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Scan Underlay Production ApS
Bizonvej 2
8464 Galten
DENMARK

VOC EMISSION TEST REPORT
ISO 16000

21 October 2025

1 Sample Information

Sample name	Acustic Silence 360
Batch no.	-
Stated production date	02/09/2025
Product type	Underlay
Sample reception	04/09/2025

Rasmus Verdier
Analytical Service Manager

Isabella B. Larsen
Analytical Service Manager

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2 Applied Test Methods

2.1 General Test References

Regulation, protocol or standard	Version	Reporting limit VOC [µg/m³]	Calculation of TVOC	Combined uncertainty[a] [RSD(%)]
EN 16516	2017 + A1:2020	5	Toluene equivalents	22%
ISO 16000 -3 -6 -9 -11	2021-2024 depending on part	2	Toluene equivalents	22%
ASTM D5116-17	2017	-	-	-

2.2 Specific Laboratory Sampling and Analyses

Procedure	External Method	Internal SOP	Quantification limit / sampling volume	Analytical principle	Uncertainty[a] [RSD(%)]
Sample preparation	ISO 16000-11:2024	71M549810	-	-	-
Emission chamber testing	ISO 16000-9:2024, EN 16516:2017+A1:2020	71M549811	-	Chamber and air control	-
Sampling of VOC	ISO 16000-6:2021, EN 16516:2017+A1:2020	71M549812	5 L	Tenax TA	-
Analysis of VOC	ISO 16000-6:2021, EN 16516:2017+A1:2020	71M542808B	1 µg/m³	ATD-GC/MS	10%
Sampling of aldehydes	ISO 16000-3:2022, EN 16516:2017+A1:2020	71M549812	35 L	DNPH	-
Analysis of aldehydes	ISO 16000-3:2022, EN 16516:2017+A1:2020	71M548400	3-6 µg/m³	HPLC-UV	10%

3 Test Parameters, Sample Preparation and Deviations

3.1 VOC Emission Chamber Test Parameters

Parameters	Value	Sample Conditions	Value
Chamber volume, V[L]	119	Date and time of unpacking and start of sample preparation	12/09/2025 - 06:29
Air change rate, n[h^{-1}]	0.5	Preconditioning period	-
Air Velocity [m/s]	0.1	Chamber test period	12/09/2025 - 10/10/2025
Area specific ventilation rate, q [m/h or $m^3/m^2/h$]	1.25	Analytical test period	12/09/2025 - 15/10/2025
Relative humidity of supply air, RH [%]	50 ± 3	Exposed sample area [m^2]	0.0476
Temperature of supply air, T [°C]	23 ± 1	Loading factor [m^2/m^3]	0.40
Background concentration of individual VOC's [µg/m^3]	< 2	Test scenario	Flooring or ceiling
Background concentration of TVOC [µg/m^3]	< 20	Sample thickness [mm]	0.86

3.2 Preparation of the Test Specimen

The backside of the sample was covered with aluminium tape.

3.3 Picture of Sample

3.4 Deviations from Referenced Protocols and Regulations

No deviations from the referenced test methods were observed.

3.5 Air Samplings from the Test Chamber

Sampling media	Day (yyyy-mm-dd)	Time (hh:mm)	Volume [L]
28 Day, DNPH silicagel	2025-10-10	06:45 - 08:33	35
28 Day-Res, DNPH silicagel	2025-10-10	06:46 - 08:33	36
28 Day, Tenax TA	2025-10-10	06:46 - 07:45	5.1
28 Day-Res, Tenax TA	2025-10-10	07:45 - 08:34	2.3

