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FB Houtproduktie B.V.
Attn: Mr. Jasper Verheggen
C. de Vriesweg 23

1746 CM Dirkshorn
Niederlande - Netherlands

Braunschweig, 21.09.2015

Test report No. MAIC-2015-3219

Customer: FB Houtproduktie B.V., CM Dirkshorn.

Object of the test: Chamber emission test of a wooden floor covering sample according to AgBB/DIBt scheme.

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This report comprises 9 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
P46213	20.07.2015	Smoked Collection "Chicago"	6041	n.a.	26-06-2015

Name of the applicant (address / stamp):	FB Houtdistributie BV De Dijken 9-11 1747 EE Tuitjenhorn The Netherlands	**Manufacturer of the product** (if deviating from the applicant):	FB Houtproduktie BV C. de Vriesweg 23 1746 CM Dirkshorn The Netherlands
Factory in which the sample is taken:	FB Houtdistributie BV De Dijken 9-11 1747 EE Tuitjenhorn The Netherlands	**Sample drawer** (please mark): Name, company, telephone:	☐ testing laboratory ☐ inspection body ☒ manufacturer J.Verheggen FB Houtproduktie BV 0224-552689
Name of the product:	Smoked Collection "Chicago" Gerookt Wit/Smoked White 13x180	**Type of floor covering** (e.g.. laminate, textile floor covering, PVC floor covering):	Eiken FB+ Oak FB+ double layered wooden floor covering
Model / program / series:	Smoked Collection "Chicago"	**Batch-N°.:**	26/2015
Article-N°.:	6041	**Date of batch production:**	26-06-2015
Date of sampling:	16-07-2015	**Time of day:**	9:00
Sample is taken from	☐ the current production ☒ store ☐ retain samples	**How had the product been stored prior to sampling?**	☐ open ☒ wrapped up
Place of storage:	FB Houtdistributie BV De Dijken 9-11 1747 EE Tuitjenhorn The Netherlands	**Type of packing / packing material**	Special sampling aluminium Foil
Particularities (possible negative effects due to emissions at the place of taking the sample, fuel emissions, solvent emissions from the production, uncertainties, questions, etc.):		none	
Intended tests:			
☒ Emission test DIBt (approval test) ☐ Construction characteristics ☐ other (PAK, nitrosamine, etc.)		☐ Emission test DIBt (surveillance test)	
Confirmation The signer herewith confirms the correctness of the data given above. The sample was selected, drawn and packed personally in accordance with the instructions for the taking of samples.			
Date:16/07/2015	Signature: (Stamp)	FB Houtproduktie BV C. de Vriesweg 23 1746 CM Dirkshorn Tel. 0224 - 55 26 89 www.fbhout.nl	

* You are requested to fill in one sample drawing report per sample!

(Sample P46213: aluminum foil/wrapped separately, wrapping ok)

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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.



P46213 sample description

General information on parquet and wooden floors	**Product information**	**Testing information**
General information	double layered wooden floor covering	parquet
Total thickness [mm]	-	12
Grammage [g/m²]	-	9060
Construction	double layered	double layered
Species of the overlay covering	Oak	Oak
Treatments for aesthetic reasons (incense, coloring, bleaching)	-	-
Factory impact sound insulation	-	no
Type of connection of parquet blocks or wooden floor elements to each other (e.g. click- connection)	-	Tongue and groove
Chamfers present?	-	yes
Remark		

Methods:

Sample preparation: Directly after unwrapping 0.4 m² of the sample material was placed in a 1 m³ glass chamber. The back and the narrow surfaces of the sample were covered with aluminum foil. The sample was placed on the back side during the entire testing time.

Chamber emission test: The sample was tested in an emission test chamber (DIN ISO 16000-11, -9, -6 and -3) without prior conditioning. 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. After separation the trapped compounds are identified mass-spectrometrically. The LCI-compounds are quantified with pure reference compounds, non-LCI substances are quantified with toluene. Furthermore air samples were collected on DNPH and analyzed after elution with acetonitrile by HPLC-UV. Ammonia was sampled, out of the chamber air, in 0.0025 molar nitric acid. Afterwards, the absorbing solution was filtered and analyzed by ion chromatography.

