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Entwicklungs- und Prüflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden

Corkart – Industria de Corticas Ltd.  
Ms. Catarina Neves  
Parque Industrial de Vendas Novas, Lt. 20

7080-341 Vendas Novas

Portugal

Catarina.corkart@sapo.pt

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

## Test report Order number 271281/2013/3

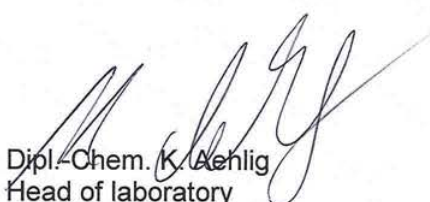
**Customer:** Corkart – Industria de Corticas Ltd.  
Parque Industrial de Vendas Novas, Lt. 20  
7080-341 Vendas Novas  
Portugal

**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.

Geschäftsführer:  
Dr.-Ing. Bernd Devantier  
Amtsgericht Dresden HRB 8072

Commerzbank AG  
Konto-Nr.: 04 002 982 00  
BLZ: 850 800 00



akkreditiert durch:  
**DAkkS**  
Deutsche  
Akkreditierungsstelle  
D-PL-11054-01-00

## 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 m<sup>2</sup>) 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 m<sup>2</sup>/m<sup>3</sup>  
Chamber volume: 0.225 m<sup>3</sup>

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.**



Dipl.-Ing. M. Broege  
Engineer in charge

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

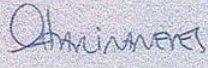
Name of the applicant (address/ stamp):	Industria de Cortiças, S.A. CORKART N.º 503-917 656 Zona Industrial, Lote 20 341 Vendas Novas	Manufacturer of the product (if deviating from the applicant):	
Factory in which the sample is taken:	CORKART VENDAS NOVAS	Sample drawer (please mark):	<input type="checkbox"/> testing laboratory <input checked="" type="checkbox"/> inspection body <input type="checkbox"/> manufacturer
		Name, company, telephone:	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-Nº.:	502013
Article-Nº.:	CK384N	Date of batch production:	WEEK 50

Date of sampling:	50/2013	Time of day:	
Sample is taken from	<input checked="" type="checkbox"/> the current production <input type="checkbox"/> store <input type="checkbox"/> retain samples	How had the product been stored prior to sampling?	<input type="checkbox"/> open <input checked="" type="checkbox"/> 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.):	
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Intended tests:
<input type="checkbox"/> Emission test DIBt (approval test) <input type="checkbox"/> Emission test DIBt (surveillance test) <input type="checkbox"/> Design characteristics <input type="checkbox"/> Other (PAK, nitrosamine, etc.)

<b>Confirmation</b> 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						
Prüfberichts-nr. Number of the test report	271281/2013/3						
Kunde/Antragsteller Client/Applicant	Corkart S.A.						
Produktname und Artikel-nr. Name of the product and material number	Flooring Atlantico Morena						
Aktenzeichen beim DIBt File number at DIBt	Stellen- zeichen	SVA-Nr.	Sachgebiet	lfd. Nr.	Jahr (2 Ziffern)	Unter- sachgebiet	
	-1.	-	-	-	-	-	
	II 44	156	613	500	11	B	
Art der Prüfung Type of testing	A	S <sub>0</sub>	S <sub>C</sub>	S <sub>CL</sub>			
	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!	<input type="checkbox"/> Textile Bodenbeläge - Textile floor coverings <input type="checkbox"/> Laminat und Paneele - Laminates and panels <input type="checkbox"/> Parkette und Holzfußböden - Parquet and wood floorings <input type="checkbox"/> Elastische Bodenbeläge - Resilient floor coverings <input type="checkbox"/> Beschichtungen - Coatings <input type="checkbox"/> Korkbodenbeläge - Cork floor coverings <input type="checkbox"/> Sportbodenbeläge - Surfaces for sport areas <input type="checkbox"/> Oberflächenbeschichtungen - Surface coatings <input type="checkbox"/> Bodenbelagskleber - Adhesives for floor coverings <input type="checkbox"/> Verlegeunterlagen - Underlayers <input type="checkbox"/> Sonstige Produkte - Other products						
	<i>Laminat und Paneele - Laminates and panels</i>		<i>Herstellerangaben Manufacturer's data</i>		<i>Prüfstellenangaben Testing laboratory's data</i>		
	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/m <sup>2</sup> ] Area weight [g/m <sup>2</sup> ]				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/m <sup>2</sup> ] Applied quantity [g/m <sup>2</sup> ]						
Fasen vorhanden? Bevels?			-		-		
Art der Verbindung der Laminatpaneelle 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

