



eco-INSTITUT Germany GmbH

Laborprüfung
Laboratory testing
Zertifizierung
Certification



EVALUATION

for eco-INSTITUT-Label Certification



Nach DIN EN ISO/IEC 17025 akkreditiertes Prüflabor



Certification Report No. 55357-001-002

Test objective:	Evaluation according to eco-INSTITUT-Label-criteria
Scope of certification:	<p>Latex mattress Pincore* Latex pillow Oval* C. Fusion Latex Mattress* C. Fusion Latex Pillow*</p> <p><small>*This certification is valid only for the foam. Any other materials that might be used in combination with the foam (e.g. cover materials or adhesives) are excluded from the certification.</small></p>
Sample description by client:	<p>C. Fusion Latex Pillow, Oval Pillow Natural Latex mattress core</p>
Customer:	<p>LIEN A Co., Ltd. 55/1A Khuong Viet Street Phu Trung Ward, Tan Phu District Viet Nam- Ho Chi Minh City, Vietnam</p>
Sampled by:	Le Huu Nghi, International Environment Co. Ltd, Ho Chi Minh City, Vietnam
Date of sampling:	18.06.2020
Location of sampling:	at the client
Date of production:	15.06.2020
Date of arrival of sample:	03.07.2020
Test period:	03.07.2020 - 30.07.2020
Date of report:	19.08.2020
Number of pages of report:	30
Testing laboratory:	<p>eco-INSTITUT Germany GmbH, Cologne except ‡ subcontracted # outside accreditation</p>
Test objective fulfilled:	✓
Note:	<p>The report immediately loses its validity upon changes to the composition or the production method of the certified product. The publication of extracts of the report requires the prior written approval of eco-INSTITUT Germany GmbH. More information at www.eco-institut.de/en/advertising</p>



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Sample View

Internal Sample-no.	Description by customer	Condition upon delivery	Type of sample
A001	C. Fusion Latex Pillow, Oval Pillow	without objection	Latex Pillow
A002	Natural Latex mattress core	without objection	Mattress core



A001: C. Fusion Latex Pillow, Oval Pillow

A002: Natural Latex mattress core

Evaluation[#]

Representative for the products

Latex mattress Pincore*

Latex pillow Oval*

and

C. Fusion Latex Mattress*

C. Fusion Latex Pillow*

the materials listed in the Sample View were submitted to laboratory tests on behalf of **LIEN A Co., Ltd.** for an ecological product examination according to the eco-INSTITUT-Label test criteria "mattresses/beddings" (status: September 2018).

The results documented in the test report were evaluated as follows.¹

A001: C. Fusion Latex Pillow, Oval Pillow

A002: Natural Latex mattress core

P11 Complete mattress

Test parameters	Result	Limit Value	Within limits [yes/no]
Emission analysis			
Measurement time: 2 days after test chamber loading			
TVOC (total volatile organic compounds including SVOC with LCI)	19 µg/m ³	≤ 400 µg/m ³	yes
CMR 1: VOC (incl. WOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B; TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A; DFG (MAK list): Categories III1, III2 (Sum)	< 1 µg/m ³	≤ 1 µg/m ³	yes
Formaldehyde	2 µg/m ³	≤ 24 µg/m ³	yes
Acetaldehyde	2 µg/m ³	≤ 24 µg/m ³	yes
Measurement time: 7 days after test chamber loading			
CMR 1: VOC (incl. WOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B; TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A; DFG (MAK list): Categories III1, III2 (Sum)	< 1 µg/m ³	≤ 1 µg/m ³	yes

¹ If a measurement result that slightly exceeds the specification is assessed as "not fulfilled", this is based on the agreement of the "shared risk of measurement uncertainty (shared risk approach)". According to this, the probability that the statement is correct is ≥ 50%. Similarly, a result slightly below the specification value also only has a probability of ≥ 50 % of being compliant. I.e., the risk of making a false negative statement regarding the fulfilment of the specification is just as high as the risk of making a false positive statement (more information at https://www.eco-institut.de/en/2019/07/measurement_uncertainty/).

Test parameters	Result	Limit Value	Within limits [yes/no]
CMR 2: CMR: VOC (incl. VOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 2, Muta. 2, Repr. 2; TRGS 905: K3; IARC: Group 2B; DFG (MAK list): Category III3 (Sum)	2 µg/m ³	≤ 50 µg/m ³	yes
TVOC (total volatile organic compounds including SVOC with LCI)	14 µg/m ³	≤ 200 µg/m ³	yes
TSVOC (total semi-volatile organic compounds)	< 1 µg/m ³	≤ 40 µg/m ³	yes
VOC (Sum) without LCI	9 µg/m ³	≤ 100 µg/m ³	yes
Sensitising compounds with the following categorisations: DFG (MAK list): Category IV, German Federal Institute for Risk Assessment lists: Cat A, TRGS 907 (Sum)	< 1 µg/m ³	≤ 100 µg/m ³	yes
Bicyclic terpenes (Sum)	< 1 µg/m ³	≤ 200 µg/m ³	yes
C9 - C14 Alkanes / Isoalkanes (Sum)	< 1 µg/m ³	≤ 200 µg/m ³	yes
C4 - C11 Aldehydes, acyclic, aliphatic (Sum)	< 2 µg/m ³	≤ 100 µg/m ³	yes
C6 - C15 Alkyl benzenes (Sum)	< 1 µg/m ³	≤ 100 µg/m ³	yes
Cresols (Sum)	< 1 µg/m ³	≤ 5 µg/m ³	yes
Xylene (Sum)	< 1 µg/m ³	≤ 100 µg/m ³	yes
VOC (individual substances):			
Styrene	< 1 µg/m ³	≤ 10 µg/m ³	yes
Phenole	< 1 µg/m ³	≤ 20 µg/m ³	yes
Methylisothiazolinone (MIT)	< 1 µg/m ³	≤ 1 µg/m ³	yes
Benzaldehyde	< 1 µg/m ³	≤ 20 µg/m ³	yes
2-Ethyl-1-hexanol	< 1 µg/m ³	≤ 100 µg/m ³	yes
Ethylen glycol monobutylether	< 1 µg/m ³	≤ 100 µg/m ³	yes
2-Hexoxyethanol	< 1 µg/m ³	≤ 100 µg/m ³	yes
Methylisobutylketone	< 1 µg/m ³	≤ 100 µg/m ³	yes
2-Butoxyethylacetate	< 1 µg/m ³	≤ 200 µg/m ³	yes
2-Phenoxyethanol	< 1 µg/m ³	≤ 30 µg/m ³	yes
Propylene glycol (Propane-1,2-diol)	< 1 µg/m ³	≤ 60 µg/m ³	yes
Glycol ethers with insufficient data* (Limit value per single substance):	< 0.0025 ppm	< 0.0025 ppm	yes
R-Value	0.01	≤ 1.0	yes

