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Acosorb BV
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9107 1180 MC AMSTELVEEN
Niederlande - Netherlands

Braunschweig, 25.04.2018

Test report No. MAIC-2018-1761

Customer: Acosorb BV, 1180 MC AMSTELVEEN.

Object of the test: Chamber emission test and evaluation of an acoustic coating sample according to AgBB/DIBt scheme.

Contents:

This report comprises 7 pages.

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Sample description:

WKI no.	Date of reception	Sample Name (this information is provided by the customer)	Product No.	Manufacturer-Code	Date-Stamp
P67607	06.02.2018	acoustic coating	n.a.	Acosorb	n.a.

(Sample P67607: Bottle/box/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:

The measurements were performed according to DIN EN ISO 16000 parts 3, 6, 9 and 11 and according to DIN EN 16516.

The sample preparation and pre-conditioning were done according to customer instructions.

Sample preparation:
The acoustic coating was applied with a roller on a glass plate (surface of the glass plate 0.4 m²). The customer's specification regarding the sample thickness was 5-25mm. The actual layer thickness (wet) of the coating was ~ 15mm which was determined with a caliper. The applied quantity of the wet sample was 3857 g/m².

Pre-conditioning:

Directly after application the prepared sample was positioned under laboratory fume hood for 24 hours (airing time). After that the sample was placed in a chamber and conditioned under defined climatic parameters (23°C, 50 r.h.) for further six days (additional airing time).

Chamber emission test: After the airing time of 7 days had elapsed the prepared sample was placed in an emission test chamber (DIN EN ISO 16000-9) and the test started. After defined times (3, 7 and 28 days) samples of the chamber air were collected on sorbent tubes (Tenax TA) and analyzed on a thermal desorption-GC/MS system (TD/GC/MS). The described method covers volatile organic compounds from C5 to C22 and has a limit of determination of approx. 1 µg/m³. Substances in the range of C6 to C16 are reported as VOC, the more volatile ones as VVOC and those eluting after C16 as SVOC.

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

DIN EN 16516 describes the test method including the procedure of chamber emission testing, air sampling and analysis, but contains no evaluation of results.

Results:

The quantitative test results can be found on the next page. These are reference room concentrations for the scenario "Ceiling" of the European reference room according to DIN EN 16516.

The results for TD/GC/MS analysis are reported in two tables:

Table one

- Identified compounds, quantified with authentic calibration compounds (original response), limit of determination 1 µg/m³
- Non-identified compounds , quantified with toluene response, limit of determination 1 µg/m³
- Sum of identified and non-identified compounds (< C6) with reporting threshold ≥ 5 µg/m³
- Sum of identified and non-identified compounds (C6 – C16) with reporting threshold ≥ 5 µg/m³
- Sum of identified and non-identified compounds (> C16) with reporting threshold ≥ 5 µg/m³

Table two

- Identified compounds, quantified with toluene response, limit of determination 1 µg/m³
- Non-identified compounds , quantified with toluene response, limit of determination 1 µg/m³
- Sum of identified and non-identified compounds (< C6) quantified with toluene response with reporting threshold ≥ 5 µg/m³
- Sum of identified and non-identified compounds (C6 – C16) quantified with toluene response with reporting threshold ≥ 5 µg/m³
- Sum of VOC (C6-C16) as TVOC $_{\text{Toluene response}}$ according to DIN EN ISO 16000-6
- Sum of identified and non-identified compounds (> C16) quantified with toluene response with reporting threshold ≥ 5 µg/m³

As mentioned above DIN EN 16516 does not cover the evaluation of test results for building products. For various (national) evaluation protocols different types of reporting are requested. Not all evaluation schemes cover the same target compounds. With the figures presented in table one and table two it is possible to calculate various evaluations at a later stage. Also the emission class for CE marking can be calculated after publishing of the delegated act.

AgBB-Evaluation

According to the customer specification, the evaluation of the emission was done according to the AgBB scheme and ADAM calculation program (LCI list 2015).

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Results of the chamber emission test of sample P67607 (acoustic coating), Table one

RT	CAS-No.	Substance	Concentration in µg/m³ after 3d	7d	28d	Info
6.58	000064-19-7	Acetic acid	195	189	128	bd
35.94	007473-98-5	2-Hydroxy-2-methylpropiophenone (Darocur 1173)	2	< 1	< 1	

(The fragments/substances shown in subscript were used for the quantification.)

Additional information: **a** acute toxic substance cat. 1+2+3 (acc. UN-GHS/CLP); **b** German LCI list; **c** safe sampling volume too low, under-estimation likely;
d odor relevant; **e** compound boiling point exceeds thermal limit of the TDS unit – underestimation likely; f terpene, possibly wood-related;
g chronic toxic substance CMR cat. 1A+1B (acc. UN-GHS/CLP); **h** aromatic solvent IOS-MAT-0054; **i** chlorinated solvent IOS-MAT-0054;
l specific target organ toxic substance STOT RE1+SE1 (acc. UN-GHS/CLP); **p** listed in Proposition 65; **<C6** VVOC compound; **>C16** SVOC compound.

