



# Bremer Umweltinstitut<sup>⊕</sup>

Gesellschaft für Schadstoffanalysen  
und Begutachtung mbH



Bremer Umweltinstitut GmbH · Fahrenheitstr. 1 · D-28359 Bremen

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z. Hd. Herrn Schmitt  
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AZ: K 1183 FM

03.06.2015

Dear Mr. Schmitt,

Enclosed you will find the analysis report of the emission test of your product

### **amBooo Deck Select (preoiled).**

The emission test was carried out according to the DIBt principles for the health assessment of construction products used in interiors (DIBt-Grundsätze für die gesundheitliche Bewertung von Bauprodukten). Results base on the NIK list from June 2012.

Referring to ADAM the following evaluation parameters could be established (specification after 3 and 28 days):

<b>K 1183 FM - 1</b>	<b>result</b>	<b>specification</b>	<b>Specification observed ?</b>
<b>after 3 Days</b>			
<b>TVOC</b>	1,814 mg/m <sup>3</sup>	≤ 10 mg/m <sup>3</sup>	Yes
<b>Sum carcinogenic substances</b>	n.d.	≤ 0,01 mg/m <sup>3</sup>	Yes
<b>after 28 Days</b>			
<b>TVOC</b>	0,136 mg/m <sup>3</sup>	≤ 1,0 mg/m <sup>3</sup>	Yes
<b>Sum SVOC</b>	n.d.	≤ 0,1 mg/m <sup>3</sup>	Yes
<b>R-Value</b>	0,71	≤ 1	Yes
<b>Sum VOC without NIK</b>	n.d.	≤ 0,1 mg/m <sup>3</sup>	Yes
<b>Sum carcinogenic substances</b>	n.d.	≤ 0,001 mg/m <sup>3</sup>	Yes

Based on this emission test, the specifications for the emissions of VOC and SVOC by the evaluation scheme of the committee for health-related evaluation of building products (Prüf- und Bewertungsschema des Ausschusses zur gesundheitlichen Bewertung von Bauprodukten AgBB) are achieved by the product „amBooo Deck Select (preoiled)“ after 3 and 28 days.



Deutsche  
Akkreditierungsstelle  
D-PL-18812-01-00

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Geschäftsführung:  
Dr. Norbert Weis, Ulrike Siemers  
Amtsgericht Bremen HRB 14617  
Steueridentnummer DE 154288998  
Es gelten unsere Geschäftsbedingungen,  
die wir Ihnen auf Wunsch zuschicken.  
Erfüllungsort und Gerichtsstand ist Bremen.

Bankverbindung:  
Sparkasse Bremen  
IBAN: DE55 29050101 0001 117167  
BIC: SBREDE 22  
Konto 1 117 167  
BLZ 290 501 01

According to the french VOC-regulations the following data could be established after 28 days:

K 1183 FM - 1	result [µg/m³]	requirements after 28 days [µg/m³]				Classification in category
		C	B	A	A+	
<b>Formaldehyde</b>	n.d.	>120	<120	<60	<10	A+
<b>Acetaldehyde</b>	n.d.	>400	<400	<300	<200	A+
<b>Toluene</b>	n.d.	>600	<600	<450	<300	A+
<b>Tetrachloroethylene</b>	n.d.	>500	<500	<350	<250	A+
<b>Xylene</b>	n.d.	>400	<400	<300	<200	A+
<b>1,2,4-Trimethylbenzene</b>	n.d.	>2000	<2000	<1500	<1000	A+
<b>1,4-Dichlorobenzene</b>	n.d.	>120	<120	<90	<60	A+
<b>Ethylbenzene</b>	n.d.	>1500	<1500	<1000	<750	A+
<b>2-Butoxyethanol</b>	n.d.	>2000	<2000	<1500	<1000	A+
<b>Styrene</b>	n.d.	>500	<500	<350	<250	A+
<b>TVOC</b>	30	>2000	<2000	<1500	<1000	A+

Trichloroethylene, Benzene, DEHP and DBP could not be detected.  
 The sample fulfills the requirements of category A +.

For further questions do not hesitate to contact us.

Kind regards,  
 Bremer Umweltinstitut

Dr. Heidrun Hofmann,  
 Chemist

Enclosures: ANALYSIS REPORT UND ADAM-EVALUATION

## ANALYSIS REPORT

### 1 Order description

<b>Client:</b>	GS Götz Schmitt GmbH Herr Schmitt Neue Finien 2 28832 Achim
<b>Date of order:</b>	16.02.2015
<b>Agent:</b>	Bremer Umweltinstitut Gesellschaft für Schadstoffanalysen und Begutachtung mbH Fahrenheitstraße 1 28359 Bremen
<b>Report number:</b>	K 1183 FM
<b>Sample receipt:</b>	16.02.2015
<b>Test periode:</b>	23.02.2015 bis 17.04.2015
<b>Type of sample:</b>	Bamboo floor
<b>Sampling:</b>	The material sample was taken by the client. Preparation of the test specimen and sampling of the air samples were taken by Lars Röhrs and Dirk Stolz, Bremer Umweltinstitut.