<b>Produktname - Name of the product</b>		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			
<b>Prüfung - Testing</b>			
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
<b>Prüfkammer - Test chamber</b>			
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		[m <sup>3</sup> ]	0,23
Fläche der Probe Area of the test specimen		[m <sup>2</sup> ]	0,09
Luftwechselrate Air exchange rate		[h <sup>-1</sup> ]	0,50
flächenspezifische Luftdurchflussrate q Area specific air flow rate		[mh <sup>-1</sup> ]	1,25
Temperatur Temperature		[°C]	23,0
relative Luftfeuchte relative humidity		[%]	50,0
<b>Berücksichtigungsgrenzen - Limits of consideration</b>		$C_i$ [µg/m <sup>3</sup> ]	
Substanzen mit NIK-Wert Substances with LCI value		5	
alle anderen Substanzen*) all other substances		5	
LCI list 2012			
AgBB scheme 2012			
*) mit Ausnahme aller cancerogenen Substanzen, hier gilt Nachweisgrenze with exception of all carcinogenic substances, detection limit applies here			
<b>Anmerkungen zur Prüfung</b> (neue Zeile mit [ALT] + [RETURN]) Comments on testing (new line with [ALT] + [RETURN])			

ADAM 2012\_08\_3

<b>Probenbezeichnung</b>		Flooring Atlantico Morena					
<b>Name of the sample</b>		Flooring Atlantico Morena					
<b>Aktenzeichen beim DIBt</b>		II 44-1.156.613-500/11					
<b>File number of DIBt</b>		II 44-1.156.613-500/11					
<b>Prüfinstitut</b>		Entwicklungs- und Prüflabor Holztechnologie GmbH					
<b>Testing laboratory</b>		Entwicklungs- und Prüflabor Holztechnologie GmbH					
<b>Ergebnisüberblick</b>		<b>3 Tage (days)</b>		<b>7 Tage (days)</b>		<b>28 Tage (days)</b>	
<b>General view of the results</b>						<b>Keine Daten vorhanden - No data available</b>	
ADAM_2012_08_3							
	<b>Ergebnisse results</b>	<b>AgBB Anforderungen requirements</b>	<b>Abbruchkriterien break-off criteria</b>	<b>Ergebnisse results</b>	<b>Abbruchkriterien break-off criteria</b>	<b>Ergebnisse results</b>	<b>AgBB Anforderungen requirements</b>
[A]	TVOC (C <sub>6</sub> - C <sub>16</sub> )	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>
	191	0	≤ 10 mg/m <sup>3</sup>	125	0,1	0	≤ 1,0 mg/m <sup>3</sup>
[B]	Σ SVOC (C <sub>16</sub> - C <sub>22</sub> )	0	keine none	0	0,00	0	≤ 0,1 mg/m <sup>3</sup>
[C]	R (dimensionless/dimensionalless)	0,546	keine none	0,415	0,4	0,000	0
[D]	Σ VOC o. NIK without LCI	38	keine none	21	0,02	0	≤ 0,1 mg/m <sup>3</sup>
[E]	Σ Cancerogene	0	≤ 0,01 mg/m <sup>3</sup>	0	0,000	0	≤ 0,001 mg/m <sup>3</sup>
<b>Dieser Block liefert zusätzliche Information</b> This part gives some additional information.							
[F]	TVOC (< C <sub>6</sub> )	0		0		0	
[G]	VOC (C <sub>6</sub> - C <sub>16</sub> ) 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	n.n.	≤ 0,060 mg/m <sup>3</sup>	n.n.	≤ 0,120 mg/m <sup>3</sup>

## Emissionen nach 3 Tagen

Emission after 3 days

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"	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C <sub>i</sub> [µg/m <sup>3</sup> ]	SER <sub>i</sub> [µg/m <sup>2</sup> h]	Zuordnung Classification [canc./NIK/o. NIK] [canc./LCI/no LCI]	R <sub>i</sub>	Ifd. Nr Serial number	ADAM_2012_08_3	Legende Legend	
											VOC = < C6 VOC = C6 - C16 SVOC = C16 - C22	a = substanzspezifisch substance-specific b = substanzähnlich substance-like c = Toluoläquivalent toluene equivalent d = DNPH
Essigsäure	64-19-7	5,80	VOC	a	1	43	53,75	1250	0,034	9-1	1	1 = Klasse 1 class 1
Hexanal	66-25-1	11,20	VOC	a	1	4	5,00	890	0,004	7-3	1	2 = Klasse 2 class 2
Furfural	98-01-1	12,60	VOC	a	1	6	7,50	20	0,300	7-17	1	3 = Klasse 3 class 3
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-butylprophenone	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-trimethylbicyclo[2,2,1]hept-2-yl ester	5888-33-5	34,80	VOC	c	3	1	1,25	ohne NIK			0	