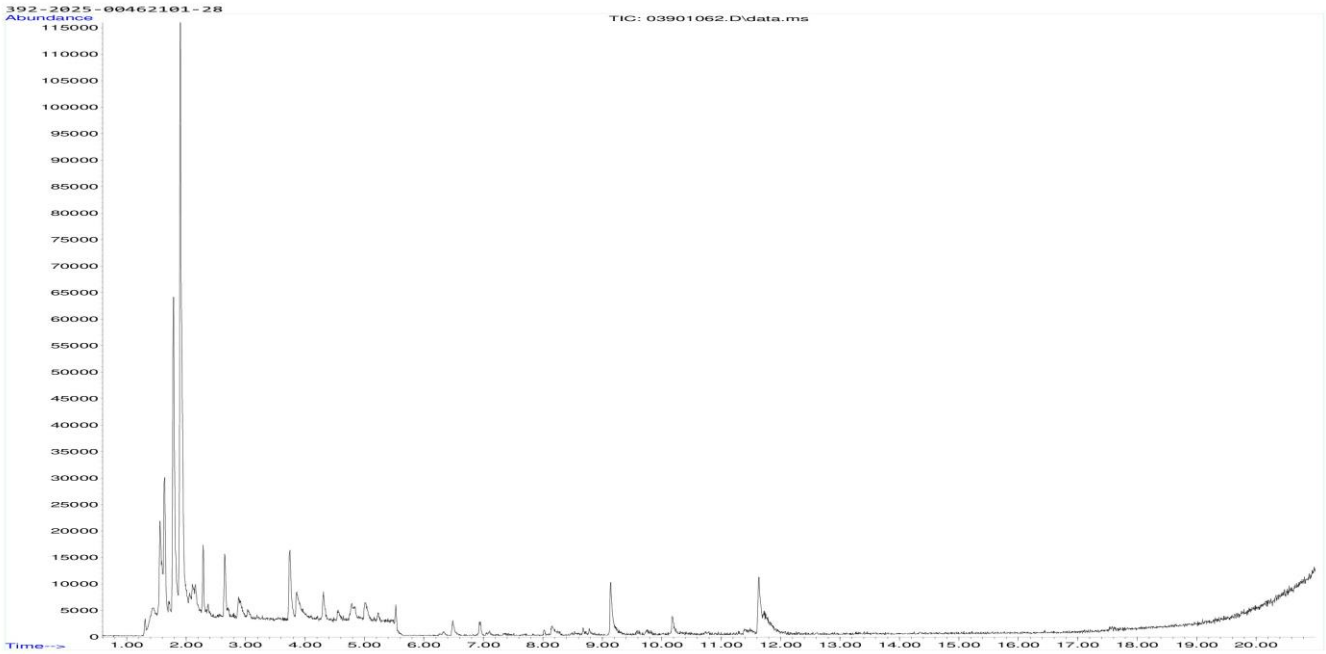
4 Results

4.1 VOC Emission Test Results after 28 Days

	CAS No.	Retention time [min]	ID-Cat	Specific Conc. [µg/m³]	Toluene eq. [µg/m³]	Specific SER [µg/(m²·h)]
VOC compounds						
None determined						
TVOC				< 2	< 2	< 3
VVOC compounds						
None determined						
TVVOC				< 2	< 2	< 3
SVOC compounds						
None determined						
TSVOC				< 2	< 2	< 3
Carcinogens						
Total carcinogens				< 1	< 1	< 2
Aldehydes						
Formaldehyde	50-00-0		1	< 3		< 4
Acetaldehyde	75-07-0		1	< 3		< 4
Propionaldehyde	123-38-6		1	< 3		< 4
Butyraldehyde	123-72-8		1	< 3		< 4
Acrolein *	107-02-8		1	< 5		< 7
2-Butenal *	123-73-9		1	< 5		< 7
Glutaraldehyde *	111-30-8		1	< 3		< 4

5 Appendices

5.1 Chromatogram of VOC Emissions after 28 Days



5.2 Sampling Report

eurofins | Product Testing

This document must be printed and shipped with the sample.

