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Dresden, 2014-02-06
50-br/ku

Test report
Order number 271281/2013/3

Customer:	Forna 104–3170 194 Street Surrey, BC V3Z 9V2 Canada
Order dated:	2011-08-08
Order:	Determination of the VOC and formaldehyde emission of a cork flooring according to AgBB-Scheme, ISO 16000 part 3, 6 and 9, supervision test **Flooring Atlantico Morena**
Contractor:	EPH – Laboratory chemical testing
Engineer in charge:	Dipl.-Ing. M. Broege

Dipl.-Chem. K. Aehlig
Head of laboratory
Chemical testing

The test report contains 3 pages and 9 annexes. Any duplication in part requires written approval from EPH. These test results are exclusively related to the tested material.

1. Assignment

Accomplishment of an emission test based on the AgBB-Scheme, supervision test

2. Sample identification

Product name:	**Flooring Atlantico Morena**
Article-no.:	CK384N

3. Product description

Type:	cork flooring	
Thickness:	10 mm	
Construction:	Top layer:	cork
	Core:	high density fiberboard
	Backside:	cork

4. Sampling

Charge:	502013
Date of production:	week 50, 2013
Sampling:	by customer
Date of sampling:	week 50, from current production
Packaging material:	foil/carton
Number:	1 package
Sample receipt at EPH:	2014-01-15

5. Emission measurement

Chamber test – ISO 16000 part 9

The test piece (0.09 m²) was placed into a test chamber – lying on the bottom – under the following conditions:

Temperature:	23 °C ± 1 K
Air humidity:	50 % ± 5 %
Air exchange rate:	0.5 /h ± 0.1 /h
Loading:	0.4 m²/m³
Chamber volume:	0.225 m³
Storage:	2014-01-17

During the test the climatic parameters temperature and relative air humidity were recorded. Data for chamber test are documented on the enclosed page "measurement parameters".

6. Analytics

Volatile organic compounds (VOC) – ISO 16000 part 6

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

Sample air volume: 1 – 6 l

1. Measurement	after	3 d	double determination
2. Measurement	after	7 d	double determination

Formaldehyde/Aldehydes – ISO 16000 part 3

The determination of formaldehyde and other aldehydes was carried out by DNPH-method.
Sample air volume: 120 l

1. Measurement	after	3 d	double determination
2. Measurement	after	7 d	double determination

7. Results

VOC-Emission

The following printouts are attached to the report:

Sampling protocol
General information
Measurement parameters
General view of the results
Single values – Emissions after 3 days
Single values – Emissions after 7 days
Photo
Chromatogram after 3 days
Chromatogram after 7 days

Formaldehyde

1. Measurement	ppm after 3 d
2. Measurement	ppm after 7 d

Requirements after 28 days: 0.1 ppm

The tested product "Flooring Atlantico Morena" fulfills the requirements of the AgBB-Scheme.

M. Br

Dipl.-Ing. M. Broege
Engineer in charge

Deutsches Institut für Bautechnik DIBt

Annex 1a): Report of the sampling procedure for floor coverings, underlays and components for surfaces for sports areas

Name of the applicant (address/ stamp):	CORKART - Industria de Cortiças, S.A. Cont. Nº 503 917 656 Avenue Industrial, Lote 20 2441 Vendas Novas	**Manufacturer of the product** (if deviating from the applicant):	
Factory in which the sample is taken:	CORKART VENDAS NOVAS	**Sample drawer** (please mark): Name, company, telephone:	☐ testing laboratory ☒ inspection body ☐ manufacturer EPH +4935146620

Name of the product:	ATLANTICO MORENA CK384N CORK FLOATING	**Type of floor covering** (e.g.. laminate, textile floor covering, PVC floor	CORK FLOATING
Model / programm / series:	502013	**Batch-N°.:**	502013
Article-N°.:	CK384N	**Date of batch production:**	WEEK 50

Date of sampling:	50/2013	**Time of day:**	
Sample is taken from	☒ the current production ☐ store ☐ retain samples	**How had the product been stored prior to sampling?**	☐ open ☒ wrapped up WITH PE-FOIL
Place of storage:	CORKART WAREHOUSE / PRODUCTION	**Type of packing / packing material**	PE - FOIL

Particularities (possible negative effects due to emissions at the place of sampling, fuel emissions, solvent emissions from the production, uncertainties, questions, etc.):	

Intended tests:

☐ Emission test DIBt (approval test)	☐ Emission test DIBt (surveillance test)
☐ Design characteristics	
☐ Other (PAK, nitrosamine, etc.)	