#### 1.1 Sample description

sample number	description	sample amount	aim
<b>K 1183 FM - 1</b>	<i>Material sample</i> amBooo Deck Select (preoiled), 20x140x2200mm	surface: 0,01 m <sup>2</sup>	Emission test in the 0,25m <sup>3</sup> -test chamber
<b>K 1183 FM - 1.1</b>	<i>Air sample</i> chamber air after 3 days	Volume 2,00 Liter	Volatile organic compounds (VOC)
<b>K 1183 FM - 1.2</b>	<i>Air sample</i> chamber air after 3 days	---	<i>Backup sample</i>
<b>K 1183 FM - 1.3</b>	<i>Air sample</i> chamber air after 3 days	---	<i>Backup sample</i>
<b>K 1183 FM - 1.4</b>	<i>Air sample</i> chamber air after 3 days	Volume 52 Liter	Aldehydes und Ketones
<b>K 1183 FM - 1.5</b>	<i>Air sample</i> chamber air after 28 days	Volume 2 Liter	Volatile organic compounds (VOC)
<b>K 1183 FM - 1.6</b>	<i>Air sample</i> chamber air after 28 days	---	<i>Backup sample</i>
<b>K 1183 FM - 1.7</b>	<i>Air sample</i> chamber air after 28 days	---	<i>Backup sample</i>
<b>K 1183 FM - 1.8</b>	<i>Air sample</i> chamber air after 28 days	Volume 40 Liter	Aldehydes und Ketones

Backup samples = chamber air samples, which are measured but not analysed for optional later usage

## 2 Test methods

### 2.1 Information about test specimen and testing procedure

<b>Test specimen</b>	
General description	Bamboo terrace floor, surface corrugated, description: amBooo Deck Select (oiled before), dimension: 20 mm x 140 mm x 2200 mm
Packing at sample receipt	aluminium foil, air-tight packed
State of sample	intact
Storage of sample until testing	air tight packed at normal room temperature
<b>Making of test specimen and testing procedure</b>	
Date of making	23.02.2015, 15:40 p.m. bis 16:15 p.m.
Preparation of test specimen	cutting and masking of angles with aluminium tape
Start of emission test	23.02.2015, 16.15 p.m.
Sampling after 3 days	26.02.2015, 15.50 p.m.
Sampling after 28 days	23.03.2015, 16.35 p.m.
	
<p><b>Fig. 1:</b> test specimen in the 0,25 m<sup>3</sup> test chamber</p>	

## 2.2 Test method for emission testing of material samples by test chamber

- Emission test according to DIN EN ISO 16000-9:2008-04
- sampling and analysis of volatile organic compounds according to DIN EN ISO 16000-6:2012-11, volume flow 0,2 l/min
- sampling and analysis of aldehydes and ketones according to DIN EN ISO 16000-3:2013-01, volume flow 1,5 l/min

Test chamber parameters:	K 1183 FM - 1 amBooo Deck Select (oiled before)
Surface	0,1 m <sup>2</sup>
Open angles	no open angles
Dimensions of the sample	2 cm x 32 cm x 31,6 cm
Chamber volume	0,25 m <sup>3</sup>
Temperature	23,0 °C
Humidity	50 %
Sample loading coefficient	0,4 m <sup>2</sup> /m <sup>3</sup>
Air exchange rate	0,5 h <sup>-1</sup>
Area specific air flow rate (Q)	1,25 m <sup>3</sup> /(m <sup>2</sup> *h)

Quality of climate parameters: Normally the following climate parameters are maintained:

temperature: 23°C +- 1°C

relative humidity: 50%rh +- 3 %points. resp. 45 %rh +- 3 %points

air exchange rate: 0,5 1/h +-3%

air velocity: 0,1-0,3 m/s +- 0,1 m/s

### 3 Results

#### 3.1 Results of the analysis of the chamber air

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Alkanes, Aliphates (C6-C22)</b>				
n-Hexane	n.d.	n.d.	72	--
n-Heptane	n.d.	n.d.	21.000	--
2-Methylpentane # <	n.d.	n.d.	--	--
3-Methylpentane # <	n.d.	n.d.	--	--
2,2,4-Trimethylpentane (i-Octane)	n.d.	n.d.	15.000	--
Aliphates C6-C8*	n.d.	n.d.	15.000	--
iso-Heptane	n.d.	n.d.	15.000	--
3-Methylhexane	n.d.	n.d.	15.000	--
2,3-Dimethylpentane	n.d.	n.d.	15.000	--
n-Octane	n.d.	n.d.	15.000	--
2-Methylheptane	n.d.	n.d.	15.000	--
3-Methylheptane	n.d.	n.d.	15.000	--
4-Methylheptane	n.d.	n.d.	15.000	--
n-Nonane	n.d.	n.d.	6.000	6.000
n-Decane	n.d.	n.d.	6.000	6.000
2,2,4,6,6-Pentamethylheptane	n.d.	n.d.	6.000	6.000
n-Undecane	n.d.	n.d.	6.000	6.000
n-Dodecane	n.d.	n.d.	6.000	6.000
n-Tridecane	n.d.	n.d.	6.000	6.000
2,2,4,4,6,8,8-Heptamethylnonane	n.d.	n.d.	6.000	6.000
n-Tetradecane	n.d.	n.d.	6.000	6.000
n-Pentadecane	n.d.	n.d.	6.000	6.000
n-Hexadecane	n.d.	n.d.	6.000	6.000
Aliphates C9-n-C16*	n.d.	n.d.	6.000	6.000
n-Heptadecane > #	n.d.	n.d.	--	--
n-Oktadecane > #	n.d.	n.d.	--	--
n-Nonadecane > #	n.d.	n.d.	--	--
n-Eicosane > #	n.d.	n.d.	--	--
n-Heneicosane > #	n.d.	n.d.	--	--
n-Docosane > #	n.d.	n.d.	--	--
<b>Cycloalkanes</b>				
Cyclopentans # <	n.d.	n.d.	--	--
Methylcyclopentane	n.d.	n.d.	15.000	--
Cyclohexane	n.d.	n.d.	7.000	6.000
Methylcyclohexane	n.d.	n.d.	8.100	8.100
1,4-Dimethylcyclohexane	n.d.	n.d.	15.000	--
trans-Decalin	n.d.	n.d.	6.000	--
<b>Alkenes, Olefines</b>				
Cyclohexene	n.d.	n.d.	--	--
4-Vinylcyclohexene	n.d.	n.d.	--	--
1-Octene	n.d.	n.d.	--	--
1-Decene	n.d.	n.d.	--	--
1-Undecene	n.d.	n.d.	--	--
Isobutene-Trimer	n.d.	n.d.	--	--
4-Phenylcyclohexene	n.d.	n.d.	1.300	--