AgBB-Evaluation

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

Results:

The quantitative test results can be found on the next page.

Results of the chamber emission test of sample P46213 (2. Smoked Collection "Chicago")

RT	CAS-No.	Substance	Concentration in µg/m³ after 3d	7d	28d	Info
5.14	000109-66-0	n-Pentane (Toluene)	4	4	1	<C6c
5.48	000079-20-9	Acetic acid methyl ester (Toluene)	23	23	13	<C6c
6.97	000064-19-7	Acetic acid	322	290	195	bd
10.50	000110-62-3	Pentanal	12	12	9	bd
14.45	000108-88-3	Toluene	4	4	2	bdhp
14.63	000071-41-0	n-Pentanol	3	3	2	b
16.47	000066-25-1	n-Hexanal	22	22	15	bd
25.19	000108-95-2	Phenol	1	1	<1	abd
25.83	000000-01-9	saturated aliphatic hydrocarbons C9-C16 (2-10) (Toluene)	1	<1	<1	b
30.06	001120-21-4	C 11 (Undecane)	3	2	1	b
30.36	000149-57-5	2-Ethylhexanoic acid	3	2	<1	bd
33.51	000112-40-3	C 12 (Dodecane)	3	2	<1	b
33.91	000150-76-5	4-Methoxy-phenol (Toluene)	2	2	<1	
35.78	007473-98-5	2-Hydroxy-2-methyl-1-phenyl-propan-1-one (Darocur 1173) (Toluene)	2	2	<1	
42.78	000954-16-5	2,4,6-Trimethylbenzophenone (Toluene)	16	14	3	>C16

(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)*:	23	23	13
Sum of VOC (C6-C16) as TVOC $_{\text{original response}}$*[1]:	356	324	219
Sum of VOC (C6-C16) as TVOC $_{\text{Toluene}}$ according to AgBB[2]:	69	64	43
Sum of VOC (C6-C16) as TVOC $_{\text{Toluene}}$ according to DIN EN ISO 16000-6[3]:	87	83	47
Sum of SVOC (> C16)*:	16	14	<5

*Limit value of consideration is 5 µg/m³

[1]LCI-substances were quantified with the original response and non-LCI substances were quantified with toluene.
[2]Sum of TVOC $_{\text{original response}}$ quantified with toluene

[3]Sum of all measured VOC quantified with toluene

Lower aldehyde results of sample P46213

CAS-No.	Substance	Concentration in µg/m³ after			Limit of determination
		3d	7d	28d	[µg/m³]
50-00-0	Formaldehyde	< 2	< 2	< 2	2
75-07-0	Acetaldehyde	10	9	8	3
123-38-6	Propanal	< 3	< 3	< 3	3
123-72-8	Butanal	< 4	< 4	< 4	4
67-64-1	Aceton	26	23	23	2

Ammonia results of sample P46213

CAS. no.	Substance	Concentration in µg/m³ after			Limit of determination
		3d	7d	28d	[µg/m³]
7664-41-7	Ammonia	85	44	29	2

Parameters of the emission chamber test:

Chamber type: 1m³-glass chamber B

Climatic conditions: 23 °C, 50 % r.h.