Confirmation
The signer herewith confirms the correctness of the data given above. The sample was selected, drawn and packed personally in accordance with the sampling instructions.

Date: 19/12/2013	Signature: (Stamp)

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

1. Allgemeine Angaben - General information

Prüfstelle Testing laboratory	**Entwicklungs- und Prüflabor Holztechnologie GmbH**
Verantwortlicher Prüfer Responsible laboratory staff	**Dipl.-Ing. M. Broege**
Prüfberichtsnr. Number of the test report	**271281/2013/3**
Kunde/Antragsteller Client/Applicant	Forna
Produktname und Artikelnr. Name of the product and material number	**Flooring Atlantico Morena**

Aktenzeichen beim DIBt File number at DIBt	Stellen-zeichen	-1.	SVA-Nr.	-	Sachgebiet	-	lfd. Nr.	/	Jahr (2 Ziffern)	Unter-sachgebiet
	II 44		156		613		500		11	B

Art der Prüfung Type of testing	A	S_Q	S_C	S_{CL}
		7		

Probenbezeichnung Name of the sample	**Flooring Atlantico Morena**
Datum des Probeneingangs bei der Prüfstelle Date of receipt of the sample	**15.01.2013**
Lagerung der Probe bis zur Prüfung Storage of the sample until testing	**packaged**

2. Beschreibung des Bauprodukts - Description of the construction product

Bitte auswählen!
Choose, please!

- ☐ Textile Bodenbeläge - Textile floor coverings
- ☑ Laminate und Paneele - Laminates and panels
- ☐ Parkette und Holzfußböden - Parquet and wood floorings
- ☐ Elastische Bodenbeläge - Resilient floor coverings
- ☐ Beschichtungen - Coatings
- ☐ Korkbodenbeläge - Cork floor coverings
- ☐ Sportbodenbeläge - Surfaces for sport areas
- ☐ Oberflächenbeschichtungen - Surface coatings
- ☐ Bodenbelagskleber - Adhesives for floor coverings
- ☐ Verlegeunterlagen - Underlayers
- ☐ Sonstige Produkte - Other products

Laminate und Paneele - Laminates and panels		***Herstellerangaben Manufacturer's data***	***Prüfstellenangaben Testing laboratory's data***
Allgemeine Produktbeschreibung General description of the product		**Morena Atlantico**	**flooring panel**
Abmessung der gelieferten Probe [mm x mm] Dimensions of the delivered sample [mm x mm]		900 x 300	900 x 300
Originalabmessung eines Elements [mm x mm] Original dimension of an element [mm x mm]		900 x 300	900 x 300
Gesamtdicke [mm] Total thickness [mm]		10	10
Flächengewicht [g/m²] Area weight [g/m²]			7325
Verlegeunterlage/Trittschalldämmung (falls vorhanden) Underlayer/Impact sound insulation (if relevant)	Produktbeschreibung Product description		counter layer of cork
	Dicke [mm] Thickness [mm]		
Kleber für Verlegeunterlage/Trittschalldämmung Adhesive used for underlayer/impact sound insulation	Bezeichnung Product name		
	Auftragsmenge [g/m²] Applied quantity [g/m²]		
Fasen vorhanden? Bevels?		-	-
Art der Verbindung der Laminatpaneele untereinander (z.B. Click-Verbindung, Nut& Feder) Joint structure of laminate panels (e.g. click connection, slot & key)		click-connection	click-connection
Kantenabdeckung ? Verhältnis der offenen zu den abgedeckten Kanten? Covering of the edges? Ratio of covered edges to uncovered edges?			completely closed
weitere Angaben Additional information			

3. Bemerkungen (z.B. Produktbesonderheiten, Abweichungen von "Grundsätzen zur gesundheitlichen Bewertung von Bauprodukten in Innenräumen" etc.) (neue Zeile mit [ALT] + [RETURN])