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Aromates</b>				
Benzene	n.d.	n.d.	Kat. 1A	--
Toluene	n.d.	n.d.	1.900	2.900
Ethynylbenzene (Phenylacetylene)	n.d.	n.d.	840	--
Ethylbenzene	n.d.	n.d.	4.400	850
m,p-Xylene (1,3/1,4-Dimethylbenzene)	n.d.	n.d.	2.200	500
o-Xylene (1,2-Dimethylbenzene)	n.d.	n.d.	2.200	500
Styrene (Vinylbenzene)	n.d.	n.d.	860	250
alpha-Methylstyrene (2-Phenylpropene)	n.d.	n.d.	2.500	--
beta-Methylstyrene (1-Propenylbenzene)	n.d.	n.d.	2.400	--
Styroloxide	n.d.	n.d.	Kat. 1B	--
n-Propylbenzene	n.d.	n.d.	1.000	950
iso-Propylbenzene (Cumene)	n.d.	n.d.	1.000	--
1,2,3-Trimethylbenzene	n.d.	n.d.	1.000	450
1,2,4-Trimethylbenzene (Pseudocumene)	n.d.	n.d.	1.000	450
1,3,5-Trimethylbenzene (Mesitylene)	n.d.	n.d.	1.000	450
2-Ethyltoluene	n.d.	n.d.	1.000	--
3-Ethyltoluene	n.d.	n.d.	1.000	--
4-Ethyltoluene	n.d.	n.d.	1.000	--
Diethylbenzene isomeric mixture	n.d.	n.d.	1.000	--
2-Cymene (2-Isopropylmethylbenzene)	n.d.	n.d.	1.100	1.000
3-Cymene (3-Isopropylmethylbenzene)	n.d.	n.d.	1.100	1.000
4-Cymene (4-Isopropylmethylbenzene)	n.d.	n.d.	1.100	1.000
n-Butylbenzene	n.d.	n.d.	1.100	--
1,2,3,5-Tetramethylbenzene	n.d.	n.d.	1.000	--
1,2,4,5-Tetramethylbenzene	n.d.	n.d.	1.100	--
2-Vinyltoluene	n.d.	n.d.	4.900	--
3-Vinyltoluene	n.d.	n.d.	4.900	--
4-Vinyltoluene	n.d.	n.d.	4.900	--
1,3-Diisopropylbenzene	n.d.	n.d.	1.400	750
1,4-Diisopropylbenzene	n.d.	n.d.	1.400	750
n-Octylbenzene (Phenyloctane)	n.d.	n.d.	1.600	1.100
n-Decylbenzene (1-Phenyldecane)	n.d.	n.d.	1.800	--
n-Undecylbenzene (1-Phenylundecane)	n.d.	n.d.	1.900	--
further Alkylbenzenes*	n.d.	n.d.	1.000	--
Indane	n.d.	n.d.	--	--
Indene	n.d.	n.d.	450	450
Naphthalene	n.d.	n.d.	5	--
1-Methylnaphthalene	n.d.	n.d.	--	--
2-Methylnaphthalene	n.d.	n.d.	--	--
Di-Isopropyl-Naphthalenes >#	n.d.	n.d.	--	0
Tetraline	n.d.	n.d.	--	0
Acenaphthylene	n.d.	n.d.	--	0
Acenaphthene	n.d.	n.d.	--	0
Fluorene >#	n.d.	n.d.	--	0
Phenanthrene >#	n.d.	n.d.	--	0