* cf. Announcement of the Ad-hoc Working Group on Indoor Guidelines of the Indoor Air Hygiene Committee and of the Supreme State Health Authorities: Richtwerte für Glykolether und Glykolester in der Innenraumluft, Bundesgesundheitsblatt, February 2013, Volume 56, Issue 2, pp 286-320.
An exceedance of this limit value will not yet result automatically in a refusal.



P11 Complete mattress

Test parameter	Result	Limit value	Within limits [yes/no]
Emission test			
Nitrosamines (only latex products)	< q.l.	≤ 0.1 µg/m ³	yes
Disulphide (only latex products)	1	≤ 50 µg/m ³	yes
Odour	A001 A002 Grade 2.5	≤ Grade 3 (24 hours after loading of desiccator)	yes

P31 Upholstery / padding materials: Latex

Test parameter	Sample	Result	Limit value	Within limits [yes/no]
Content analysis				
Polymer content (NR: natural rubber)	A002	100 % NR	not applicable	not applicable
Filler content	A002	0.0 %	≤ 5 %	yes
Filler content	A001	4 %	≤ 5 %	yes

P12 Complete furniture

Test parameter	Sample	Result	Limit value	Within limits [yes/no]
Content analysis				
AOX (Absorbable organic halogenated compounds)	A001	< q.l.	≤ 1.0 mg/kg	yes
EOX (Extractable organic halogenated compounds)	A001	< q.l.	≤ 2 mg/kg	yes

< q.l. = Value below quantification limit

Summary evaluation[#]

Representative for the products

Latex mattress Pincore*

Latex pillow Oval*

and

C. Fusion Latex Mattress*

C. Fusion Latex Pillow*

the materials listed in the Sample View were submitted to laboratory tests on behalf of **LIEN A Co., Ltd.** for the acquisition of the eco-INSTITUT-Label.

The eco-INSTITUT-Label criteria were successfully fulfilled.

As a result of the successful ecological product examination the

eco-INSTITUT-Label

is awarded for the product/s:



Latex mattress Pincore*
Latex pillow Oval*

[#]This certification is valid only for the foam. Any other materials that might be used in combination with the foam (e.g. cover materials or adhesives) are excluded from the certification.

for a period of two years.

Certification number	ID 0310 – 12246 - 001
Test report Number	55357-001-002
Validity	06/2022

and for the product/s:



C. Fusion Latex Mattress*
C. Fusion Latex Pillow*

[#]This certification is valid only for the foam. Any other materials that might be used in combination with the foam (e.g. cover materials or adhesives) are excluded from the certification

for a period of two years.

Certification number	ID 0820 – 12246 - 002
Test report Number	55357-001-002
Validity	06/2022

After expiration of two years it is possible to acquire the eco-INSTITUT-Label for another two year period. For this a pre-certification review and a laboratory test will be accomplished according to the latest eco-INSTITUT-Label test criteria.

Cologne, 19.08.2020



Vanessa Laumann, Dipl.-Chem.
(Project Manager)

Laboratory report

1 Emission analysis

Test method

DIN EN 16516:2018-01 | Testing and evaluation of the release of dangerous substances;
determination of emissions into indoor air

A001, A002, Preparation of test sample

Date: | 10.08.2020
Sample preparation: | not applicable
Masking of backside: | no
Masking of edges: | no
Relationship of unmasked edges to surface: | not applicable
Loading: | related to area
Dimensions: | 5.6 cm x 5.5 cm x 15.5 cm (A002) + 6.5 cm x 8 cm x 10 cm (A001)

B001, B002, Test chamber conditions according to DIN ISO 16000-9:2008-04

Chamber volume: | 0.125 m³
Temperature: | 23°C ± 1°C
Relative humidity: | 50 % ± 1 %
Air pressure: | normal
Air: | cleaned
Air change rate: | 0.5 h⁻¹
Air velocity: | 0.3 m/s
Loading: | 0.65 m²/m³
Specific air flow rate: | 0.769 m³/(m² · h)
Air sampling: | 2 days after test chamber loading
| 7 days after test chamber loading

Analytics

Aldehydes and Ketones | DIN ISO 16000-3:2013-01
Limit of determination: | 2 µg/m³
Volatile Organic Compounds | DIN ISO 16000-6:2012-11
Limit of determination: | 1 µg/m³ (1,4-Cyclohexanedimethanol, Diethylene glycol,
1,4-Butanediol: 5 µg/m³)
Note for analysis: | not specified

1.1 Sample A001, Sample A002, Volatile Organic Compounds after 2 days

Test objective:

Volatile Organic Compounds (VOC), test chamber, air sampling 2 days after test chamber loading

Test result:

Sample:

A001: C. Fusion Latex Pillow, Oval Pillow
 A002: Natural Latex mattress core

No.	Substance	CAS No.	RT [min]	Concentration+	Toluene-equivalent	CMR Classifi- cation++	LCI AgBB 2018 [µg/m³]	R-value
				Substances ≥ 1 µg/m³ [µg/m³]	Substances ≥ 5 µg/m³ [µg/m³]			
2	Aliphatic hydrocarbons (n-, iso- and cyclo-)							
2-10.3	n-Undecane	1120-21-4	15.27	1			6000	0.00
6	Glycols, Glycol ethers, Glycol esters							
6-22	2-Butoxyethyl acetate (Ethylene glycol butylether acetate)	112-07-2	14.84	4		III4	2200	0.00
7	Aldehydes							
7-7	Nonanal	124-19-6	15.42	2			900	0.00
7-20	Acetaldehyde	75-07-0		2		Carc. 2	1200	0.00
7-22	Formaldehyde	50-00-0		2		Carc. 1B Muta. 2	100	0.02
9	Acids							
9-1	Acetic acid	64-19-7	4.7	4			1200	0.00
13	Other identified substances in addition to LCI list							
	Benzothiazole	95-16-9	18.81	6				
	Hexamethylcyclotrisiloxane (D3)	541-05-9	8.7	2				

