

Fraunhofer Institute for Wood Research  
Wilhelm-Klauditz-Institut WKI

Director  
Prof. Dr. Bohumil Kasal

Bienroder Weg 54 E  
38108 Braunschweig | Germany

Andrea Schulze

Material Analysis & Indoor Chemistry  
Phone + 49 531 2155-394 | Fax + 49 531 2155-905  
sample\_info@wki.fraunhofer.de  
www.wki.fraunhofer.de

Fraunhofer WKI | Bienroder Weg 54 E | 38108 Braunschweig | Germany

RIF Ametist Ltd  
Attn: Ms. Medvedeva Olesya  
2-y Pyatiletki Str.

140730 Roshal, Moscow Region  
Russland - Russia

Braunschweig, 03.05.2017

### Test report No. MAIC-2017-2003

<b>Customer:</b>	RIF Ametist Ltd, Roshal, Moscow Region.	
<b>Object of the test:</b>	Chamber emission test of a foam sample.	
<b>Contents:</b>	1. Sample description	Page 2
	2. Methods	Page 2
	3. Results	Page 2

This report comprises 4 pages.

The test report may be made available or duplicated only in its unabridged form. Publication in excerpt form is subject to the written consent of the Fraunhofer Institute for Wood Research – Wilhelm-Klauditz-Institut (WKI). The test results refer solely to the objects tested. The tested material was used up.

### Sample description:

WKI no.	Date of reception	Sample Name (this information is provided by the customer)	Product No.	Manufacturer-Code	Date-Stamp
P61511	25.04.2017	HR3538 Extra	979	RIF Ametist	n.a.

(Sample P61511: aluminum foil/wrapped separately, wrapping ok)

Notice: Oversized samples as in this order can only be stored for two weeks after the report date. They will be disposed without further notice. Please contact us soon if the 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:

#### Chamber emission test:

The sample was tested in the emission test chamber without prior conditioning. After defined times samples of the chamber air were collected on sorbent tubes (Tenax TA) and analyzed on a thermal desorption-GC/MS system. Compounds were identified using MS-Spectra libraries, quantification was done using pure reference compound mixtures. The described method covers volatile organic compounds from C5 to C22 and has a limit of determination of approx. 1 µg/m<sup>3</sup>. 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 measurements were performed according to DIN EN ISO 16000 part 6, 9 and 11.

### Results:

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

### Results of the chamber emission test of sample P61511 (HR3538 Extra)

CAS-No.	Substance	Concentration in $\mu\text{g}/\text{m}^3$ after			Info
		5h	24h	48h	
000071-36-3	n-Butanol	131	20	2	bd
000108-88-3	Toluene	7	1	< 1	bdhp
000127-18-4	Tetrachloroethene	2	< 1	< 1	dip
000123-86-4	n-Butyl acetate	9	3	1	bd
	Ketone (Toluene)	12	2	< 1	
000142-96-1	Dibutyl ether	11	1	< 1	d
000141-32-2	Butyl acrylate	24	11	4	bd
000590-01-2	Butyl propionate	8	3	1	
000124-19-6	n-Nonanal	2	2	< 1	bd
	Sum VVOC (< C6):	< 1	< 1	< 1	
	Sum VOC (C6-C16):	206	43	8	
	Sum SVOC (> C16):	< 1	< 1	< 1	
	TVOC <small>Toluene equivalents (ISO 16000-6)</small> :	111	22	< 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, underestimation 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.

The TVOC Toluene equivalents has no requirement level and is reported solely for information purposes.

#### Parameters of the emission chamber test:

Chamber type: 500l-stainless steel chamber 5

Climatic conditions: 23 °C, 50 % r.h.

**Air exchange: 1.16 h<sup>-1</sup>**

**Loading factor: 1.16 m<sup>2</sup>/m<sup>3</sup>**

Test started: 27.04.2017 08:27:37

Sampling: Tenax TA

Analysis: Thermal desorption GC/MS



Photo of the tested sample part.

**Evaluation according to IOS-MAT 0010 (Ver. AA-10911-13)**

Substance class	Present		Level				
	Yes	No	Traces	Low	Moderate	High	Very high
Emission of volatile organic compounds Compounds: n-Butanol, butyl acrylate.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emission of odor relevant compounds Compounds: n-Butanol, toluene, tetrachloroethene, n-butyl acetate, dibutyl ether, butyl acrylate, n-nonanal.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emission of toxic compounds Compounds:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<b>Evaluation after:</b>		<b>48 hours</b>			
Sum of VOC requirements <sup>1</sup> [ $\leq 1.2 \text{ mg/m}^3$ ] fulfilled?					<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No
Acute toxic/STOT VOC <sup>2</sup> requirements <sup>3</sup> fulfilled?					<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No
Chronic toxic VOC <sup>2</sup> requirements <sup>3</sup> fulfilled?					<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No

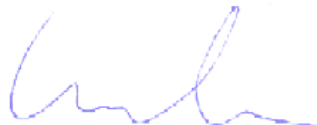
<sup>1</sup> according to IOS-MAT-0010; <sup>2</sup> according to EG-GHS-regulation; <sup>3</sup>  $\leq 10 \text{ } \mu\text{g/m}^3$  individual CMR-substance cat. 1A+1B and  $\leq 50 \text{ } \mu\text{g/m}^3$  sum of all CMR-substances cat. 1A+1B and  $\leq 30 \text{ } \mu\text{g/m}^3$  each individual acute toxic substance class 1+2+3 and specific target organ toxic substance class RE1+SE1.

**Remarks:** The sample material was a weak source of volatile organic compounds (VOC). The odorous compounds n-butanol, toluene, tetrachloroethene, n-butyl acetate, dibutyl ether, butyl acrylate and n-nonanal were detected in trace concentrations.

Officer in Charge


  
 A. Schulze

For the department


  
 Dr. E. Uhde