOC o. NIK without LCI	0	keine none		0,00 ≤ 0,05 mg/m³		0	0,00 ≤ 0,05 mg/m³		20	0,0	≤ 0,1 mg/m³	
[E] Σ Canzerogene	0	0,00	≤ 0,01 mg/m³		0,000	≤ 0,001 mg/m³		0	0,000	≤ 0,001 mg/m³		
Dieser Block liefert zusätzliche Information this part gives some additional information												
[F] VVOC (< C <sub>6</sub> )	0					0			0			
[G] VOC (C <sub>6</sub> - C <sub>16</sub> ) als Toluoläquivalent as toluene equivalent		Wert manuell eingeben! Enter value manually!					Wert manuell eingeben! Enter value manually!			Wert manuell eingeben! Enter value manually!		