+ identified and calibrated substances, substance specific calculated

++ Classification according to Regulation (EG) N° 1272/2008: Categories Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B, TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A, DFG MAK-list: Kategorie III1 and III2

* unidentified substances, calculated as toluene equivalent reported with significant mass fragments as mass-to-charge ratio (m/z)

Carcinogenic, mutagenic and reproductive toxic components*	Concentration after 2 days [µg/m³]	SERa [µg/(m² · h)]
CMR 1: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B; TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A; DFG (MAK list): Categories III1, III2 (Sum)	< 1	< 0.77
C 1: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EG) Nr. 1272/2008: Category Carc. 1A u. 1B (Sum)	< 1	< 0.77

TVOC, Total volatile organic compounds	Concentration after 2 days [µg/m³]	SERa [µg/(m² · h)]
Sum of VOC according to DIN EN 16516	< 5	< 3.85
Sum of VOC according to AgBB 2018 / DIBt	< 5	< 3.85
Sum of VOC according to eco-INSTITUT-Label	19	15
Sum of VOC according to ISO 16000-6	15	12

TSVOC, Total semi volatile organic compounds	Concentration after 2 days [µg/m³]	SERa [µg/(m² · h)]
Sum of SVOC according to DIN EN 16516	< 5	< 3.85
Sum of SVOC without LCI according to AgBB 2018 / DIBt	< 5	< 3.85
Sum of SVOC without LCI according to eco-INSTITUT-Label	< 1	< 0.77
Sum of SVOC with LCI according to AgBB 2018 / DIBt	< 5	< 3.85

TVVOC, Total very volatile organic compounds	Concentration after 2 days [µg/m³]	SERa [µg/(m² · h)]
Sum of VVOC according to AgBB 2018 / DIBt and Belgian regulation	< 5	< 3.85
Sum of VVOC according to eco-INSTITUT-Label	4	3.1

*Excluding formaldehyde (Carc. 1B) due to an assumed "practical threshold" under which a significant carcinogenic risk is no longer to be expected (see Federal Institute for Risk Assessment (2006): Toxicological evaluation of formaldehyde and Federal Environment Agency (2016): Reference value for formaldehyde in indoor air). In the case of a toxicological emission assessment, a single-substance analysis of the formaldehyde concentration is necessary.

In the opinion of the committee for Indoor Air Guide Values (Ausschuss für Innenraumrichtwerte) of the Federal Environment Agency, the concentration of 0.1 mg formaldehyde/m³ indoor air, based on a measurement period of half an hour, should not be exceeded, also for a short time (Bundesgesundheitsblatt 2016 · 59: 1040-1044 DOI 10.1007 / s00103 -016-2389-5 © Springer-Verlag Berlin Heidelberg 2016).

Other sums of VOC	Concentration after 2 days [µg/m³]	SERa [µg/(m² · h)]
VOC without LCI according to AgBB/DIBt and Belgian regulation (Sum)	6	4.6
VOC without LCI according to eco-INSTITUT-Label (Sum)	8	6.2
CMR 2: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 2, Muta. 2, Repr. 2; TRGS 905: K3; IARC: Group 2B; DFG (MAK list): Category III3 (Sum)	4	3.1
Sensitising compounds with the following categorisations: DFG (MAK list): Category IV, German Federal Institute for Risk Assessment lists: Cat A, TRGS 907 (Sum)	2	1.5
Bicyclic Terpenes (Sum)	< 1	< 0.77
C9 - C14: Alkanes / Isoalkanes as dekane-equivalent (Sum)	1	0.77
C4 - C11 Aldehydes, acyclic, aliphatic (Sum)	2	1.5
C9 - C15 Alkylated benzenes (Sum)	< 1	< 0.77
Kresoles (Sum)	< 1	< 0.77

Risk value for assessment of LCI	R-value
R-value according to eco-INSTITUT-Label	0.03
R-value according to AgBB 2018 / DIBt	0.00
R-value according to Belgian regulation	0.00
R-value according to AFSSET	0.00

Note:

Due to different requirements in the respective guidelines, the calculation of TVOC, TVOC, TSVOC and R-value may result in different values.

Short-chain carbonyl compounds (C1-C5) are quantified via HPLC acc. to DIN ISO 16000-3:2013-01. Therefore, no toluene equivalents are given for VVOC. These substances are taken into concern by means of their substance specific calibration via the sum of VVOC acc. to DIN EN 16516:2018-01. For VOC however, the substance specific calibration takes place via HPLC whereas the TVOC is calculated using the toluene equivalent determined via Tenax acc. to DIN EN 16516:2018-01.

1.2 Sample A001, Sample A002, Volatile Organic Compounds after 7 days

Test objective:

Volatile Organic Compounds (VOC), test chamber, air sampling 7 days after test chamber loading

Test result:

Sample:

A001: C. Fusion Latex Pillow, Oval Pillow
 A002: Natural Latex mattress core

No.	Substance	CAS No.	RT [min]	Concentration+	Toluene-equivalent	CMR Classifi- cation++	LCI	R-value
				Substances ≥ 1 µg/m³ [µg/m³]	Substances ≥ 5 µg/m³ [µg/m³]		AgBB 2018 [µg/m³]	
7	Aldehydes							
7-7	Nonanal	124-19-6	15.42	1			900	0.00
7-20	Acetaldehyde	75-07-0		2		Carc. 2	1200	0.00
9	Acids							
9-1	Acetic acid	64-19-7	4.69	4			1200	0.00
13	Other identified substances in addition to LCI list							
	Benzothiazole	95-16-9	18.81	7	5			
	Hexamethylcyclotrisiloxane (D3)	541-05-9	8.7	2				