Air exchange: 0.50 h^{-1}

Loading factor: 0.40 m^2/m^3

Area specific air exchange rate q: 1.25 $m^3/(m^2*h)$

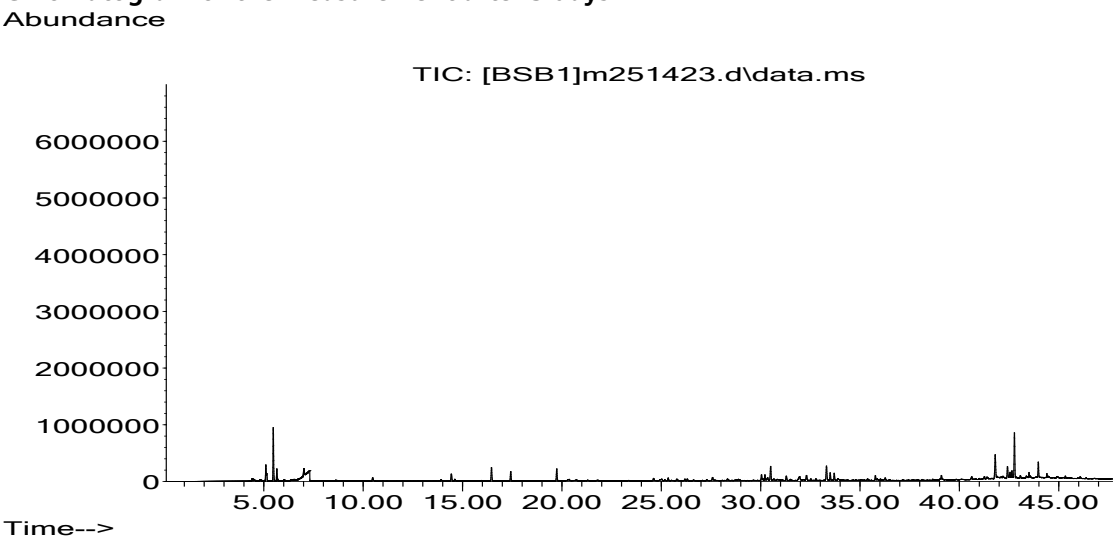
Test started: 27.07.2015 09:49:56

Sampling: Tenax TA, DNPH, nitric acid

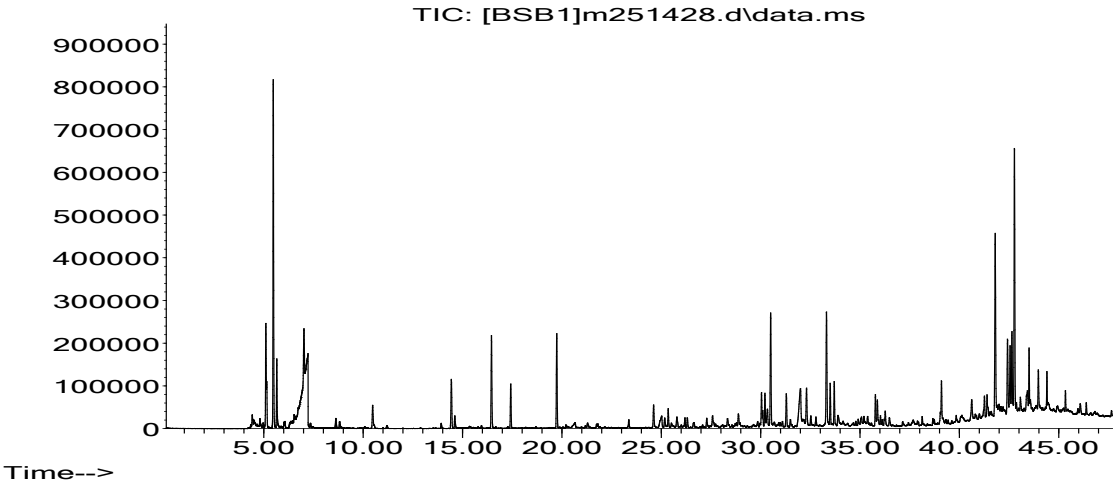
Analysis: Thermal desorption GC/MS, HPLC/UV, IC