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Terpenes</b>				
a-Pinene	n.d.	n.d.	1.500	2.500
b-Pinene	n.d.	n.d.	1.500	1.400
Camphene	n.d.	n.d.	1.500	1.400
d <sup>3</sup> -Carene	n.d.	n.d.	1.500	1.500
a-Terpinene	n.d.	n.d.	1.500	1.400
R+-Limonene	n.d.	n.d.	1.500	1.400
alpha-Caryophyllene	n.d.	n.d.	1.500	1.400
beta-Caryophyllene	n.d.	n.d.	1.500	1.400
Isolongifolene	n.d.	n.d.	1.500	1.400
alpha-Phellandrene	n.d.	n.d.	1.500	1.400
Longipinene *	n.d.	n.d.	1.500	1.400
beta-Farnesene *	n.d.	n.d.	1.500	1.400
alpha-Bisabolene *	n.d.	n.d.	1.500	1.400
Borneol	n.d.	n.d.	1.500	1.400
b-Myrcene	n.d.	n.d.	1.500	1.400
Eucalyptol	n.d.	n.d.	1.500	1.400
b-Linalool	n.d.	n.d.	1.500	1.400
Campher	n.d.	n.d.	1.500	1.400
Menthol	n.d.	n.d.	1.500	1.400
a-Terpineol	n.d.	n.d.	1.500	1.400
4-t-Butylcyclohexylacetate	n.d.	n.d.	1.500	1.400
Verbenone	n.d.	n.d.	1.500	1.400
Longifolene	n.d.	n.d.	1.500	1.400
further Terpenes *	n.d.	n.d.	1.500	1.400
<b>Halogenated hydrocarbons</b>				
Dichloromethane # <	n.d.	n.d.	--	--
Trichloromethane	n.d.	n.d.	--	--
1,2-Dichloroethane	n.d.	n.d.	Kat. 1B	--
1,1,1-Trichloroethane	n.d.	n.d.	--	--
Tetrachloroethene (PER)	n.d.	n.d.	--	--
Trichloroethylene	n.d.	n.d.	Kat. 1B	--
1,3-Dichloro-2-propanol	n.d.	n.d.	Kat. 1B	--
Epichlorohydrine	n.d.	n.d.	Kat. 1B	--
Chloroprene (2-Chloro-1,3-butadiene)	n.d.	n.d.	Kat. 1B	--
Bis(chloromethyl)ether *	n.d.	n.d.	Kat. 1A	--
1,2,3-Trichloropropane	n.d.	n.d.	Kat. 1B	--
1,4-Dichloro-2(E)-butene	n.d.	n.d.	Kat. 1B	--
1,2-Dibromomethane	n.d.	n.d.	Kat. 1B	--
1,2-Dibrom-3-chloropropane	n.d.	n.d.	Kat. 1B	--
2,3-Dibrom-1-propanol	n.d.	n.d.	Kat. 1B	--
4-Chloro-3-methylphenol	n.d.	n.d.	--	--
Chlorobenzene	n.d.	n.d.	--	--
Benzylchloride	n.d.	n.d.	Kat. 1B	--
Benzotrichloride	n.d.	n.d.	Kat. 1B	--
1,2-Dichlorobenzene	n.d.	n.d.	--	--
1,3-Dichlorobenzene	n.d.	n.d.	--	--
1,4-Dichlorobenzene	n.d.	n.d.	--	150
1,2,3,4-Tetrachlorobenzene	n.d.	n.d.	--	--
1-Monochloronaphthalene	n.d.	n.d.	--	--
2-Monochloronaphthalene	n.d.	n.d.	--	--
1,4-Dichloronaphthalene	n.d.	n.d.	--	--
1,5-Dichloronaphthalene	n.d.	n.d.	--	--



Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Ketones</b>				
Acetone # < *	n.d.	n.d.	--	--
2-Butanone (Ethylmethylketone)* <sup>1</sup>	n.d.	n.d.	6.000	5.000
But-en-2-one # <	n.d.	n.d.	--	--
MIBK (Methylisobutylketone)	n.d.	n.d.	830	--
2-Pentanone	n.d.	n.d.	--	--
2-Hexanone	n.d.	n.d.	--	--
2-Heptanone	n.d.	n.d.	--	--
3-Heptanone	n.d.	n.d.	--	--
6-Methyl-5-hepten-2-one	n.d.	n.d.	--	--
Cyclohexanone	n.d.	n.d.	410	410
Acetophenone	n.d.	n.d.	490	490
3-Methyl-2-butanone	n.d.	n.d.	7.000	7.000
Cyclopentanone	n.d.	n.d.	900	900
2-Methylcyclopentanone	n.d.	n.d.	1.000	--
2-Methylcyclohexanone	n.d.	n.d.	2.300	2.300
1-Hydroxyacetone	n.d.	n.d.	2.400	--
Acetonaldol (Diacetone alcohol)	n.d.	n.d.	960	960
Benzophenone > #	n.d.	n.d.	--	--
<b>Ethers</b>				
Tetrahydrofurane (THF)	n.d.	n.d.	1.500	--
2-Methylfurane	n.d.	n.d.	--	--
2-Pentylfurane	n.d.	n.d.	--	--
Dibutylether	n.d.	n.d.	--	--
Diocylether > #	n.d.	n.d.	--	--
<b>Esters and Lactones</b>				
Methylacetate # <	2	n.d.	--	--
Ethylacetate (acetic acid ethyl ester) # <	n.d.	n.d.	--	--
Vinylacetate # <	n.d.	n.d.	--	--
n-Propylacetate	n.d.	n.d.	4.200	4.200
iso-Propylacetate	n.d.	n.d.	4.200	4.200
n-Butylformiate	n.d.	n.d.	2.000	--
iso-Butylacetate	n.d.	n.d.	4.800	4.800
n-Butylacetate	n.d.	n.d.	4.800	4.800
n-Pentylacetate	n.d.	n.d.	--	--
n-Hexylacetate	n.d.	n.d.	--	--
Benzylacetate	n.d.	n.d.	--	--
Methylacrylate	n.d.	n.d.	180	180
Ethylacrylate	n.d.	n.d.	210	200
Methylmethacrylate	n.d.	n.d.	2.100	--
further Methacrylates	n.d.	n.d.	2.100	--
n-Butylacrylate	n.d.	n.d.	110	110
n-Butylmethacrylate	n.d.	n.d.	2.100	--
2-Ethylhexylacetate	2	n.d.	690	--
2-Ethylhexylacrylate	n.d.	n.d.	380	380
further Acrylates	n.d.	n.d.	110	110