Sum of VVOC (< C6)*:	< 5	< 5	< 5
Sum of VOC (C6-C16)*:	195	189	128
Sum of SVOC (> C16)*:	< 5	< 5	< 5

*Only peaks individually exceeding ≥ 5 µg/m³ are considered.

Results of the chamber emission test of sample P67607 (acoustic coating), Table two

RT	CAS-No.	Substance	Concentration in µg/m³ after 3d	7d	28d	Info
6.58	000064-19-7	Acetic acid$_{(Toluene)}$	32	31	17	bd
35.94	007473-98-5	2-Hydroxy-2-methylpropiophenone (Darocur 1173)$_{(Toluene)}$	3	< 1	< 1	

(The fragments/substances shown in subscript were used for the quantification.)

Sum of VVOC (< C6)*:	< 5	< 5	< 5
Sum of VOC (C6-C16) as TVOC $_{Toluene}$ according to DIN EN 16516*[2]:	32	31	17
Sum of VOC (C6-C16) as TVOC $_{Toluene}$ according to DIN EN ISO 16000-6[3]:	35	31	17
Sum of SVOC (> C16)*:	< 5	< 5	< 5

*Only peaks individually exceeding ≥ 5 µg/m³ are considered.

[2]Sum of all individual VOC substances quantified with toluene as reference.

[3]Sum of total response between C6 and C16 quantified with toluene as reference

Lower aldehyde results of sample P67607 (acoustic coating)

CAS-No.	Substance	Concentration in µg/m³ after			Limit of Determination
		3d	7d	28d	[µg/m³]
50-00-0	Formaldehyde	18	13	10	2
75-07-0	Acetaldehyde	< 3	< 3	< 3	3
123-38-6	Propanal	< 3	< 3	< 3	3
123-72-8	Butanal	< 4	< 4	< 4	4
67-64-1	Aceton	< 2	< 2	< 2	2

Parameters of the emission chamber test:

Chamber type: 1m³-glass chamber R

Climatic conditions: 23 °C, 50 % r.h.

Air exchange: 0.50 h^{-1}

Loading factor: 0.40 m²/m³, Scenario "Ceiling"

Applied quantity of the wet sample: 3856 g/m²

Area specific air exchange rate q: 1.25 m³/(m²*h)

Test started: 20.02.2018 08:33:03

Sampling: Tenax TA, DNPH

Analysis: Thermal desorption GC/MS, HPLC/UV

Due to technical reasons no photos of the prepared sample can be shown in the test report.

Results of the evaluation according to AgBB-scheme

Name of the product and material ...	A24536/P67607	**Client/Applicant**	Acosorb BV, 1180 MC AMSTELVEEN.	
Number of the test report	MAIC-2018-1761			
Testing laboratory	Fraunhofer WKI			

Parameter	**Day 3** Results [µg/m³]	Results [mg/m³]	✓ [mg/m³]	→ [mg/m³]	✗ [mg/m³]	**Day 7** Results [µg/m³]	Results [mg/m³]	✓ [mg/m³]	→ [mg/m³]	**Day 28** Results [µg/m³]	Results [mg/m³]	✓ [mg/m³]	✗ [mg/m³]
TVOC	**195**	**0.2**	≤0.3	≤10.0	>10.0	**189**	**0.2**	≤0.5	>0.5	**128**	**0.1**	≤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 *	**0.336**	**0.3**	≤0.5	>0.5	-	**0.281**	**0.3**	≤0.5	>0.5	**0.202**	**0**	≤1	>1
Σ VOC w/o LCI	**0**	**0.00**	≤0.05	>0.05	-	**0**	**0.00**	≤0.05	>0.05	**0**	**0.0**	≤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	**18**	**0.018**	≤0.060	>0.060	-	**13**	**0.013**	≤0.060	>0.060	**10**	**0.010**	≤0.120	>0.120
Additional Information													
Σ VVOC	**18**	**0**	-	-	-	**13**	**0**	-	-	**10**	**0**	-	-

*) dimension less ✓ Pass → Continue ✗ Fail

Carcinogenic compounds could not be detected in the chamber air (limit of determination of 1 µg/m³).

For this type of material no DIBT test procedure exists. The emission test of the acoustic coating was performed with an area specific ventilation rate of 1.25 m³/(m² h), which is defined for ceiling materials. Using the stated loading factor and air exchange rate, the sample would fulfill the requirements of the DIBt/AgBB-scheme "Health-related evaluation for Volatile Organic Compound Emissions (VOC and SVOC) from Building Products 2015 / LCI list 2015".

Requirements fulfilled?	**Evaluation after:**	**3 days**		**28 days**	
TVOC		☒Yes	☐No	☒Yes	☐No
carcinogenic compounds		☒Yes	☐No	☒Yes	☐No
R-value (VOC with LCI)				☒Yes	☐No
VOC without LCI				☒Yes	☐No
TSVOC				☒Yes	☐No
Formaldehyde				☒Yes	☐No

Officer in charge

A. Ligarski

For the department

Dr. E. Uhde