+ identified and calibrated substances, substance specific calculated

++ Classification according to Regulation (EG) N° 1272/2008: Categories Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B, TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A, DFG MAK-list: Kategorie III1 and III2

* unidentified substances, calculated as toluene equivalent reported with significant mass fragments as mass-to-charge ratio (m/z)

Carcinogenic, mutagenic and reproductive toxic components*	Concentration after 7 days [µg/m³]	SERa [µg/(m² · h)]
CMR 1: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B; TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A; DFG (MAK list): Categories III1, III2 (Sum)	< 1	< 0.77
C 1: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EG) Nr. 1272/2008: Category Carc. 1A u. 1B (Sum)	< 1	< 0.77

TVOC, Total volatile organic compounds	Concentration after 7 days [µg/m³]	SERa [µg/(m² · h)]
Sum of VOC according to DIN EN 16516	5	3.9
Sum of VOC according to AgBB 2018 / DIBt	5	3.9
Sum of VOC according to eco-INSTITUT-Label	14	11
Sum of VOC according to ISO 16000-6	18	14

TSVOC, Total semi volatile organic compounds	Concentration after 7 days [µg/m³]	SERa [µg/(m² · h)]
Sum of SVOC according to DIN EN 16516	< 5	< 3.85
Sum of SVOC without LCI according to AgBB 2018 / DIBt	< 5	< 3.85
Sum of SVOC without LCI according to eco-INSTITUT-Label	< 1	< 0.77
Sum of SVOC with LCI according to AgBB 2018 / DIBt	< 5	< 3.85

TVVOC, Total very volatile organic compounds	Concentration after 7 days [µg/m³]	SERa [µg/(m² · h)]
Sum of VVOC according to AgBB 2018 / DIBt and Belgian regulation	< 5	< 3.85
Sum of VVOC according to eco-INSTITUT-Label	2	1.5

*Excluding formaldehyde (Carc. 1B) due to an assumed "practical threshold" under which a significant carcinogenic risk is no longer to be expected (see Federal Institute for Risk Assessment (2006): Toxicological evaluation of formaldehyde and Federal Environment Agency (2016): Reference value for formaldehyde in indoor air). In the case of a toxicological emission assessment, a single-substance analysis of the formaldehyde concentration is necessary.
 In the opinion of the committee for Indoor Air Guide Values (Ausschuss für Innenraumrichtwerte) of the Federal Environment Agency, the concentration of 0.1 mg formaldehyde/m³ indoor air, based on a measurement period of half an hour, should not be exceeded, also for a short time (Bundesgesundheitsblatt 2016 · 59: 1040-1044 DOI 10.1007 / s00103 -016-2389-5 © Springer-Verlag Berlin Heidelberg 2016).

Other sums of VOC	Concentration after 7 days [µg/m³]	SERa [µg/(m² · h)]
VOC without LCI according to AgBB/DIBt and Belgian regulation (Sum)	7	5.4
VOC without LCI according to eco-INSTITUT-Label (Sum)	9	6.9
CMR 2: VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 2, Muta. 2, Repr. 2; TRGS 905: K3; IARC: Group 2B; DFG (MAK list): Category III3 (Sum)	2	1.5
Sensitising compounds with the following categorisations: DFG (MAK list): Category IV, German Federal Institute for Risk Assessment lists: Cat A, TRGS 907 (Sum)	< 1	< 0.77
Bicyclic Terpenes (Sum)	< 1	< 0.77
C9 - C14: Alkanes / Isoalkanes as dekane-equivalent (Sum)	< 1	< 0.77
C4 - C11 Aldehydes, acyclic, aliphatic (Sum)	1	0.77
C9 - C15 Alkylated benzenes (Sum)	< 1	< 0.77
Cresols (Sum)	< 1	< 0.77

Risk value for assessment of LCI	R-value
R-value according to eco-INSTITUT-Label	0.01
R-value according to AgBB 2018 / DIBt	0.00
R-value according to Belgian regulation	0.00
R-value according to AFSSET	0.00

Note:

Due to different requirements in the respective guidelines, the calculation of TVOC, TVVOC, TSVOC and R-value may result in different values.

Short-chain carbonyl compounds (C1-C5) are quantified via HPLC acc. to DIN ISO 16000-3:2013-01. Therefore, no toluene equivalents are given for VVOC. These substances are taken into concern by means of their substance specific calibration via the sum of VVOC acc. to DIN EN 16516:2018-01. For VOC however, the substance specific calibration takes place via HPLC whereas the TVOC is calculated using the toluene equivalent determined via Tenax acc. to DIN EN 16516:2018-01.

1.3 Nitrosamines (test chamber)[†]

Test parameter:

Nitrosamines

Test method:

Analytically: | DGVV Information 213-523
 (formerly BGI/GUV-I 505-23 respectively ZH1/120.23)
 Determination of Nitrosamines

Test result:

Sample	Measurement time [days]	Parameter	Limit of determination [ng/m ³]	Concentration (Test chamber) [ng/m ³]
A001: C. Fusion Latex Pillow, Oval Pillow A002: Natural Latex mattress core	2	N-Nitrosodimethylamine (NDMA)	30	< q.l.
		N-Nitrosomethylethylamine (NMEA)	30	< q.l.
		N-Nitrosodiethylamine (NDEA)	30	< q.l.
		N-Nitrosodiisopropylamine (NDIPA)	30	< q.l.
		N-Nitrosodiisobutylamin (NDIBA)	30	< q.l.
		N-Nitrosodipropylamine (NDPA)	30	< q.l.
		N-Nitrosodibutylamine (NDBA)	30	< q.l.
		N-Nitrosopyrrolidine (NPYR)	30	< q.l.
		N-Nitrosopiperidine (NPIP)	30	< q.l.
		N-Nitrosomorpholine (NMOR)	30	< q.l.

< q.l. = Value below quantification limit

Remark: Concentrations below the limit of determination are between quantification limit and limit of determination and provide only qualitative evidence.