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Esters and Lactones (continuation)</b>				
Linaloylacetate	n.d.	n.d.	--	--
Ethyl diethoxyacetate	n.d.	n.d.	--	--
1,6-Hexandioldiacrylate	n.d.	n.d.	10	10
n-Butylpropionate	n.d.	n.d.	--	--
DMS (Dimethylsuccinate)	n.d.	n.d.	50	50
DMG (Dimethylglutarate)	n.d.	n.d.	50	50
DMA (Dimethyladipate)	n.d.	n.d.	50	50
Diisobutylsuccinate *	n.d.	n.d.	100	--
Diisobutylglutarate	n.d.	n.d.	100	--
Di-n-butylmaleate	n.d.	n.d.	50	50
Dibutylfumarate	n.d.	n.d.	50	50
Texanol	n.d.	n.d.	600	600
TXIB	n.d.	n.d.	450	450
Triacetin	n.d.	n.d.	--	--
DMP (Dimethylphthalate)	n.d.	n.d.	--	--
DEP (Diethylphthalate)	n.d.	n.d.	--	--
DIBP (Diisobutylphthalate) >#	n.d.	n.d.	--	--
DBP (Dibutylphthalate) >#	n.d.	n.d.	--	--
DEHP (Di-2-Ethylhexylphthalate) >#	n.d.	n.d.	--	--
DIBA (Diisobutyladipate) >#	n.d.	n.d.	--	--
1,3-Propansultone	n.d.	n.d.	Kat. 1B	--
Gamma-Butyrolactone	2	n.d.	2.700	--
<b>Glycol derivates</b>				
Ethylene glycol	n.d.	n.d.	260	--
Diethylene glycol	n.d.	n.d.	440	440
2-Propoxyethanol	n.d.	n.d.	860	860
1,2-PG (1,2-Propylene glycol)	n.d.	n.d.	2.500	--
1,2-PGDM (1,2-Propylene glycol dimethylether)	n.d.	n.d.	25	--
DPGDM (Dipropylene glycol dimethylether)	n.d.	n.d.	1.300	1.300
T3PG (Tripropylene glycol)	n.d.	n.d.	--	--
EGMM (Ethylene glycol monomethylether)	n.d.	n.d.	3	--
EGDM (Ethylene glycol dimethylether)	n.d.	n.d.	4	--
EGDE (Ethylene glycol diethylether)	n.d.	n.d.	10	--
DEGDM (1-Methoxy-2-(2-methoxy-ethoxy)-ethane)	n.d.	n.d.	28	28
DEGDE (Diethylene glycol diethylether)	n.d.	n.d.	--	--
T3EGDM (Triethylene glycol dimethylether)	n.d.	n.d.	7	--
T4EGDM (Tetraethylene glycol dimethylether)	n.d.	n.d.	--	--
T3PGMM (Tripropylene glycol-mono-methylether)	n.d.	n.d.	1.200	--
1,2-PGMM (1,2-Propylene glycol monomethylether)	n.d.	n.d.	3.700	--
EGME (Ethylene glycol monoethylether)	n.d.	n.d.	8	--
EGMB (Ethylene glycol mono-n-butylether)	n.d.	n.d.	490	1.100
EGMiPr (2-Methylethoxyethanol)	n.d.	n.d.	220	220
1,2-PGMB (1,2-Propylene glycol monobutylether)	n.d.	n.d.	1.600	--
EGMP (Ethylene glycol monophenylether)	n.d.	n.d.	1.100	1.100
1,2-PGME (1,2-Propylene glycol monoethylether)	n.d.	n.d.	--	--
1,2-PGMP (1,2-Propylene glycol monophenylether)	n.d.	n.d.	--	--
DEGMM (Diethylene glycol monomethylether)	n.d.	n.d.	--	--
DEGME (Diethylene glycol monoethylether)	n.d.	n.d.	350	350
DPGMM (Dipropylene glycol monomethylether)	n.d.	n.d.	3.100	3.100
DEGMB (Diethylene glycol monobutylether)	n.d.	n.d.	670	670

