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ADLER-Werk Lackfabrik
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Dresden, 06/12/2021
50-ku/br

Test Report Order no. 2520504

Translation of test report 2520504 dated 26/01/2021

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

Date of Order: 27/11/2020

Order: Accomplishment of an emission test based on different labels
Lacquer "Bluefin Terra-Diamond"

Contractor: Entwicklungs- und Prüflabor Holztechnologie GmbH
Laboratory Unit Chemical Testing
Zellescher Weg 24
01217 Dresden
Germany

Engineer in charge: Dipl.-Nat. Anne Kuban



Dipl.-Ing. Martina Broege
Head of Laboratory Chemical Testing

The test report contains 4 pages and 1 annex with 9 pages. Any duplication of extracts requires the written permission of EPH. The test results refer exclusively to the material tested.

1 Task

Accomplishment of an emission test based on different labels

Parameter: VOC, Formaldehyde

2 Evaluation*

Table 1: Evaluation overview

Label	Evaluation Scheme	Result	Annex
AgBB-Scheme	AgBB-Scheme 2018	✓	1
Austrian Eco-label	Guideline UZ 06	✓	

3 Sample material

Article description

Product name Comp. A: Lacquer "Bluefin Terra-Diamond"
 Article number: 2962
 Product name Comp. B: ADLER Aqua-PUR hardener
 Article number: 82221

Product description

Type of product: **Multilayer lacquer**
 Build up: 2-layer structure
 Manufacturer: ADLER-Werk Lackfabrik
 Sample size [mm]: 450 mm x 250 mm

Sampling

Charge: Lacquer "Bluefin Terra Diamond"
 Date of production: 26/11/2020, completion of test specimen
 Count: 2 boards, 0.1125 m²
 Sample receipt at EPH: 27/11/2021

The client carried out the test sample preparation.

Coating: "Bluefin Terra-Diamond" + ADLER Aqua-PUR hardener
 Mixing ratio A:B = 10:1
 Substrate: particleboard with beech veneer, sanded with grain size 180

*Statements on conformity assessment/classification were made on the basis of the measurement results obtained. Measurement uncertainties are not included in the assessment (ILAC G8 03/2009 "Guidelines on the Reporting of Compliance with Specification" Section 2.7).

Table 2: Test sample preparation

Step	Manufacturer		
	Applied quantity [g/m ²]	Date	Time
1. Application "Bluefin Terra Diamond" + hardener	100	25/11/2020	7:00
Drying		25/11/2020	4h, at 23 °C
Intermediate sanding Gran size 240		25/11/2020	11:00
2. Application "Bluefin Terra Diamond" + hardener	100	25/11/2020	11:05
Drying		25/11/2020	Overnight, at 23 °C

4 Performed Tests

Table 3: Parameters investigated

Pos.	Parameter	Testing standard	Test period
1	Chamber test (Annex, „Test parameter“)	EN 16516, basis test	07/12/2020 – 04/01/2021
1.1	Volatile organic compounds (VOC/SVOC)	EN 16516, GC/MS	
1.2	Formaldehyde/Aldehyde/Acetone	EN 16516, HPLC	

5 Results

VOC-Emission

The following printouts are attached to the report:

Evaluation according to AgBB 2018:

- General information

- Measurement parameters

- General view of the results

- Measurement after day 3, 7 and 28 days

- Photo

- Chromatogram after day 3, 7 and 28 days

Table 4: Requirements according UZ 06 Furniture (01/2019), results and evaluation

