

Fraunhofer WKI | Bienroder Weg 54 E | 38108 Braunschweig

Berkvens B.V.  
Attn: Herr Joost Baerselmann  
Kanaaldijk Noord 24

Postbus 2  
5710 AA Someren  
Niederlande - Netherlands

Fraunhofer Institut für Holzforschung  
Wilhelm-Klauditz-Institut WKI

Institutsleiter  
Prof. Dr. -Ing. Bohumil Kasal

Bienroder Weg 54 E  
38108 Braunschweig | Germany

Anette Ligarski

Materialanalytik & Innenluftchemie  
Phone + 49 531 2155-359 | Fax + 49 531 2155-905  
sample\_info@wki.fraunhofer.de  
www.wki.fraunhofer.de

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## Test report No. MAIC-2022-3321

**Customer:** Berkvens B.V., Someren.

**Objective of the test:** Testing and evaluation of a door sample according to the Blue Angel criteria for "Low-emission floor coverings, panels and doors of interiors made of wood and wood-based materials" (DE-UZ 176).

<b>Contents:</b>	1. Summary	Page 2
	2. Sample description	Page 4
	3. Methods	Page 4
	4. Parameters of the chamber emission tests	Page 5
	5. Annex	Page 7

This report comprises 10 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.

## Summary

The Fraunhofer WKI Braunschweig, Department Material Analysis and Indoor Chemistry, was commissioned by Berkvens B.V. with the emission testing of a door sample (60+ fitec ). The tests were carried out according to the Blue Angel basic award criteria for "Low-emission floor coverings, panels and doors of interiors made of wood and wood-based materials"- DE-UZ 176, (edition January 2013, ver. 7) in consideration of the AgBB evaluation scheme 2021, LCI List 2020. The test results are summarized in the table below.

Detailed results of the emission test can be found in the annex (Table 1).

### Evaluation of the results of sample P95577 (60+) fitec according to the Blue Angel criteria DE-UZ 176.

Parameter	Measured values	3 <sup>rd</sup> day	Measured value (after 7 days)	28 <sup>th</sup> day
		Requirements		Requirements
TVOC [mg/m <sup>3</sup> ]	0.175	≤ 3	0.099	≤ 0.3
TSVOC [mg/m <sup>3</sup> ]	< 0.005	-	< 0.005	≤ 0.1
Carcinogenic substances [µg/m <sup>3</sup> ]	< 1	≤ 10 (total)	< 1	≤ 1 (per single value)
Sum VOC without LCI [mg/m <sup>3</sup> ]	< 0.005	-	< 0.005	≤ 0.1
R-value	0.354	-	0.262	≤ 1
Formaldehyde [ppm]	0.017 (21 µg/m <sup>3</sup> )	-	0.015 (18 µg/m <sup>3</sup> )	≤ 0.05
<b>Requirements acc. to DE-UZ 176 fulfilled?</b> (Edition January 2013, Ver. 7)		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The boundary conditions selected as part of the emission test corresponded to the test specifications for doors according to the Blue Angel basic award criteria.

**The tested sample material met the requirements for "Low-emission floor coverings, panels and doors of interiors made of wood and wood-based materials"- DE-UZ 176 (edition January 2013, ver. 7).**

The break off criteria after 7 days were tested and could be applied.

## Summarized results of the evaluation acc. to AgBB scheme for sample P95577 (60+ fitec )

Parameter	Measured values	3 <sup>rd</sup> day	Measured values (after 7 days)	28 <sup>th</sup> day
		Requirements		Requirements
TVOC [mg/m <sup>3</sup> ]	0.175	≤ 10	0.099	≤ 1.0
TSVOC [mg/m <sup>3</sup> ]	< 0.005	-	< 0.005	≤ 0.1
Carcinogenic substances [mg/m <sup>3</sup> ]	< 0.001	≤ 0.01	< 0.001	≤ 0.001
VOC without LCI [mg/m <sup>3</sup> ]	< 0.005	-	< 0.005	≤ 0.1
R-value	0.354	-	0.262	≤ 1
<b>Requirements acc. to AgBB scheme fulfilled?</b> (Version June 2021, LCI list 2020)		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The tested sample material met the requirements of the AgBB scheme "Health-related evaluation for Volatile Organic Compound Emissions from Building Products (AgBB scheme 2021, LCI list 2020)".

**Table 1.** Results of the emission test of sample Probe P95577 (60+ fitec).

RT	CAS-No.	Substance	Concentration in µg/m³ after		Ri-value after		Info <sup>6</sup>	LCI-list 2020	
			3d	7d	3d	7d		No.	Value
<b>analysis acc. to DIN ISO 16000-3</b>									
	000050-00-0	Formaldehyde	21	18	0.210	0.180	<C6bag	7-22	100
	000075-07-0	Acetaldehyde	3	2			<C6bdg	7-20	300
	000107-02-8	Acrolein	<2	<2			<C6bad	7-23	14
	000123-38-6	Propanal	<2	<2			<C6bd	7-21	650
	000123-72-8	Butanal	<2	<2			<C6bd	7-1	650
	000067-64-1	Acetone	4	4			<C6b	8-10	120000
<b>analysis acc. to DIN ISO 16000-6</b>									
6.66	000108-05-4	Vinyl acetate (Toluene)	4	3			<C6cd		
7.31	000064-19-7	Acetic acid	162	94	0.135	0.078	bd	9-1	1200
14.75	000108-88-3	Toluene	1	1			bdhp	1-1	2900
18.41	000098-01-1	2-Furaldehyde	2	1			abd	7-17	10
21.66	000108-94-1	Cyclohexanone	1	1			bd	8-5	410
26.30	000111-90-0	Ethyl diglycol	1	<1			b	6-38	350
37.93		Terpene (Toluene)	6	4	0.004		b	3-5	1400
40.01		Terpene (Toluene)	7	5	0.005	0.004	b	3-5	1400
		Sum of WVOC (< C6) <sup>1</sup> :	<5	<5					
		Sum of VOC (C6-C16) as TVOC <sup>original response</sup> *1,2:	175	99					
		Sum of VOC (C6-C16) as TVOC <sup>Toluene</sup> according to DIN EN 16516 <sup>1,3</sup> :	33	18					
		Sum of VOC (C6-C16) as TVOC <sup>Toluene</sup> according to DIN EN ISO 16000-6 <sup>4</sup> :	42	25					
		Sum of SVOC (> C16) <sup>1</sup> :	<5	<5					
		Sum of VOC without LCI <sup>1</sup> :	<5	<5					
		Sum of carcinogen <sup>5</sup> :	<1	<1					
		R-value (sum of Ri-values, dimensionless)			0.354	0.262			

(The fragments/substances shown in subscript were used for the quantification)

<sup>1</sup>Limit value of consideration is 5 µg/m³

<sup>2</sup>LCI-substances were quantified with the original response and non-LCI substances were quantified with toluene.

<sup>3</sup>Sum of TVOC<sup>original response</sup> quantified with toluene

<sup>4</sup>Sum of all measured VOC quantified with toluene

<sup>5</sup>Sum of carcinogenic substances acc. to AgBB-scheme

<sup>6</sup>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;