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Glycol derivates (continuation)</b>				
DEGDB (Diethylene glycol dibutylether)	n.d.	n.d.	--	--
DPGMB (Dipropylene glycol monobutylether)	n.d.	n.d.	810	--
T3EGMB (Triethylene glycol monobutylether)	n.d.	n.d.	--	--
T3PGMB (Tripropylene glycol monobutylether)	n.d.	n.d.	--	--
EGMH (Ethylene glycol monohexylether)	n.d.	n.d.	1.200	--
DEGMH (Diethylene glycol monohexylether)	n.d.	n.d.	740	--
EGMMA (Ethylene glycol monomethyl etheracetate)	n.d.	n.d.	5	--
1,2-PGMM (1,2-Propylene glycol monomethyl etheracetate)	n.d.	n.d.	2.700	2.700
2,1-PGMM (2-Methoxy-1-Propanol) *	n.d.	n.d.	19	19
2,1-PGMM (2-Methoxy-1-Propyl-acetate) *	n.d.	n.d.	28	28
PGDA (Propylene glycol-di-acetate)	n.d.	n.d.	5.300	--
DPG (Di-Propylene glycol)	n.d.	n.d.	670	670
DPGMM (Di-propylene glycol-mono-methylether-acetate)	n.d.	n.d.	3.900	--
DPGMP (Dipropylene glycol-mono-n-propylether)	n.d.	n.d.	740	--
DPGMB (Dipropylene glycol-mono-t-butylether)	n.d.	n.d.	810	--
EGMEA (Ethylene glycol monoethyl etheracetate)	n.d.	n.d.	11	--
EGMBA (Ethylene glycol mono-n-butyl etheracetate)	n.d.	n.d.	1.300	--
DEGMBA (Diethylene glycol monobutyl etheracetate)	n.d.	n.d.	850	850
DEGDA (Diethylene glycol diacetate)	n.d.	n.d.	--	--
1,2-PGMP (1,2-Propylene glycol-n-propylether)	n.d.	n.d.	1.400	--
3-Methoxy-1-butanol	n.d.	n.d.	500	--
DEGMP (Diethylene glycol-phenylether)	n.d.	n.d.	1.450	--
Neopentylglycol (2,2-Dimethylpropan-1,3-diol)	n.d.	n.d.	1.000	--
Ethylene carbonate	n.d.	n.d.	370	--
n-Butylglycolate	n.d.	n.d.	550	--
<b>Aldehydes</b>				
Formaldehyde # < * <sup>1</sup>	n.d.	n.d.	--	--
Acetaldehyde # < * <sup>1</sup>	7	n.d.	--	1.200
Propanal # < * <sup>1</sup>	n.d.	n.d.	--	--
Methacrolein * <sup>1</sup>	n.d.	n.d.	--	--
n-Butanal # < * <sup>1</sup>	n.d.	n.d.	--	650
Iso-Butanal # <	n.d.	n.d.	--	--
n-Pentanal	n.d.	n.d.	1.700	800
3-Methylbutanal	n.d.	n.d.	--	--
n-Hexanal	2	1	890	900
n-Heptanal	n.d.	n.d.	1.000	900
2-Ethylhexanal	n.d.	n.d.	1.100	900
n-Oktanal	n.d.	n.d.	1.100	900
n-Nonanal	2	n.d.	1.300	900
n-Decanal	8	n.d.	1.400	900
n-Undecanal	n.d.	n.d.	--	--
n-Dodecanal	n.d.	n.d.	--	--
Benzaldehyde * <sup>1</sup>	n.d.	n.d.	90	--
Cuminaldehyde	n.d.	n.d.	--	--
Glutardialdehyde (Glutaraldehyde)	n.d.	n.d.	2	--

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Aldehydes (continuation)</b>				
2(E)-Butenal <sup>*1</sup>	n.d.	n.d.	1	--
2(E)-Pentenal	n.d.	n.d.	12	--
2(E)-Hexenal	n.d.	n.d.	14	--
2(E)-Heptenal	n.d.	n.d.	16	--
2(E)-Octenal	n.d.	n.d.	18	--
2(E)-Nonenal	n.d.	n.d.	20	--
2(E)-Decenal	n.d.	n.d.	22	--
2(E)-Undecenal	n.d.	n.d.	24	--
8(Z)-Undecenal	n.d.	n.d.	--	--
2-Phenylethanal	n.d.	n.d.	--	--
Furfural	2	n.d.	20	--
5-Methylfurfural	n.d.	n.d.	--	--
<b>Alcanoic acids</b>				
Ethanoic acid (Acetic acid)	1700	130	1.250	--
Propanoic acid (Propionic acid)	21	n.d.	310	310
2-Methylpropanoic acid	n.d.	n.d.	370	--
n-Butanoic acid	n.d.	n.d.	370	--
2,2-Dimethylpropanoic acid	n.d.	n.d.	420	--
n-Pentanoic acid	n.d.	n.d.	420	--
n-Hexanoic acid	n.d.	n.d.	490	--
n-Heptanoic acid	n.d.	n.d.	550	--
n-Octanoic acid	n.d.	n.d.	600	--
2-Ethylhexanoic acid	n.d.	n.d.	50	--
<b>Alkohols</b>				
Ethanol # <	n.d.	n.d.	--	--
n-Propanol # <	n.d.	n.d.	--	--
2-Propanol # <	n.d.	n.d.	--	--
iso-Butanol	n.d.	n.d.	3.100	3.000
tert.-Butanol	n.d.	n.d.	620	620
n-Butanol	1	n.d.	3.100	3.000
2-Methyl-1-butanol	n.d.	n.d.	730	730
3-Methyl-1-butanol	n.d.	n.d.	730	730
3-Methyl-2-butanol	n.d.	n.d.	730	730
n-Pentanol	n.d.	n.d.	730	730
2-Pentanol	n.d.	n.d.	730	730
3-Pentanol	n.d.	n.d.	730	730
tert-Pentanol	n.d.	n.d.	730	730
Neopentanol	n.d.	n.d.	730	730
n-Hexanol	n.d.	n.d.	2.100	2.100
n-Heptanol	n.d.	n.d.	500	--
2-Ethylhexanol	n.d.	n.d.	540	--
n-Oktanol	n.d.	n.d.	500	1.100
n-Nonanol	n.d.	n.d.	500	--
n-Decanol	n.d.	n.d.	500	--
1,4-Butandiol	n.d.	n.d.	2.000	2.000
Cyclohexanol	n.d.	n.d.	2.100	2.000
Hexylene glycol (2-Methyl-2,4-pentandiol)	n.d.	n.d.	490	--



Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Alkohols (continuation)</b>				
Phenol	79	6	10	--
2-Methylphenol	n.d.	n.d.	--	--
3-Methylphenol	n.d.	n.d.	--	--
4-Methylphenol	n.d.	n.d.	--	--
2-Phenylphenol	n.d.	n.d.	--	--
Benzylalcohol	n.d.	n.d.	440	440
Further saturated Alcohols C4-C10 *	n.d.	n.d.	500	--
BHT (Butylated Hydroxytoluene)	n.d.	n.d.	100	100
TMDYD (2,4,7,9-Tetramethyldec-5-yn-4,7-diol)	n.d.	n.d.	--	--
Further saturated Alcohols C11-C13 *	n.d.	n.d.	500	--
<b>aromatic amines</b>				
2-Methoxyaniline	n.d.	n.d.	Kat. 1B	--
4-Chloraniline	n.d.	n.d.	Kat. 1B	--
2,4-Diaminoanisol *	n.d.	n.d.	Kat. 1B	--
4-Kresidine *	n.d.	n.d.	Kat. 1B	--
2,4,5-Trimethylaniline	n.d.	n.d.	Kat. 1B	--
4-Chlor-2-toluidine	n.d.	n.d.	Kat. 1B	--
2,4-TDA *	n.d.	n.d.	Kat. 1B	--
2,6-TDA *	n.d.	n.d.	--	--
2-Naphthylamine *	n.d.	n.d.	Kat. 1A	--
Hydrazobenzene *	n.d.	n.d.	Kat. 1B	--
4,4'-MDA (4,4'-Diaminodiphenylmethane) *	n.d.	n.d.	Kat. 1B	--
3,3'-Dimethyl-4,4'-MDA *	n.d.	n.d.	Kat. 1B	--
3,3'-Dimethylbenzidine *	n.d.	n.d.	Kat. 1B	--
3,3'-Dichlorbenzidine *	n.d.	n.d.	Kat. 1B	--
3,3'-Dimethoxybenzidine *	n.d.	n.d.	Kat. 1B	--
<b>Nitro-compounds</b>				
2-Nitropropane	n.d.	n.d.	Kat. 1B	--
2-Nitrotoluene *	n.d.	n.d.	Kat. 1B	--
2-Nitroanisol	n.d.	n.d.	Kat. 1B	--
2,6-Dinitrotoluene	n.d.	n.d.	Kat. 1B	--
2,3-Dinitrotoluene	n.d.	n.d.	Kat. 1B	--
2,4-Dinitrotoluene	n.d.	n.d.	Kat. 1B	--
3,4-Dinitrotoluene	n.d.	n.d.	Kat. 1B	--
2-Nitronaphthalene *	n.d.	n.d.	Kat. 1B	--
4-Nitrobiphenyl *	n.d.	n.d.	Kat. 1B	--