Compound/Substance	Day 3	Final value (Day 28)	Test result in $\mu\text{g}/\text{m}^3$ (Day 28)	Requirements fulfilled?
Total organic compounds $\text{C}_6\text{-C}_{16}$, without acetic acid	$\leq 3.0 \text{ mg}/\text{m}^3$	$\leq 0,4 \text{ mg}/\text{m}^3$ for further boards	159	Yes
Acetic acid		$\leq 0,60 \text{ mg}/\text{m}^3$	38	Yes
Total organic compounds $> \text{C}_{16}\text{-C}_{22}$ (TSVOC)	-	$\leq 0.1 \text{ mg}/\text{m}^3$	< 5	Yes
Carcinogenic compounds	$\leq 10 \mu\text{g}/\text{m}^3$ (Total)	$\leq 1 \mu\text{g}/\text{m}^3$ (Single value)	Not detected	Yes
Total VOC without LCI	-	$\leq 0.1 \text{ mg}/\text{m}^3$	61	Yes
R value	-	≤ 1	0,240	Yes
Formaldehyde	-	0,03 ppm (EN 717-1)	$< 0.005 \text{ ppm}$	Yes
Result				Yes



Dipl.-Nat. A. Kuban
Engineer in charge

Evaluation according to AgBB 2018

2520504

1. General Information

Testing laboratory	Entwicklungs- und Prüflabor Holztechnologie GmbH
Responsible laboratory staff	Julia Zink
Number of the test report	2520504
Client/Applicant	ADLER-Werk Lackfabrik
Name of the product and material number	lacquer "Bluefin Terra-Diamond"
Control type	Other
Date of batch production	2020-11-26
Date of receipt of the sample	2020-11-27
Storage of the sample until testing	packaged
Product Group	Other Products

Description of the construction product:

Parameter	Manufacturer	Laboratory
General description of the product	Coating for furniture and interior accessories	Coating for furniture and interior accessories
Total thickness		
Area weight	200 g/m ²	200 g/m ²
Additional information		

Comments

2. Test parameter

Date of the completion of the test specimen	2020-11-25
Preparation of the test specimen by	ADLER-Werk Lackfabrik
Used auxiliary materials	
Start of preconditioning	
Placing of the test specimen into the test chamber and start of testing	2020-12-07
Arrangement of the test specimen in the test chamber	on rack
Covering of the edges? Ratio of covered edges to uncovered edges?	edges completely sealed
Use of the break-off criteria	No
Manufacturer/type of the test chamber	
Material of the test chamber	glass
Volume of the test chamber [m³]	0.225
Area of the test specimen [m²]	0.225
Air exchange rate [1/h]	0.5
Area specific air flow rate [m/h]	0.500
Temperature [°C]	23±1
Relative humidity [%]	50±3
Comments on testing	The back side was sealed with aluminium tape.

3. Evaluation for AgBB 2018

Parameter	Day 3					Day 7				Day 28			
	✓ ➡ ✗					✓ ➡				✓ ✗			
	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]
TVOC	196	0.2	0.3	10.0	>10.0	145	0.1	0.5	>0.5	197	0.2	1.0	>1.0
Σ SVOC	0	0.00	0.03	>0.03	-	0	0.00	0.05	>0.05	0	0.0	0.1	>0.1
R-Value *	0.235	0.2	0.5	>0.5	-	0.211	0.2	0.5	>0.5	0.240	0	1	>1
Σ VOC w/o LCI	50	0.05	0.05	>0.05	-	36	0.04	0.05	>0.05	61	0.1	0.1	>0.1
Σ Carcinogenic	0	0.000	0.001	0.01	>0.01	0	0.000	0.001	>0.001	0	0.000	0.001	>0.001
Total	✓					✓				✓			

DIBt Parameter

Formaldehyde	0	0.000	0.060	>0.060	-	0	0.000	0.060	>0.060	0	0.000	0.120	>0.120
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Additional Information

Σ VVOC	134	0	-	-	-	139	0	-	-	152	0	-	-
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*) dimension less ✓ Pass ➡ Continue ✗ Fail