Comments (e.g. particularities on the product, variation of the "Principles for health assessment of construction products used in interiors" etc.) (new line with [ALT] + [RETURN])

ADAM_2012_08_3

test parameter

Produktname - Name of the product	Flooring Atlantico Morena
Datum der Prüfkörperherstellung Date of the manufacture of the test specimen	17.01.2014
Herstellung des Prüfkörpers durch Preparation of the test specimen by	EPH
verwendete Hilfsmaterialien used auxiliary materials	

Prüfung - Testing		Datum date	Uhrzeit time
Beginn der Vorkonditionierung Start of preconditioning	t_{0-x}		
Einbringen der Probe in die Prüfkammer und Beginn der Prüfung Placing of the test specimen into the test chamber and start of testing	t_0	17.1.2014	11:00
erste Probenahme first sampling	t_{3d}	20.1.2014	11:00
zweite Probenahme second sampling	t_{7d}	24.1.2014	10:20
dritte Probenahme third sampling	t_{28d}		
Prüfkörperanordnung in der Prüfkammer Arrangement of the test specimen in the test chamber		bottom of chamber	
Anwendung der Abbruchkriterien Use of the break-off criteria	3d/7d	7 d	

Prüfkammer - Test chamber			
Hersteller/Typ der Prüfkammer Manufacturer/type of the test chamber			
Material der Prüfkammer Material of the test chamber		glass	
Volumen der Prüfkammer Volume of the test chamber	[m³]	0,23	
Fläche der Probe Area of the test specimen	[m²]	0,09	
Luftwechselrate Air exchange rate	[h^{-1}]	0,50	
flächenspezifische Luftdurchflussrate q Area specific air flow rate	[mh^{-1}]	1,25	
Temperatur Temperature	[°C]	23,0	
relative Luftfeuchte relative humidity	[%]	50,0	

Berücksichtigungsgrenzen - Limits of consideration	C_i [µg/m³]	
Substanzen mit NIK-Wert Substances with LCI value	5	
alle anderen Substanzen*) all other substances	5	*) **mit Ausnahme aller cancerogenen Substanzen, hier gilt Nachweisgrenze** with exception of all carcinogenic substances, detection limit applies here
LCI list 2012		
AgBB scheme 2012		

Anmerkungen zur Prüfung (neue Zeile mit [ALT] + [RETURN])
Comments on testing (new line with [ALT] + [RETURN])

ADAM_2012_08_3

Probenbezeichnung Name of the sample	**Flooring Atlantico Morena**
Aktenzeichen beim DIBt File number of DIBt	**II 44-1.156.613-500/11**
Prüfinstitut Testing laboratory	**Entwicklungs- und Prüflabor Holztechnologie GmbH**

Ergebnisüberblick
General view of the results

ADAM_2012_08_3

		3 Tage (days)					7 Tage (days)					28 Tage (days)				
												Keine Daten vorhanden - No data available				
		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_6 - C_{16})	191	0	≤ 10 mg/m³	0,2	≤ 0,3 mg/m³	125	0,1	≤ 0,5 mg/m³			0	0,0	≤ 1,0 mg/m³		
[B]	Σ SVOC (C_{16} - C_{22})	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)	0,546		keine none	0,5	≤ 0,5	0,415	0,4	≤ 0,5			0,000	0	≤ 1		
[D]	Σ VOC o. NIK without LCI	38		keine none	0,04	≤ 0,05 mg/m³	21	0,02	≤ 0,05 mg/m³			0	0,0	≤ 0,1 mg/m³		
[E]	Σ Cancerogene	0	0,00	≤ 0,01 mg/m³	0,000	≤ 0,001 mg/m³	0	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_6)	0					0					0				
[G]	VOC (C_6 - C_{16}) als Toluoläquivalent as toluene equivalent		←	Wert manuell eingeben! Enter value manually!				←	Wert manuell eingeben! Enter value manually!				←	Wert manuell eingeben! Enter value manually!		
[H]	Formaldehyd Formaldehyde	n.n.		keine none		≤ 0,060 mg/m³	n.n.			≤ 0,060 mg/m³		n.n.			≤ 0,120 mg/m³	