Parameters	K 1183 FM - 1.1 chamber air after 3 days [µg/m <sup>3</sup> ]	K 1183 FM - 1.5 chamber air after 28 days [µg/m <sup>3</sup> ]	NIK-value [µg/m <sup>3</sup> ]	LCI-value [µg/m <sup>3</sup> ]
<b>Further polar compounds</b>				
2-Butanonoxime	n.d.	n.d.	20	--
N-Methylpyrrolidone	n.d.	n.d.	400	400
N-Ethylpyrrolidone	n.d.	n.d.	--	--
Aniline	n.d.	n.d.	--	--
Pyridine	n.d.	n.d.	--	--
2-Vinylpyridine	n.d.	n.d.	--	--
Benzothiazol	n.d.	n.d.	--	--
2-Octylisothiazolinone >#	n.d.	n.d.	--	--
CIT (5-Chloro-2-methyl-4-isothiazolin-3-one)	n.d.	n.d.	1	1
MIT (2-Methyl-4-isothiazolin-3-one)	n.d.	n.d.	100	100
Methene amin (Urotropine)	n.d.	n.d.	30	30
Triethylamine	n.d.	n.d.	42	--
N,N-Dimethylformamide	n.d.	n.d.	15	--
N,N-Diethylformamide	n.d.	n.d.	--	--
N,N-Dibutylformamide	n.d.	n.d.	--	--
Acrylnitril <#	n.d.	n.d.	Kat. 1B	--
Acrylamide	n.d.	n.d.	Kat. 1B	--
Isobutylnitrit <#	n.d.	n.d.	Kat. 1B	--
1,2-Dimethylhydrazine *	n.d.	n.d.	Kat. 1B	--
Methacrylamido-methoxyacetate *	n.d.	n.d.	Kat. 1B	--
Caprolactam	n.d.	n.d.	240	300
Trimethylphosphate	n.d.	n.d.	--	--
Triethylphosphate	n.d.	n.d.	75	--
Tri-n-Butylphosphate >#	n.d.	n.d.	--	--
Propylene carbonate	n.d.	n.d.	250	--
Dimethylsulfide <#	n.d.	n.d.	--	--
Dimethyldisulfide	n.d.	n.d.	--	--
1,4-Dioxane	n.d.	n.d.	73	--
Hexamethyldisiloxane	n.d.	n.d.	--	--
D3 (Hexamethylcyclotrisiloxane)	6	n.d.	--	--
D4 (Octamethylcyclotetrasiloxane)	n.d.	n.d.	1.200	1.200
D5 (Decamethylcyclopentasiloxane)	n.d.	n.d.	1.500	--
D6 (Dodecamethylcyclohexasiloxane)	n.d.	n.d.	1.200	--
D7 (Tetradecamethylcycloheptasiloxane) *	n.d.	n.d.	--	--
<b>TVOC according to AgBB</b>	<b>1814</b>	<b>136</b>		
<b>Sum SVOC</b>	<b>-</b>	<b>-</b>		
<b>R-value according to AgBB</b>	<b>9,334</b>	<b>0,704</b>		
<b>Sum without NIK</b>	<b>6</b>	<b>-</b>		
<b>Sum carcinogenic compounds</b>	<b>n.d.</b>	<b>n.d.</b>		

TVOC = total volatile organic compounds  $\geq 5 \mu\text{g}/\text{m}^3$  in the retention range of C<sub>6</sub>-C<sub>16</sub>

R-value = sum of concentrations of single components  $\geq 5 \mu\text{g}/\text{m}^3$  divided through the corresponding NIK-value

NIK-value = lowest concentration of interest according to AgBB

LCI-value = EU-LCI, lowest concentration of interest according to CEN TC 351/WG 2.

SVOC = single components  $\geq 5 \mu\text{g}/\text{m}^3$  in the retention range C<sub>>16</sub>-C<sub>22</sub>

# = this substance is not included in the TVOC. In the chromatogram it comes before hexane („#<“) or after hexadecane („>#“).

detection limit =  $1 \mu\text{g}/\text{m}^3$ , formaldehyde and acetaldehyde  $5 \mu\text{g}/\text{m}^3$

n.d. = not detected

„-“ = not detected respectively single substances  $< 5 \mu\text{g}/\text{m}^3$

µg = Mikrogram

µg/m<sup>3</sup> = Mikrogram per cubic metre

n.a. = not analysed

„-“ = no NIK-value

Kat.1A = carcinogenic substance, category 1A

Kat.1B = carcinogenic substance, category 1B

\*quantified by the response of Toluene

\*1 determination by HPLC

\*2 quantified by the response of D5

explanatory notes:

1. area specific emission rate: The named air concentrations can be converted into area specific emission rates by multiplication with the area specific air flow rate  $q$ .
2. double samples: The results of the air samples from the test chamber are normally assured by at least a second sample.
3. background concentrations: The background concentrations of the test chamber before the filling with the test material are normally under  $20 \mu\text{g}/\text{m}^3$  for the TVOC, under  $10 \mu\text{g}/\text{m}^3$  for toluene, ethyl acetate and acetic acid, under  $6 \mu\text{g}/\text{m}^3$  for formaldehyde and under  $2 \mu\text{g}/\text{m}^3$  for all other substances.

The following substances could be additionally identified and semi-quantitative estimated by the response of the named substances within of the retention range between n-hexane and n-hexadecane.

Parameter	K 1183 FM - 1.1 chamber air after 3 days [ $\mu\text{g}/\text{m}^3$ ]	K 1183 FM - 1.5 chamber air after 28 days [ $\mu\text{g}/\text{m}^3$ ]
$\Sigma$ fatty acid alkyl esters	1	-
$\Sigma$ fatty acids	3	-

„-“ = not identified  
 $\mu\text{g}$  = Microgram

$\Sigma$  = Sum  
 $\mu\text{g}/\text{m}^3$  = Microgram per cubic meter

***There could not be identified further substances outside the retention range between n-Hexane and n-Hexadecane***

**- End of ANALYSIS REPORT -**

The test results refer to the tested samples only. The analysis report may only be reported completely or – with permission of the Bremer Umweltinstitut – in parts.

With kind regards  
Bremer Umweltinstitut

Ulrike Siemers,  
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