1.4 Carbon disulfide (CS₂, test chamber)

Test parameter:

Carbon disulfide (CS₂)

Test method:

Analytically: | DIN ISO 16000-6:2012-11
Limit of determination: | 1 µg/m³

Test result:

Sample	Parameter	Measurement time [days]	Concentration (test chamber) [µg/m ³]
A001: C. Fusion Latex Pillow, Oval Pillow A002: Natural Latex mattress core	Carbon disulfide CS ₂	2	1

< q.l. = Value below quantification limit

2 Odour test following VDA recommendation 270:2018-06

Test parameter:

Odour

Test method:

Analytically:	VDA-recommendation 270:2018-06
Rating:	1 not perceptible 2 perceptible, not bothering 3 clearly perceptible, not bothering 4 bothering 5 strongly bothering 6 unbearable

B001

B002

Desiccator volume:	3 L
Temperature:	40°C
Relative humidity:	50%
Sampling time:	24 hours after loading of desiccator
Loading:	4.33 m ² /m ³
Sample size:	not applicable
Absolute application amount:	not applicable
Masking of edges:	no
Masking of backside:	no
Sample volume:	150 cm ³
Sample dimensions:	5 cm x 5 cm x 6 cm

Test result:

Sample	Intensity of odour [Grade]
A001: C. Fusion Latex Pillow, Oval Pillow A002: Natural Latex mattress core	2.5

3 Polymer content[#]

Test parameter:

Relation between natural rubber (NR) and synthetic rubber (SBR)

Test method:

Analytics: | IR/ATR

Test result:

Sample	Polymer content	[weight/%]
A002: Natural Latex mattress core	NR, with reference to the polymer content ^{1) 2) 3)}	100
	SBR, with reference to the polymer content	0

¹⁾ The averaged relative expanded measurement uncertainty (k=2) for for the content of NR is estimated to 34 %.

²⁾ If NR-content is below 5 %, the result will be 100 % SBR. Usually there will be no use of NR below 5 % in a mixture of NR and SBR.

³⁾ The content of NR is based on the assumption that polyisoprene in latex mattresses is always of natural origin.



4 Ash content[#]

Test parameter:

Ash content, filler content

Test method:

Analytics: Thermogravimetry at 520 °C

Test result:

Sample: A002: Natural Latex mattress core

Duplicate Determination	Applied sample amount	Mass aluminium shell	Mass aluminium shell + sample after heating	Mass ash	Ash content	Filler content
	[g]	[g]	[g]	[g]	[%]	[%]
Determination 1	1.2701	40.6133	40.6541	0.0408	3.2	0.0
Determination 2	1.4282	40.2237	40.2681	0.0444	3.1	0.0

Parameter	Content [M%]
Ash content (incl. zinc oxide), with reference to the sample	3.2
Filler content, with reference to the sample ¹⁾	0.0

Test method:

Analytics: | Thermogravimetry at 900 °C

Test result:

Sample: | A001: C. Fusion Latex Pillow, Oval Pillow

Duplicate Determination	Applied sample amount	Mass aluminium shell	Mass aluminium shell + sample after heating	Mass ash	Ash content	Filler content
	[g]	[g]	[g]	[g]	[%]	[%]
Determination 1	1.2352	40.3557	40.4682	0.1125	9.1	4.1
Determination 2	1.3007	40.8314	40.9478	0.1164	8.9	3.9

Parameter	Content [M%]
Ash content (incl. zinc oxide), with reference to the sample	9.0
Filler content, with reference to the sample ¹⁾	4.0

¹⁾ The amount of filler is calculated as difference between the amount of ash and zinc oxide, assuming that the maximum of zinc oxide is 5 % of the total latex foam.

5 Organic halogenated compounds (AOX / EOX)[‡]

Test parameter:

Absorbable organic halogenated compounds (AOX) and extractable organic halogenated compounds (EOX)

Test method:

Analytically:

AOX: elution with purest water in Soxleth-apparatus, mixing of 50 ml of the elution with 50 mg activated carbon, combustion of organic bound halogens in oxygen flow, micro coulometric determination of halogen content (analogous to DIN EN ISO 9562:2005-02)

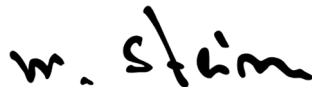
EOX: clean up on silica gel, extraction with ethyl acetate, combustion of extract in oxygen flow, micro coulometric determination of halogen content (analogous to DIN 38414-17:2017-01)

Test result:

Sample	Parameter	Content (Material) [mg/kg]	Limit of determination [mg/kg]
A001: C. Fusion Latex Pillow, Oval Pillow	AOX	< q.l.	0,5
	EOX	< q.l.	2

< q.l. = Value below quantification limit

Cologne, 19.08.2020



Michael Stein, Dipl.-Chem.
(Laboratory Manager)

Appendix

I Sampling sheets

eco-INSTITUT Germany GmbH

eco-INSTITUT-Label
Sampling Sheet*

Project number
eco-INSTITUT /
will be filled in
by Laboratory

55357-001

Testing laboratory eco-INSTITUT Germany GmbH Schanzenstr. 6-20, D-51063 Cologne Tel. +49 (0)221 - 931245-0 Fax +49 (0)221 - 931245-33	Sampler Le Huu Nghi (Name, Company, Phone) International Environment Co.Ltd 247/5, Bui Thi Xuan Street, 1 Ward, Tan Binh District, Ho Chi Minh City, Vietnam Tel. + 84 62924344
Name of manufacturer / distributor at place of sampling (Address / Stamp) Lien A Co., Ltd. 55/1A Khuong Viet Street, Phu Trung Ward, Tan Phu District, Ho Chi Minh City, Vietnam	Customer/ Invoice recipient (if different from manufacturer)

Product name C. Fusion Latex Pillow	Product type (e.g. Pillow parquet, floor covering)
Model / programme / series Oval Pillow	Batch
Article number	Production date of batch 15.06.20

Samples are taken from <input checked="" type="checkbox"/> current production <input type="checkbox"/> storage	Sampling date 18.06.20
Storage location before sampling <input checked="" type="checkbox"/> production <input type="checkbox"/> storage <input type="checkbox"/> other:	Sampling time 09:45
Storage location:	Storage conditions before sampling <input checked="" type="checkbox"/> open <input type="checkbox"/> packaged
Packaging material:	

Special features (possible negative effects through emissions at place of sampling (e.g. benzene, exhaust fumes), unclarities, questions etc.)