Combined Sampling Report and Chain of Custody

Name of applicant: (name, company, phone)	Carsten Frost, Scan Underlay Production ApS, Bizonvej 2, 8464 Galten, Denmark, 81772786

Product information

Name of the product:	Acustic Silence 360	**Product type**	Underlay
Batch N°:		**Article N°:**	
Model / Program / Series:		**Manufacture:** (Company, Address, Stamp)	Scan Underlay Production ApS, Bizonvej 2, 8464 Galten, Denmark

Production & Sampling information

Production Date: 2.9.2025 **Time:**		**Sampling Date:** 2.9.2025 **Time:** 10.00	
Place of sampling (if deviating from the manufature)		**Sample is taken from:**	☑ ongoing production ☐ stocks ☐ retained sample
		Number of samples:	
Person in charge of sampling: (Name, company, telephone)	Carsten Frost, Scan Underlay Production ApS	**Signature of sample collector:**	
Where has the product been stored prior to sampling?	☑ production ☐ store ☐ miscellaneous	**How has the product been stored prior to sampling?**	☐ open ☐ in the stack ☑ wrapped up
Place of storage:		*Packing material:*	Plastic Pose

Specifics (possible negative influences by air contamination where sample was taken, by petrol emissions, by solvent emissions from production; any other uncertainties, questions, etc).	
Cut edges (identification of cut edges when present and identification of new surfaces and surface to be exposed in the emission test):	The product is in a roll of 25 meters - You can use it all for testing - we do not need it back and acan be destroyed

Confirmation from the applicant

Herewith the signer confirms the correctness of the data given above. The sample was selected, drawn and packed personally in accordance with the instructions for the taking of samples.

Date:	**Signature:**
4.9.2025	(Stamp) Scan underlay Production ApS

Chain of custody

What is a Chain of custody?

Whenever the sample is handed over, please fill out the below information

Handed over between:	Initials + Signature	Date + Time	Condition
Handed over by	Carsten Frost, Scan Underlay Production ApS		
Handed over to			
Handed over by			
Handed over to			
Handed over by			
Handed over to			

Laboratory receiving details (date, condition of package and sample, assigned lab no.): 4/9, ok, 392-2025-00462101

Receptionist, Eurofins Product Testing A/S:	Signature of receptionist:
UX4A	

5.3 How to Understand the Results

5.3.1 Acronyms Used in the Report

<	Means less than
>	Means bigger than
*	Not a part of our accreditation
¤	Please see section regarding uncertainty in the Appendices
§	Deviation from method. Please see deviation section
a	The method is not optimal for very volatile compounds. For these substances smaller results and a higher measurement uncertainty cannot be ruled out
b	The component originates from the substrate and is thus removed
c	The results have been corrected by the emission from the substrate
d	Very polar organic compounds are not suitable for reliable quantification using Tenax TA adsorbent and HP-5ms GC column. A high degree of uncertainty must be expected
e	The component may be overestimated due to contribution from the system
SER	Specific Emission Rate

5.3.2 Explanation of ID Category

Categories of Identity:

1: Identified by comparison with a mass spectrum obtained from library and supported by other information and quantified through specific calibration.

2: Identified by comparison with a mass spectrum obtained from library and supported by other information. Quantified as toluene equivalent.

3: Identified with a lower match by comparison with a mass spectrum obtained from a library. Quantified as toluene equivalent.

4: Not identified, quantified as toluene equivalent.

5.4 Description of VOC Emission Test

5.4.1 Test Chamber

The test chamber is made of stainless steel. A multi-step air clean-up is performed before loading the chamber, and a blank check of the empty chamber is performed.
The chamber operation parameters are as described in the test method section. (EN 16516, ISO 16000-9, internal method no.: 71M549811).
The recovery rates in the climate test chamber have been investigated using toluene and n-dodecane. The mean recovery rates of toluene and n-dodecane were concluded to be between 95 % and 100 % depending on the chamber size. These values comply with the criteria of a minimum mean recovery rate of 80 % stated in the 16000-9 test method.
Air sampling from the test chamber is carried out in a clean test chamber room at ambient air pressure and 23 ± 1 °C.

5.4.2 Expression of the Test Results

All test results are calculated as specific emission rate, and as extrapolated air concentration in the European Reference Room (EN 16516, AgBB, EMICODE, M1 and Indoor Air Comfort).

5.4.3 Testing of Carcinogenic VOCs

The emission of carcinogens (EU Categories C1A and C1B, as per European law) is tested by drawing sample air from the test chamber outlet through Tenax TA tubes after the specified duration of storage in the ventilated test chamber. Analysis is performed by ATD-GC/MS (automated thermal desorption coupled with gas chromatography and mass spectroscopy using 30 m HP-5 (slightly polar) column with 0.25 mm ID and 0.25 µm film, Agilent) (EN 16516, ISO 16000-6, internal methods no.: 71M549812 / 71M542808B).