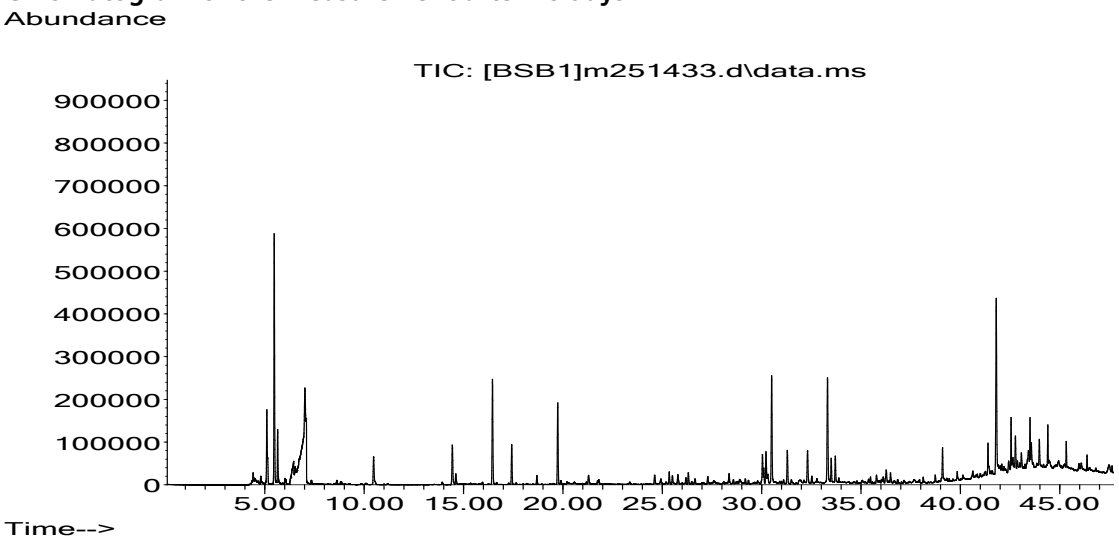
Chromatogram of the measurement after 3 days



Chromatogram of the measurement after 7 days



Chromatogram of the measurement after 28 days



Results of the evaluation according to AgBB-scheme

Produktname und Artikelnr.	A16322/P46213	**Kunde/Antragsteller**	FB Houtproduktie B.V., CM Dirkshorn	
Prüfberichtsnr.	MAIC-2015-3219			
Prüfstelle	Fraunhofer WKI			

Parameter	**Tag 3**					**Tag 7**				**Tag 28**			
	Ergebnisse		✓	➡	✗	Ergebnisse		✓	➡	Ergebnisse		✓	✗
	[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	356	0.4	≤0.3	≤10.0	>10.0	324	0.3	≤0.5	>0.5	219	0.2	≤1.0	>1.0
Σ SVOC	16	0.02	≤0.03	>0.03	-	14	0.01	≤0.05	>0.05	0	0.0	≤0.1	>0.1
R-Wert *	0.327	0.3	≤0.5	>0.5	-	0.298	0.3	≤0.5	>0.5	0.210	0	≤1	>1
Σ VOC o. NIK	0	0.00	≤0.05	>0.05	-	0	0.00	≤0.05	>0.05	0	0.0	≤0.1	>0.1
Σ Kanzerogene	0	0.000	≤0.001	≤0.01	>0.01	0	0.000	≤0.001	>0.001	0	0.000	≤0.001	>0.001
Gesamt				➡				✓				✓	
DIBt Parameter													
Formaldehyd	0	0.000	≤0.060	>0.060	-	0	0.000	≤0.060	>0.060	0	0.000	≤0.120	>0.120
Ammoniak	85	0.085	≤0.100	>0.100	-	44	0.0	≤100.0	>100.0	29	0.029	≤0.100	>0.100
Zusätzliche Informationen													
Σ VVOC	59	0	-	-	-	55	0	-	-	44	0	-	-

*) dimensionslos ✓ Abbruchkriterium erfüllt ➡ Abbruchkriterium NICHT erfüllt, weitere Messung notwendig ✗ Nicht Bestanden

Carcinogenic compounds (EU class 1 and 2) could not be detected (detection limit 1 µg/m³).

The sample material fulfills 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" in regard of the VOC-emissions after 3 and 28 days.

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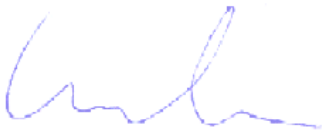
Requirements fulfilled?	Evaluation after:	3 days	28 days
TVOC		☒Yes ☐No	☒Yes ☐No
carcinogenic compounds		☒Yes ☐No	☒Yes ☐No
R-value (VOC with LCI)			☒Yes ☐No
VOC without LCI			☒Yes ☐No
TSVOC			☒Yes ☐No
Formaldehyde			☒Yes ☐No

Officer in Charge



A. Omelan

For the department



Dr. E. Uhde