Validation
 Hereby the signer affirms the accuracy of the above-mentioned statements. The sample was chosen, sampled and packaged according to the sampling guidelines.

Date: 19.06.20

Signature: NHH
(Stamp)

GIÁM ĐỐC
Le Huu Nghi

* Please take one sampling sheet for each sample! The sampling instruction must be strictly maintained.

Order

(Please insert quote number, or - if not available, please enter the desired analysis)



**eco-INSTITUT-Label
 Sampling Sheet***



Project number
 eco-INSTITUT /
 will be filled in
 by Laboratory

55357-002

Testing laboratory	eco-INSTITUT Germany GmbH Schanzenstr. 6-20, D-51063 Cologne Tel. +49 (0)221 - 931245-0 Fax +49 (0)221 - 931245-33	Sampler	Le Huu Nghi (Name, Company, Phone) International Environment Co.Ltd 247/5, Bui Thi Xuan Street, 1 Ward, Tan Binh District, Ho Chi Minh City, Vietnam Tel. + 84 62924344
Name of manufacturer / distributor at place of sampling (Address / Stamp)	Lien A Co., Ltd. 55/1A Khuong Viet Street, Phu Trung Ward, Tan Phu District, Ho Chi Minh City, Vietnam	Customer/ Invoice recipient (if different from manufacturer)	

Product name	Natural Latex mattress core	Product type (e.g. parquet, floor covering)	Mattress core
Model / programme / series	Pincore	Batch	
Article number		Production date of batch	15.06.2020

Samples are taken from	<input checked="" type="checkbox"/> current production <input type="checkbox"/> storage	Sampling date	18.06.2020
Storage location before sampling	<input checked="" type="checkbox"/> production <input type="checkbox"/> storage <input type="checkbox"/> other:	Storage conditions before sampling	<input checked="" type="checkbox"/> open <input type="checkbox"/> packaged
Storage location:		Packaging material:	

Special features (possible negative effects through emissions at place of sampling (e.g. benzine, exhaust fumes), unclarities, questions etc.)

Validation
 Hereby the signer affirms the accuracy of the above-mentioned statements. The sample was chosen, sampled and packaged according to the sampling guidelines.
 Date: 19.06.2020
 Signature: *Le Huu Nghi*
 (Stamp):

* Please take one sampling sheet for each sample! The sampling instruction must be strictly maintained.

Order
 (Please insert quote number, or - if not available, please enter the desired analysis)

eco-INSTITUT Germany GmbH / Schanzenstrasse 6-20 / Carlswerk 1.19 / D-51063 Köln / Germany
 Tel. +49 221 931245-0 / Fax +49 221 931245-33 / eco-institut.de / Geschäftsführer: Dr. Frank Kuebart, Daniel Tigges
 HRG 17317 / DIN EN ISO 17226:2016 / Reifensensoren GmbH, HAN, DE60170623651701900912, BIL: DEVDRE01FHH



II Definition of terms

VOC (volatile organic compounds)	All individual compounds with a concentration $\geq 1 \mu\text{g}/\text{m}^3$ in the retention range C_6 (n-Hexane) to C_{16} (n-Hexadecane)
TVOC	Total volatile organic compounds
TVOC according to DIN EN 16516:2018-01	Sum of all VOC $\geq 5 \mu\text{g}/\text{m}^3$ in the retention range C_6 to C_{16} , calculated as toluene equivalent
TVOC according to AgBB/DIBt	Sum of all identified and calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$, SVOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI and not calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$ calculated as toluene equivalent
TVOC according to eco-INSTITUT-Label	Sum of all identified and calibrated VOC $\geq 1 \mu\text{g}/\text{m}^3$, SVOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI and not calibrated VOC $\geq 1 \mu\text{g}/\text{m}^3$ calculated as toluene equivalent
TVOC according to ISO 16000-6:2012-11	Total area of chromatogram in the retention range C_6 to C_{16} , calculated as toluene equivalent
TVOC without LCI according to AgBB/DIBt and Belgian regulation	Sum of all VOC without NIK $\geq 5 \mu\text{g}/\text{m}^3$ in the retention range C_6 to C_{16}
TVOC without LCI according to eco- INSTITUT-Label	Sum of all VOC without NIK $\geq 1 \mu\text{g}/\text{m}^3$ in the retention range C_6 to C_{16}
CMR-VOC (carcinogenic, mutagenic, reproduction-toxic VOC, VVOC and SVOC)	All individual substances with the following categories: Regulation (EC) No. 1272/2008: Category Car.1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B IARC: Group 1 and 2A DFG (MAK lists): Category III1 and III2
VVOC (very volatile organic com- pounds)	All individual substances with a concentration $\geq 1 \mu\text{g}/\text{m}^3$ in the retention range $< C_6$
TVVOC	Total very volatile organic compounds
TVVOC according to AgBB/DIBt and Belgian regulation	Sum of all identified and calibrated VVOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI
TVVOC according to eco-INSTITUT-Label	Sum of all identified and calibrated VVOC $\geq 1 \mu\text{g}/\text{m}^3$ with LCI
SVOC (semi volatile organic com- pounds)	All individual substances $\geq 1 \mu\text{g}/\text{m}^3$ in the retention range C_{16} to C_{22}
TSVOC	Total semi volatile organic compounds
TSVOC according to DIN EN 16516:2018-01	Sum of all SVOC in the retention range C_{16} to C_{22} , calculated as toluene equivalent
TSVOC without LCI according to AgBB/DIBt	Sum of all SVOC $\geq 5 \mu\text{g}/\text{m}^3$ without LCI
TSVOC without LCI according to eco- INSTITUT-Label	Sum of all SVOC $\geq 1 \mu\text{g}/\text{m}^3$ without LCI
TSVOC with LCI according to AgBB/DIBt	Sum of all identified and calibrated SVOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI
SER	Specific emission rate (see appendix IV)