All identified carcinogenic VOCs are listed; if a carcinogenic VOC is not listed then it has not been detected. Quantification is performed using the TIC signal and authentic response factors, or the relative response factors relative to toluene for the individual compounds.

This test only covers substances that can be adsorbed on Tenax TA and can be thermally desorbed. If other emissions occur, then these substances cannot be detected (or with limited reliability only).

5.4.4 Testing of VOC, SVOC and VVOC

The emissions of volatile organic compounds are tested by drawing sample air from the test chamber outlet through Tenax TA tubes after the specified duration of storage in the ventilated test chamber. Analysis is performed by ATD-GC/MS using HP-5 column (30 m, 0.25mm ID, 0.25µm film) (EN 16516, ISO 16000-6, internal methods no.: 71M549812 / 71M542808B).

All single substances that are listed with a LCI/NIK value in the latest publications (hereafter referred to as target compounds) are identified if present. All other appearing VOCs are identified as far as possible. Quantification of target compounds is done using the TIC signal and authentic response factors, or the relative response factors relative to toluene. For certain compound groups, which differ significantly in chemistry from toluene, quantification is performed relative to a representative member of the group for more accurate and precise results. This can include quantification of for example glycols and acids. In addition to that, all results are also expressed in toluene equivalents. All non-target compounds, as well as all non-identified substances, are quantified in toluene equivalents.

The results of the individual substances are calculated in three groups depending on their retention time when analyzing using a non-polar column (HP-1):

- Volatile Organic Compounds (VOC) are defined as: All substances eluting between and including n-hexane (n-C6) and n-hexadecane (n-C16)

- Semi-Volatile Organic Compounds (SVOC) are defined as: All substances eluting after n-hexadecane (n-C16) and before and including n-docosane (n-C22)
- Very Volatile Organic Compounds (VVOC) are defined as: All substances eluting before n-hexane (n-C6).

Total Volatile Organic Compounds (TVOC) is calculated by summation of all individual VOCs with a concentration ≥ 5 µg/m³. The TVOC can be expressed either in toluene equivalents as defined in EN 16516 and similar to ISO 16000-6, or as the sum of concentrations using specific or relative response factors. In the case of summation of concentrations using authentic or relative response factors, the toluene equivalent is applied to all non-target and non-identified VOCs before summing up. Compounds regarded as VOC in line with the above definition but elute before n-C6 or after n-C16 on the HP-5 column are treated as VOC, and are thus added to the TVOC.

Total Semi-Volatile Organic Compounds (TSVOC) is calculated by the summation of all individual SVOCs expressed in toluene equivalents with a concentration ≥ 5 µg/m³, as defined in EN 16516. VOCs that are regarded as VOC in line with the above definition, but elute after n-C16 in this test, are not added to the TSVOC.

Total Very Volatile Organic Compounds (TVVOC) is calculated by the summation of all individual VVOCs with a concentration ≥ 5 µg/m³ and expressed in toluene equivalents. VOCs that are regarded as VOC in line with the above definition, but elute before n-C6 in this test, are not added to the TVVOC.

This test only covers substances which can be adsorbed on Tenax TA and can be thermally desorbed. If emissions of substances outside these specifications occur then these substances cannot be detected (or with limited reliability only).

5.5 Quality Assurance

Before loading the test chamber, a blank check of the empty chamber is performed and compliance with background concentrations in accordance with EN 16516 / ISO 16000-9 is determined.

Air sampling at the chamber outlet and subsequent analysis is performed in duplicate. Relative humidity, temperature and air change rate in the chambers is logged every 5 minutes and checked daily. A double determination is performed on random samples at a regular interval and results are registered in a control chart to ensure the uncertainty and reproducibility of the method.

The stability of the analytical system is checked by a general function test of device and column, and by use of control charts for monitoring the response of individual substances prior to each analytical sequence.