4. Measurement

4.1. Day 3

Date of measurement: 2020-12-10

TVOC ISO 16000-6: -

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C _{tol} [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
141-78-6	Ethyl acetate	VOC	5.29	1	specific	1	I		-	- (VVOC)
110-19-0	Isobutyl acetate	VOC	9.648		Tol. equiv.	1	III		0.000	4800
66-25-1	Hexanal	VOC	10.762	5	specific	5	I		0.006	900
123-86-4	1-Butyl acetate	VOC	11.286	5	specific	6	I		0.001	4800
108-65-6	2-Methoxy-1-methylethyl acetate	VOC	13.659	55	specific	63	I		0.020	2700
7785-70-8	(+)-pinene	VOC	17.328	6	specific	15	I		0.002	2500
108-32-7	Propylene carbonate	VOC	19.586	20	specific	6	I		0.020	1000
127-91-3	β -Pinene	VOC	19.61	1	specific	1	I		0.000	1400
111-90-0	Ethyldiglycol	VOC	20.414		Tol. equiv.	14	III		0.040	350
498-15-7	3-Carene	VOC	21.008	1	specific	2	I		0.000	1500
54446-78-5	Ethanol, 1-(2-butoxyethoxy)-	VOC	27.804		Tol. equiv.	50	III		-	-
50-00-0	Formaldehyde	VVOC	6.119	0	DNPH	0	I		0.000	100 (VVOC)
75-07-0	Acetaldehyde	VVOC	7.444	9	DNPH	0	I		0.008	1200 (VVOC)
67-64-1	Acetone	VVOC	9.252	125	DNPH	0	I		0.104	1200 (VVOC)
64-19-7	Acetic acid	VOC	5.97	41	specific	8	I		0.034	1200

4.2. Day 7

Date of measurement: 2020-12-14

TVOC ISO 16000-6: -

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C_tol [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
141-78-6	Ethyl acetate	VOC	5.29	1	specific	1	I		-	- (VVOC)
110-19-0	Isobutyl acetate	VOC	9.648		Tol. equiv.	1	III		0.000	4800
66-25-1	Hexanal	VOC	10.762	5	specific	4	I		0.006	900
123-86-4	1-Butyl acetate	VOC	11.286	4	specific	4	I		0.000	4800
108-65-6	2-Methoxy-1-methylethyl acetate	VOC	13.659	42	specific	48	I		0.016	2700
7785-70-8	(+)-pinene	VOC	17.328	5	specific	12	I		0.002	2500
108-32-7	Propylene carbonate	VOC	19.586	15	specific	6	I		0.015	1000
127-91-3	β -Pinene	VOC	19.61	0	specific	0	I		0.000	1400
111-90-0	Ethyldiglycol	VOC	20.414		Tol. equiv.	10	III		0.029	350
498-15-7	3-Carene	VOC	21.008	1	specific	2	I		0.000	1500
54446-78-5	Ethanol, 1-(2-butoxyethoxy)-	VOC	27.804		Tol. equiv.	36	III		-	-
50-00-0	Formaldehyde	VVOC	6.119	0	DNPH	0	I		0.000	100 (VVOC)
75-07-0	Acetaldehyde	VVOC	7.444	9	DNPH	0	I		0.008	1200 (VVOC)
67-64-1	Acetone	VVOC	9.252	130	DNPH	0	I		0.108	1200 (VVOC)
64-19-7	Acetic acid	VOC	5.97	32	specific	6	I		0.027	1200