LCI value	Lowest Concentration of Interest; calculated value for the evaluation of VOC, established by the Committee for Health-related Evaluation of Building Products (Ausschuss zur gesundheitlichen Bewertung von Bauprodukten - AgBB)
R value	The quotient of the concentration and the LCI value is generated for every substance which is detected in the test chamber air. The sum of the calculated quotients results in the R value.
R value according to eco-INSTITUT-Label	R value for all identified and calibrated VOC $\geq 1 \mu\text{g}/\text{m}^3$ with LCI, established by the AgBB in 2018
R value according to AgBB 2018/DIBt	R value for all identified and calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI, established by the AgBB in 2018
R value according to Belgian regulation	R value for all identified and calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI, established by the Belgian regulation
R value according to AFSSET	R value for all identified and calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI, established by ANSES (French National Agency on Food Safety, Environment, and Workplace Security)
RT (retention time)	Time for a particular analyte to pass through the system (from the column inlet to the detector)
CAS No. (Chemical Abstracts Service)	International unique numerical identifier for a chemical substance
Toluene equivalent	Concentration, calculated as toluene equivalent

III List of calibrated Volatile Organic Compounds (VOC)

Aromatic hydrocarbons

Toluene
Ethylbenzene
p-Xylene
m-Xylene
o-Xylene
Isopropylbenzene
n-Propylbenzene
1,3,5-Trimethylbenzene
1,2,4-Trimethylbenzene
1,2,3-Trimethylbenzene
2-Ethyltoluene
1-Isopropyl-2-methylbenzene
1-Isopropyl-4-methylbenzene
1,2,4,5-Tetramethylbenzene
n-Butylbenzene
1,3-Diisopropylbenzene
1,4-Diisopropylbenzene
Phenyltoluene
1-Phenyldecane²
1-Phenylundecane²
4-Phenylcyclohexene
Styrene
β-Methylstyrene
Phenylacetylene
2-Phenylpropene
Vinyltoluene
Naphthalene
Indene
Benzene
1-Methylnaphthalene
2-Methylnaphthalene
1,4-Dimethylnaphthalene

Saturated aliphatic substances

2-Methylpentane¹
3-Methylpentane¹
n-Hexane
Cyclohexane
Methylcyclohexane
n-Heptane
n-Octane
n-Nonane
n-Decane
n-Undecane
n-Dodecane
n-Tridecane
n-Tetradecane
n-Pentadecane
n-Hexadecane
Methylcyclopentane
1,4-Dimethylcyclohexane
2,2,4,6,6-Pentamethylheptane

Terpenes

delta-3-Carene
alpha-Pinene
beta-Pinene
Limonene

Longifolene
beta-Caryophyllene
alpha-Phellandrene
Myrcene
Camphene
alpha-Terpinene
Longipinene

Aliphatic alcohols and ether

1-Propanol¹
2-Propanol¹
1-Butanol
1-Pentanol
1-Hexanol
tert-Butanol
Cyclohexanol
2-Ethyl-1-hexanol
2-Methyl-1-propanol
1-Octanol
4-Hydroxy-4-methyl-2-pentanone
1-Heptanol
1-Nonanol
1-Decanol
1,4-Cyclohexandimethanol
Ethanol¹

Aromatic alcohols (phenoles)

Phenol
BHT (2,6-Di-tert-butyl-4-methylphenol)
Benzyl alcohol
Cresols

Glycols, Glycol ether, Glycol ester

Propylenglycol (1,2-Dihydroxypropane)
Ethleneglycol (Ethandiol)
Ethylene glycol monobutyl ether
Diethylene glycol
Diethylene glycol-monobutyl ether
2-Phenoxyethanol
Ethylene carbonate
1-Methoxy-2-propanol
2-Methoxy-1-propanol
2-Methoxy-1-propyl acetate
Texanol
Glycolic acid butylester
Butyl diglycol acetate
Dipropylene glycol monomethyl ether
2-Methoxyethanol
2-Ethoxyethanol
2-Propoxyethanol
2-Methylethoxyethanol
2-Hexoxyethanol
1,2-Dimethoxyethane
1,2-Diethoxyethane
2-Methoxyethyl acetate
2-Ethoxyethyl acetate
2-(2-Hexoxyethoxy)ethanol
1-Methoxy-2-(2-methoxy-ethoxy)ethane
Propylene glycol diacetate

Dipropylene glycol
Dipropylene glycol monomethylether acetate
Dipropylene glycol n-butylether
Dipropylene glycol n-propyl ether
Di(propylene glycol) tert-butylether
1,4-Butanediol
Tri(propylene glycol) methyl ether
Triethylene glycol dimethyl ether
Propylene glycol dimethyl ether
TXIB (Texanol isobutyrate)
Ethylidiglycol
Dipropylene glycol dimethylether
Propylene carbonate
Hexyleneglycol
3-Methoxy-1-butanol
Propylene glycol n-propyl ether
Propylene glycol n-butyl ether
Diethylene glycol phenyl ether
Neopentyl glycol
Diethylene glycol methyl ether
1-Ethoxy-2-propanol
tert-Butoxy-2-propanol
2-Butoxy ethyl acetate

Aldehydes

Butanal^{1,3}
3-Methyl-1-butanol
Pentanal
Hexanal
Heptanal
2-Ethylhexanal
Octanal
Nonanal
Decanal
2-Butenal³
2-Pentenal³
2-Hexenal
2-Heptenal
2-Octenal
2-Nonenal
2-Decenal
2-Undecenal
Furfural
Ethanedial (Glyoxal)^{1,3}
Glutaraldehyde
Benzaldehyde
Acetaldehyde^{1,3}
Formaldehyde^{1,3}
Propanal^{1,3}
Propenal^{1,3}
Isobutenal³

Ketones

Ethylmethylketone³
3-Methyl-2-butanone
Methylisobutylketone
Cyclopentanone
Cyclohexanone
Acetone^{1,3}

2-Methylcyclopentanone
2-Methylcyclohexanone
Acetophenone
1-Hydroxyacetone
2-Heptanon

Acids

Acetic acid
Propionic acid
Isobutyric acid
Butyric acid
Pivalic acid
Valeric acid
Caproic acid
Heptanoic acid
Octanoic acid
2-Ethylhexanoic acid

