UL Environment, Inc.
Mr. Fleckner
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Test Report No. 50273-007

Client:	**UL Environment, Inc. Marietta**
Sample description by client:	**PU Montage Adhesive (610) 457612-405194, Sample ID: 1020**
Sampling by:	Akkim Yapi Kimyasallari, Mr. Ender Sarigul
Date of arrival of sample:	05.05.2015
Date of report:	15.07.2015
Number of pages of report:	7
Testing parameter:	see table of contents
Testing laboratory:	eco-INSTITUT Germany GmbH, Cologne

Content

Sample view

Internal Sample-no.	Description by customer	Condition upon delivery	Type of sample
A004	Sample ID: 1020	without objection	sample

Test Report

1 Emission test

1.1 Volatile Organic Compounds (VOC)

Definition of terms:

VOC (volatile organic compounds)	All individual materials with a concentration ≥ 0,001 mg/m³ in retention range C_6 (n-Hexane) to C_{16} (n-Hexadecane) Substances refer to LCI lists / AgBB (DIBt)
$TVOC_{tol}$ (Total volatile organic compounds)	Sum of all individual substances in retention range C_6 to C_{16} as toluene equivalent (DIN ISO 16000-6).
Identified and calibrated substances ($c_{id\ sub}$), substance specific calculated	Spectrum and retention time are concordant with the calibrated comparison substance

Test method TS 16516 with following parameters:

Preparation of test sample:	Date:	09.06.2015
	Pre-treatment:	According to GEV-emicode requirements for sealants. Sample preparation using a custom made form. Width: 10 mm, depth: 3 mm
	Masking of backside:	not applicable
	Masking of edges:	not applicable
	Relationship of unmasked edges to surface:	not applicable
	Charging:	related to area
	Dimensions:	8.75 cm x 1 cm (3 mm depth)
Test chamber conditions::		
	Chamber volume:	0.125 m^3
	Temperature:	23 °C
	Relative humidity:	50 %
	Air pressure:	normal
	Air:	cleaned
	Air change rate:	0.5 h^{-1}
	Air velocity:	0.3 m/s
	Loading:	0.007 m^2/m^3
	Specific air flow rate:	71.429 $m^3/m^2 \cdot h$
	Air sampling:	28 days after test chamber loading
Analytics:	DIN ISO 16000-3	
	Limit of determination:	2 µg/m^3
	DIN ISO 16000-6	
	Limit of determination:	1 µg/m^3

Measurement time 28 days after test chamber loading

1.1.1 VOC / TVOC 28d

Test parameter:
Volatile organic compounds (VOC), test chamber, air sampling 28 days after test chamber loading

Test result:

Sample:	A004: Sample ID: 1022

No.	Substance	CAS No.	Concentration (Test chamber air) [µg/m³]
VOC_{28d}: Identified and calibrated substances in accordance with LCI list/AgBB, substance specific calculated ($c_{id\ sub}$)			
1	**Aromatic hydrocarbons**		
1-1	Toluene	108-88-3	n.d.
1-2	Ethylbenzene	100-41-4	n.d.
1-4	p-Xylene	106-42-3	4
1-5	m-Xylene	108-38-3	
1-6	o-Xylene	95-47-6	2
1-11	1,2,4-Trimethylbenzene	95-63-6	n.d.
1-25	Styrene	100-42-5	n.d.
6	**Glycols, Glycol ethers, Glycol esters**		
6-3	Ethylene glycol monobutyl ether	111-76-2	n.d.
11	**Chlorinated hydrocarbons**		
11-1	Tetrachlorethene	127-18-4	n.d.
VOC_{28d}: Further identified and calibrated substances in addition with LCI list/AgBB, substance specific calculated ($c_{id\ sub}$)			
1	**Aromatic hydrocarbons**		
	Benzene	71-43-2	n.d.
11	**Chlorinated hydrocarbons**		
	1,4-Dichlorbenzene	106-46-7	n.d.

n.d. = not detectable

Total volatile organic compounds (Toluene Equivalent DIN ISO 16000-6)	Concentration (test chamber air) [µg/m³]
$TVOC_{tol,28d}$	**70**

1.1.1.1 Formaldehyde$_{28d}$ and Acetaldehyde$_{28d}$

Test parameter:
Formaldehyde and Acetaldehyde, test chamber, air sampling 28 days after test chamber loading

Test method:

Preparation of test sample:	according to DIN EN 717-1 see Volatile organic compounds	
Test chamber conditions:	DIN EN 717-1 with the following deviations: - No determination of the equilibrium concentration; the formaldehyde emission is indicated at a measuring point as determined above. - Chamber volume: see Volatile organic compounds - Relative humidity: 50% - Air change rate and loading: see Volatile organic compounds Emission chamber parameters: see volatile organic compounds	
	Air sampling:	28 days after test chamber loading
Analytics:	DIN ISO 16000-3	
	Limit of determination:	2 µg/m³ ≈ 0.002 ppm

Test result:

Sample:	A004: Sample ID: 1022

Substance	**Concentration** (Test chamber air) **[µg/m³]**	**Concentration** (Test chamber air) **[ppm]**
Formaldehyde	< 2	< 0.002
Acetaldehyde	< 2	-

2 Phthalates, chamber air analytics

Test parameter:
Phthalates, chamber air analytics

Test method:

Analytics:	DIN ISO 16000-6
Limit of determination:	1 µg/m³

Test result:

Sample: A004: Sample ID: 1022

Substance	Content (Test chamber air) [µg/m³]
Dibutylphthalate (DBP)	n.d.
Diethylhexylphthalate (DEHP)	n.d.

n.d.: not detectable

Cologne, 15.07.2015

Michael Stein, Dipl.-Chem.
(Deputy Technical Manager)