5.6 Accreditation

The testing methods described above are accredited online with EN ISO/IEC 17025 by DANAK (no. 522). This accreditation is valid worldwide due to mutual approvals of the national accreditation bodies (ILAC/IAF, see also www.eurofins.com/galten.aspx#accreditation).

Eurofins Product Testing Denmark A/S is notified body for the construction products regulation (EU) No 305/2011 with number NB 2657 under system 3.

Not all parameters are covered by this accreditation. The accreditation does not cover parameters marked with an asterisk (*), however analysis of these parameters is conducted at the same level of quality as for the accredited parameters.

5.7 Uncertainty of the Test Method

The relative standard deviation of the overall analysis is 22%. The expanded uncertainty Um equals 2 x RSD. For further information please visit www.eurofins.dk/product-testing/uncertainty/.

5.8 Version History

Report date	Report number	Modification
21/10/2025	392-2025-00462101_Q_EN	Current version

Attestation

LEED v4.1 BETA, and v5

On 4th of September 2025, Eurofins Product Testing A/S received a sample of an underlay with the product name:

Acustic Silence 360

supplied by

Scan Underlay Production ApS

The sample was supplied as being representative of the manufactured product, and it has been tested in accordance with the relevant ISO 16000 and EN 16516 testing standards (See test report no. 392-2025-00462101_Q_EN).

The test results of the tested sample indicate that the product qualifies for LEED v4, LEED v4.1 BETA (February 2025), and LEED v5 (April 2025) projects in **Europe by showing compliance with the specifications for VOC emissions by complying with:**

VOC emissions specifications in LEED EQ credit "Low-Emitting Materials" for LEED projects in Europe:

- The requirements of LEED v4.1 BETA (February 2025) and LEED v5 (April 2025) by complying with the German AgBB Testing and Evaluation Scheme (2024), showing an overall R-value ≤ 1, having a TVOC according to EN 16516 ≤ 1,000 µg/m^3, a sum of VOC without LCI < 100 µg/m^3, and a formaldehyde emission ≤ 10 µg/m^3; all after 28 days.

21 October 2025

Rasmus Verdier
Analytical Service Manager

Isabella B. Larsen
Analytical Service Manager

LEED® is the preeminent program for the design, construction, maintenance and operations of high-performance green buildings. USGBC® and the related logo are trademarks owned by the U.S. Green Building Council and are used with permission.

Attestation

BREEAM®

On 4th of September 2025 Eurofins Product Testing A/S received a sample of an underlay with the product name:

Acustic Silence 360

supplied by

Scan Underlay Production ApS

The sample was supplied as being representative of the manufactured product, and it has been tested as in accordance with the relevant EN 16516, ISO 16000-3, ISO 16000-6, ISO 16000-9, and ISO 16000-11 testing standards (See test report no. 392-2025-00462101_Q_EN).

The test results of the tested sample indicate that the product qualifies for the below mentioned BREEAM specifications on VOC emissions by complying with:

- **BREEAM® International: Compliance with 'Exemplary' criteria on VOC emission** of BREEAM International: New Construction 2025, Technical Manual – SD6073: Hea 04 Indoor Air Quality (version 7.0.0 of July 2025).
- **BREEAM® UK: Compliance with 'Exemplary' criteria on VOC emission** of BREEAM UK: New Construction 2025, Technical Manual – SD6074: Hea 04 Indoor Air Quality (version 7.0.0 of July 2025).
- **BREEAM® NL: Compliance with 'Exemplary' criteria on VOC emission** of BREEAM-NL: Nieuwbouw en renovatie utiliteitsbouw 2025, Technical Manual: Hea 04 Gezonde binnenlucht (version 6.1.1 of February 2025).
- **BREEAM® SE: Compliance with 'Exemplary' criteria on VOC emission** of BREEAM SE: New Construction 2023, Technical Manual: Hea 02 Indoor Air Quality (version 6.0. of January 2023).
- **BREEAM® NOR: Compliance with 'Exemplary' criteria on VOC emission** of BREEAM NOR: New Construction 2024, Technical Manual - SD5076NOR, Hea 02 Indoor Air Quality (version 6.1.1 of December 2024).

21 October 2025

Rasmus Verdier
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