Emissionen nach 3 Tagen
Emission after 3 days

Flooring Atlantico Morena	Kommentar Comment	CAS-No.	RT [min]	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C_i [µg/m³]	SER_i [µg/m²h]	Zuordnung Classification [canc./NIK/o.NIK] [carc./LCI/no LCI]	R_i	lfd. Nr Serial number	ADAM_2012_08_3
gefundene Substanzen Detected substances	**Daten nur über den Button "Messergebnisse eingeben/löschen" in diese Tabelle eintragen** **Data to be entered only via the button "enter/delete results"**											
Essigsäure		64-19-7	5,80	VOC	a	1	43	53,75	1250	0,034	9-1	1
Hexanal		66-25-1	11,20	VOC	a	1	4	5,00	890	0,004	7-3	1
Furfural		98-01-1	12,60	VOC	a	1	6	7,50	20	0,300	7-17	1
N-Butyl ether		142-96-1	15,00	VOC	c	3	1	1,25	ohne NIK			0
Ethylenglykol-monobutylether		111-76-2	16,30	VOC	a	1	104	130,00	490	0,212	6-3	1
alpha-Pinen		7785-70-8	17,80	VOC	a	1	1	1,25	1500	0,001	3-2	1
Benzaldehyd		100-52-7	19,20	VOC	a	1	3	3,75	90	0,033	7-19	1
N.i.			21,20	VOC	c	3	6	7,50	ohne NIK			0
N.i.			21,30	VOC	c	3	6	7,50	ohne NIK			0
N.i.			21,90	VOC	c	3	10	12,50	ohne NIK			0
Diethylenglykol-monobutylether		112-34-5	28,10	VOC	a	1	3	3,75	670	0,004	6-5	1
.alpha.-Terpineol		98-55-5	28,70	VOC	a	1	1	1,25	ohne NIK			0
2-Hydroxy-iso-butyrophenone		7473-98-5	31,40	VOC	c	3	3	3,75	ohne NIK			0
N.i.			33,60	VOC	c	3	7	8,75	ohne NIK			0
Butanoic acid, butyl ester		109-21-7	34,50	VOC	c	3	9	11,25	ohne NIK			0
2-Propenoic acid, 1,7,7-trimethxlbicyclo[2.2.1]hept-2-yl ester		5888-33-5	34,80	VOC	c	3	1	1,25	ohne NIK			0

Legende
legend

VVOC = < C6
VOC = C6 - C16
SVOC = C16 - C22

a = substanzspezifisch
substance-specific
b = substanzähnlich
substance-like
c = Toluoläquivalent
toluene equivalent
d = DNPH

1 = Klasse 1
class 1
2 = Klasse 2
class 2
3 = Klasse 3
class 3

Emissionen nach 7 Tagen
Emission after 7 days

Flooring Atlantico Morena	Kommentar Comment	CAS-No.	RT [min]	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C_i [µg/m³]	SER_i [µg/m²h]	Zuordnung Classification [canc./NIK/o.NIK] [carc./LCI/no LCI]	R_i	lfd. Nr Serial number	ADAM_2012_08_3
gefundene Substanzen Detected substances	**Daten nur über den Button "Messergebnisse eingeben/löschen" in diese Tabelle eintragen** **Data to be entered only via the button "enter/delete results"**											
Essigsäure		64-19-7	5,80	VOC	a	1	30	37,50	1250	0,024	9-1	1
Hexanal		66-25-1	11,20	VOC	a	1	2	2,50	890	0,002	7-3	1
Furfural		98-01-1	12,60	VOC	a	1	5	6,25	20	0,250	7-17	1
Ethylenglykol-monobutylether		111-76-2	16,30	VOC	a	1	69	86,25	490	0,141	6-3	1
Benzaldehyd		100-52-7	19,20	VOC	a	1	1	1,25	90	0,011	7-19	1
N.i.			21,20	VOC	c	3	4	5,00	ohne NIK			0
N.i.			21,30	VOC	c	3	4	5,00	ohne NIK			0
N.i.			21,90	VOC	c	3	7	8,75	ohne NIK			0
Diethylenglykol-monobutylether		112-34-5	28,10	VOC	a	1	2	2,50	670	0,003	6-5	1
.alpha.-Terpineol		98-55-5	28,70	VOC	a	1	1	1,25	ohne NIK			0
2-Hydroxy-iso-butyrophenone		7473-98-5	31,40	VOC	c	3	2	2,50	ohne NIK			0
N.i.			33,60	VOC	c	3	6	7,50	ohne NIK			0
Butanoic acid, butyl ester		109-21-7	34,50	VOC	c	3	8	10,00	ohne NIK			0
2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester		5888-33-5	34,80	VOC	c	3	1	1,25	ohne NIK			0