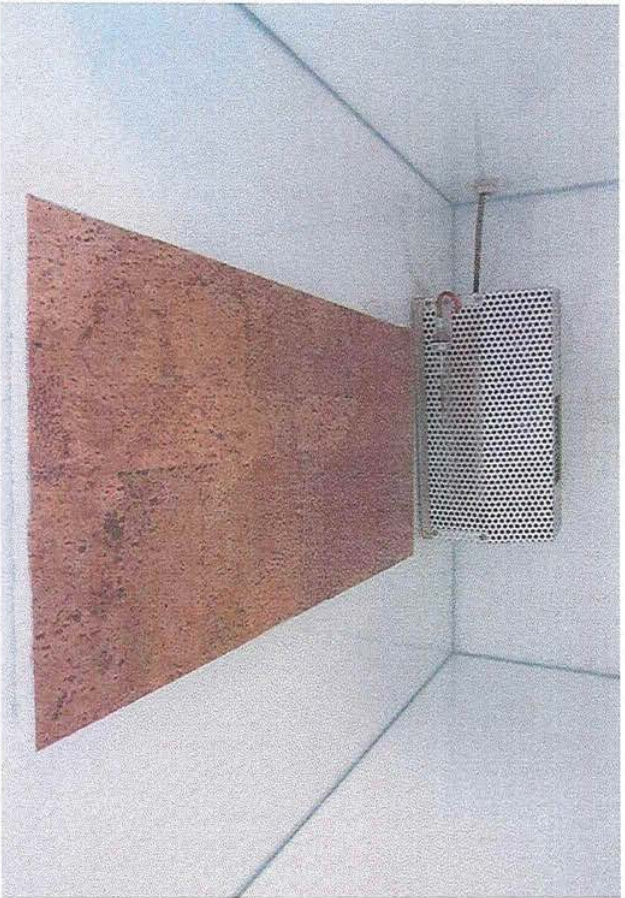


## Emissionen nach 7 Tagen

Emission after 7 days

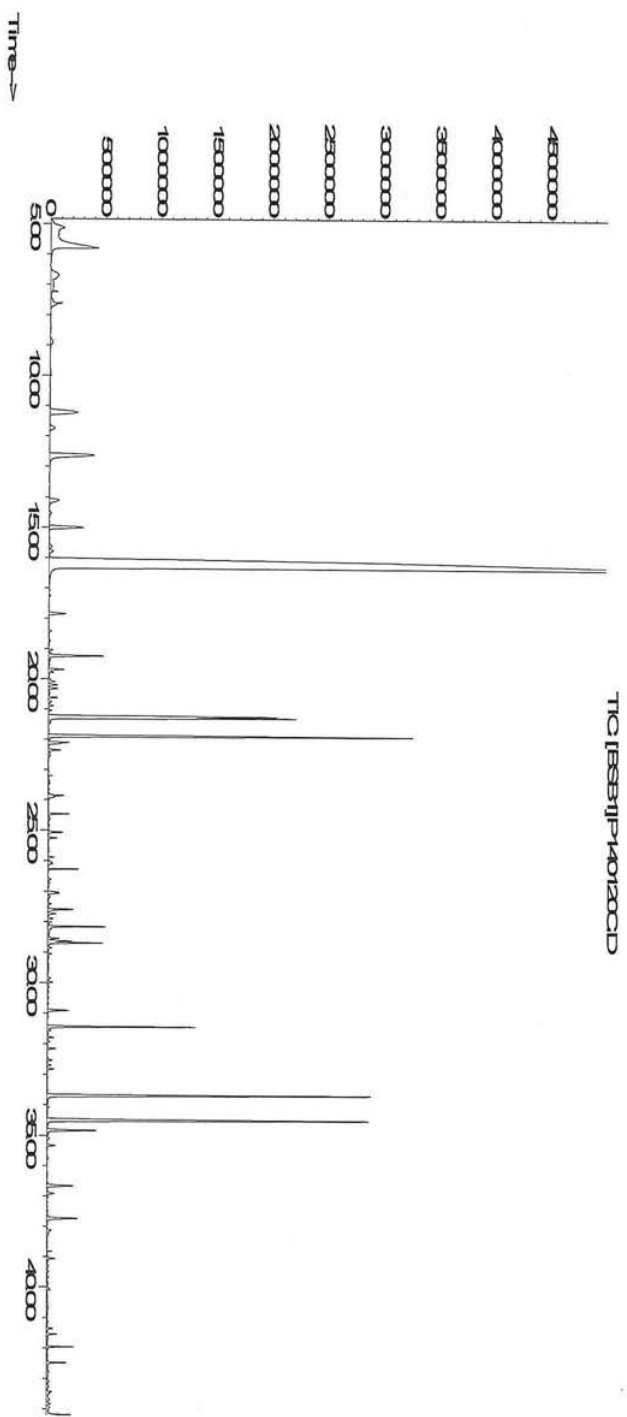
gefundene Substanzen Detected substances	Kommentar Comment	CAS-No.	RT [min]	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C <sub>1</sub>	SER <sub>1</sub>	Zuordnung Classification	R <sub>1</sub>	lfd. Nr Serial number	Legende legend	
							[µg/m <sup>3</sup> ]	[µg/m <sup>2</sup> h]	[canc./NIK/o. NIK] [canc./LCI/no LCI]				
<b>Daten nur über den Button "Messergebnisse eingeben/löschen" in diese Tabelle eintragen</b> 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	ADAM_2012_08_3  VOC = < C8 VOC = C6 - C16 SVOC = C16 - C22  a = substanzspezifisch substanz-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
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	
Dietylenglykol-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-butylphenone		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	

**Photo of the test specimen**



# Chromatogram after 3 days

Abundance



# Chromatogram after 7 days

Abundance

TIC P140124.D