Esters and Lactones

Methylacetate¹
Ethyl acetate¹
Vinyl acetate¹
Isopropyl acetate
Propyl acetate
2-Methoxy-1-methylethyl acetate
2-Methoxy-1-propylacetate
n-Butyl formate
Methylmethacrylate
Isobutylacetate
1-Butyl acetate
2-Ethylhexyl acetate
Methyl acrylate
Ethyl acrylate
n-Butyl acrylate
2-Ethylhexyl acrylate
Adipic acid dimethylester
Fumaric acid dibutylester
Succinic acid dimethylester

Glutaric acid dimethylester
Hexandioldiacrylate
Maleic acid dibutylester
Butyrolactone
Glutaric acid diisobutylester
Succinic acid diisobutylester
Dimethylphthalate
Diethylphthalate²
Dipropylphthalate²
Dibutylphthalate²
Diisobutylphthalate²
Texanol
Dipropyleneglycoldiacrylate

Chlorinated hydrocarbons

Tetrachlorethene
1,1,1-Trichlorethane
Trichlorethene
1,4-Dichlorbenzene
2-chloro-propane

Others

1,4-Dioxane
Caprolactam
N-Methyl-2-pyrrolidone
Octamethylcyclotetrasiloxane
Hexamethylcyclotrisiloxane
Methenamine
2-Butanonoxime
Triethyl phosphate
Tributyl phosphate
5-Chlor-2-methyl-4-isothiazolin-3-one (CIT)
2-Methyl-4-isothiazolin-3-one (MIT)
2-n-Octyl-4-isothiazolin-3-one (OIT)

Triethylamine
Decamethylcyclopentasiloxane
Dodecamethylcyclohexasiloxane
Tetradecamethylcycloheptasiloxane
Tetrahydrofuran (THF)
1-Octene
1-Decene
1-Dodecene
2-Pentylfuran
2-Methylfuran
Isophorone
Tetramethyl succinonitrile
Dimethylformamide (DMF)
Tributyl phosphate
N-Ethyl-2-pyrrolidone
Aniline
4-Vinylcyclohexene
Dichlormethane
Carbon tetrachloride
Chlorobenzene
Chloroform
Chloroprene (monomer)
Acetamide
Formamide
1,3-Dichlor-2-propanol
Cyclohexylisocyanate
Butyl methacrylate
2-Hexanone
Azobis[isobutyronitrile]
Benzophenone
1-Butyl-2-pyrrolidone
Acroleine
Furfuryl alcohol
Decahydronaphthalene

1 VVOC

2 SVOC

3 Analysis according to DIN ISO 16000-3:2013-01

IV Commentary on emission analysis

Test method

Measurement of the volatile organic compounds takes place in the test chamber in conditions similar to those applying in practice. Standardized test conditions are defined for the test chamber regarding loading, air exchange, relative humidity, temperature and incoming air, based on the type of test specimen and the required guideline. These conditions and the underlying standards are to be found in the section on test methods in the laboratory report.

Air samples are taken from the test chamber at defined points in time during the continuously running test. To this end, approximately 5 L of air are collected from the test chamber with an air flow rate of 100 mL/min for Tenax and approx. 100 L with an air flow rate of 0.8 L/min for DNPH (dinitrophenylhydrazine).

After thermal desorption, the substances adsorbed on Tenax are analysed using gas chromatographic separation and mass spectrometric determination. The gas chromatographic separation is performed with a slightly polar capillary column of 60 m in length.

The substances derivatized with DNPH for the determination of formaldehyde and other short-chain carbonyl compounds (C1 - C6) are analysed using high-performance liquid chromatography.

Over 200 compounds, including volatile organic compounds (C6 - C16), semi-volatile organic compounds (C16 - C22) and – insofar as possible with this method – also very volatile organic compounds (less than C6) are determined and quantified individually.

All other substances – insofar as is possible – are identified through comparison with a library of spectra. The quantification of these substances and non-identified substances is performed through a comparison of their signal area with the signal of the internal standard d8 toluene. As far as possible, identification and quantification limit of any substance shall be 1 µg per m³ for substances adsorbed on Tenax and 2 µg/m³ for DNPH-derivatized substances (limit of quantification).

Quality assurance

The eco-INSTITUT Germany GmbH is granted flexible scope of accreditation pursuant to DIN EN ISO/IEC 17025:2018-03. The accreditation covers the analytical determination of all volatile organic compounds, including the test chamber method.

In each analysis the analytical system is checked using an external standard based on the specifications in standard DIN EN 16516:2018-01. The stability of the analytical systems is documented based on the test standard using control charts.

Laboratory performance is assessed at least once a year in inter-laboratory comparisons by comparing the results with those obtained by other laboratories for identical samples.

A blank is run prior to introducing the test specimen into the test chamber to check for the possible presence of volatile organic compounds.

The expanded measurement uncertainty U for the analytical determination of all volatile organic compounds, including the test chamber method is estimated to 41,7 %. The calculation is based on DIN ISO 11352:2013-03 (Nordtest).

V Explanation of Specific Emission Rate SER

Emission measurements are accomplished in test chambers under defined physical conditions (temperature, relative humidity, room loading, air change rate etc.).

Test chamber measurement results are directly comparable only if the investigations were accomplished under the same basic conditions.

If the differences of the physical conditions refer only to the change of air rate and/or the loading, the "SER" or "specific emission rate" can be used for comparability of the measurement results. The SER indicates how many volatile organic compounds (VOC) are released by the sample for each material unit and hour (h).

The SER can be calculated using the formula below for each proven individual component of the VOC from the data in the test report.

As material units the following are applicable:

l = unit of length (m)	relation between emission and length
a = unit area (m ²)	relation between emission and surface
v = unit volume (m ³)	relation between emission and volume
u = piece unit (unit = piece)	relation between emission and complete unit

From this the different dimensions for SER result:

length-specific	SER _l	in µg/(m·h)
surface-specific	SER _a	in µg/(m ² ·h)
volume-specific	SER _v	in µg/(m ³ ·h)
unit specific	SER _u	in µg/(u·h)

SER thus represents a product specific rate, which describes the mass of the volatile organic compound, which is emitted by the product per time unit at a certain time after beginning of the examination.

$$\text{SER} = q \cdot c$$

- q specific air flow rate (quotient from change of air rate and loading)
- c concentration of the measured substance(s)

The result can be indicated in milligrams (mg) in place of micro grams (µg), whereby 1 mg = 1000 µg.