Legende
legend

VVOC = < C6
VOC = C6 - C16
SVOC = C16 - C22

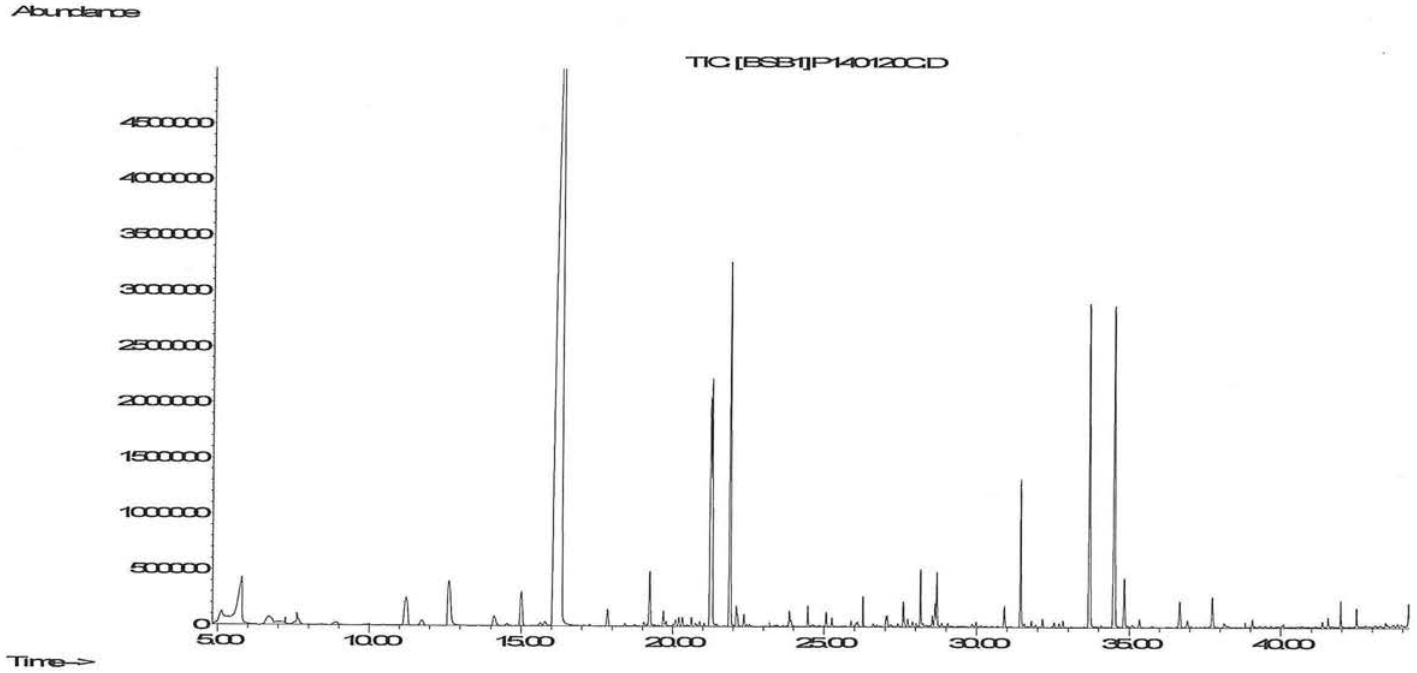
a = substanzspezifisch
substance-specific
b = substanzähnlich
substance-like
c = Toluoläquivalent
toluene equivalent
d = DNPH

1 = Klasse 1
class 1
2 = Klasse 2
class 2
3 = Klasse 3
class 3

Photo of the test specimen



Chromatogram after 3 days



Chromatogram after 7 days