4.3. Day 28

Date of measurement: 2021-01-04

TVOC ISO 16000-6: -

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C_tol [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
141-78-6	Ethyl acetate	VOC	5.29	2	specific	0	I		-	- (VVOC)
66-25-1	Hexanal	VOC	10.762	9	specific	8	I		0.010	900
123-86-4	1-Butyl acetate	VOC	11.286	4	specific	4	I		0.000	4800
108-65-6	2-Methoxy-1-methylethyl acetate	VOC	13.659	52	specific	59	I		0.019	2700
7785-70-8	(+)-pinene	VOC	17.328	6	specific	14	I		0.002	2500
108-32-7	Propylene carbonate	VOC	19.586	21	specific	5	I		0.021	1000
127-91-3	β -Pinene	VOC	19.61	1	specific	1	I		0.000	1400
111-90-0	Ethyldiglycol	VOC	20.414		Tol. equiv.	10	III		0.029	350
498-15-7	3-Carene	VOC	21.008	1	specific	2	I		0.000	1500
54446-78-5	Ethanol, 1-(2-butoxyethoxy)-	VOC	27.804		Tol. equiv.	61	III		-	-
50-00-0	Formaldehyde	VVOC	6.119	0	DNPH	0	I		0.000	100 (VVOC)
75-07-0	Acetaldehyde	VVOC	7.444	13	DNPH	0	I		0.011	1200 (VVOC)
67-64-1	Acetone	VVOC	9.252	139	DNPH	0	I		0.116	1200 (VVOC)
64-19-7	Acetic acid	VOC	5.97	38	specific	8	I		0.032	1200

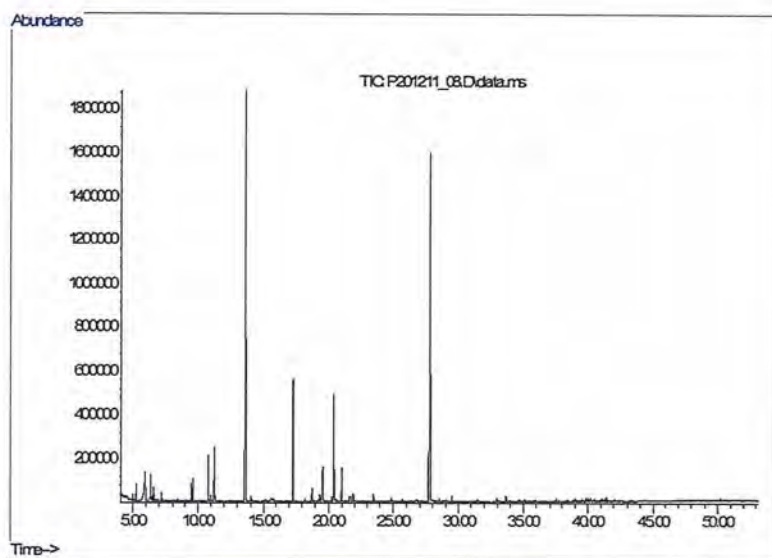
5. Images

5.1. Specimen image

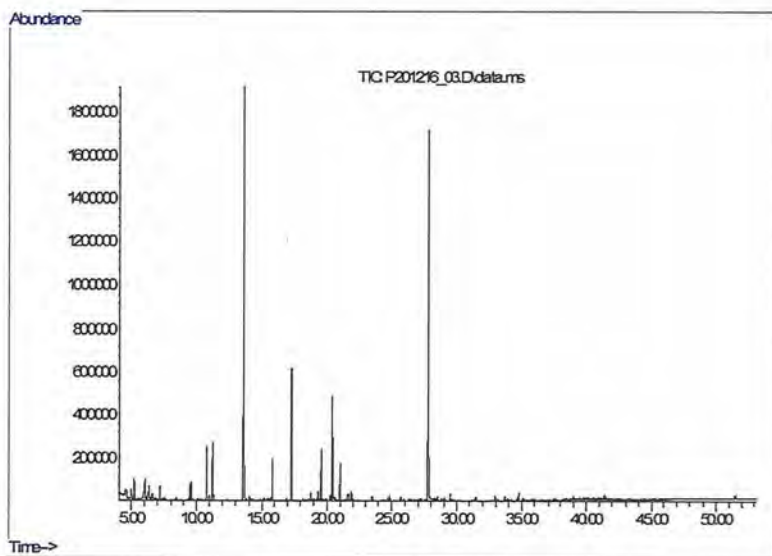


6. Chromatograms

6.1. Day 3



6.2. Day 7



6.3. Day 28

