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VOC EMISSION TEST REPORT

EN16516

21 September 2026

1 Sample Information

Sample name	Solid Pine glued panel (Pinus sylvestris)
Batch no.	-
Stated production date	30/06/2026
Product type	Wood based panel
Stated thickness, mm	18
Sample reception	06/07/2026

2 Brief Evaluation of the Results

Regulation or protocol	Conclusion	Version of regulation or protocol
REACH Regulation	Pass	Regulation EU 2023/1464

Full details based on the testing and direct comparison with limit values are available in the following pages
Regarding pass/fail decision rule please see appendix



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3 Applied Test Methods

3.1 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	2025	-	-	-
REACH Regulation	REACH regulation EU 2023/1464 regulation APPENDIX 14 Entry 77 to Annex XVII	-	-	22%

3.2 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, EN 16516:2017+A1:2020	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%

4 Test Parameters, Sample Preparation and Deviations

4.1 VOC Emission Chamber Test Parameters

Parameters	Value	Sample Conditions	Value
Chamber volume, V[L]	225	Date and time of unpacking and start of sample preparation	10/08/2026 - 09:50
Air change rate, n[h ⁻¹]	0.5	Preconditioning period	-
Air Velocity [m/s]	0.1	Chamber test period	10/08/2026 - 07/09/2026
Area specific ventilation rate, q [m/h or m ³ /m ² /h]	0.5	Analytical test period	10/08/2026 - 09/09/2026
Relative humidity of supply air, RH [%]	50 ± 3	Exposed sample area [m ²]	0.230
Temperature of supply air, T [°C]	23 ± 1	Loading factor [m ² /m ³]	1.0
Background concentration of individual VOCs [µg/m ³]	< 2	Test scenario	Wall
Background concentration of TVOC [µg/m ³]	< 20	Sample thickness [mm]	18.3

4.2 Preparation of the Test Specimen

Edges and back were covered with aluminium foil and aluminium tape.

4.3 Picture of Sample



The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).

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4.4 Deviations from Referenced Protocols and Regulations

No deviations from the referenced test methods were observed.

4.5 Air Samplings from the Test Chamber

Sampling media	Day (yyyy-mm-dd)	Time (hh:mm)	Volume [L]
28 Day, DNPH silicagel	2026-09-07	07:39 - 09:29	36
28 Day-Res, DNPH silicagel	2026-09-07	07:39 - 09:29	37

5 Results

5.1 Formaldehyde Emission Test Result after 28 Days

	CAS No.	Specific Conc. [$\mu\text{g}/\text{m}^3$]	Concentration [ppm]	Specific SER [$\mu\text{g}/(\text{m}^2 \cdot \text{h})$]
Formaldehyde	50-00-0	11	0.0085	5.3

Calculation of ppm is done with a formaldehyde conversion factor; 1 ppm = 1.236 mg/m³ at 1 bar and 23 °C.

6 Summary and Evaluation of the Results

6.1 Comparison with Limit Values of REACH Regulation

Parameters	Test after 28 days	
	Concentration mg/m ³	Limit Value mg/m ³
Formaldehyde	0.011	≤ 0.080

The formaldehyde emission is tested according to EN 16516 with air change rate 0.5 /h and relative humidity of 50 ± 3 %.

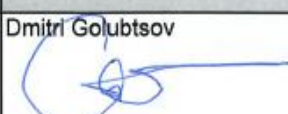
7 Appendices

7.1 Sampling Report

Combined Sampling Report and Chain of Custody	
Name of applicant: Urmas Linno, ECOBIRCH AS, Niidu 11, 80047 Pärnu, 80047 Pärnu, Estonia, (name, company, phone) 3724459480	
Product information	
Name of the product: Solid Pine glued panel (Pinus sylvestris)	Product type Panel, wood based
Batch N°:	Article N°:
Model / Program / Series:	Manufacture: ECOBIRCH AS, Niidu 11, (Company, Address, Stamp) 80047 Pärnu, 80047 Pärnu, Estonia
Production & Sampling information	
Production Date: 30.06.2026 Time:	Sampling Date: 01.07.2026 Time:
Place of sampling Factory, Ecobirch AS , niidu 11 , 80010 Pärnu (if deviating from the manufacture)	Sample is taken from: ☒ ongoing production ☐ stocks ☐ retained sample
Number of samples:	
Person in charge of sampling: Urmas Linno, Ecobirch AS 37253443874 (Name, company, telephone)	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:
Specifics (possible negative influences by air contamination where sample was taken, by petrol emissions, by solvent emissions from production; any other uncertainties, questions, etc). no	
Cut edges (identification of cut edges when present square edfes and identification of new surfaces and surface to be exposed in the emission test):	
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:

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).

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		(Stamp)	
Chain of custody			
<i>What is a Chain of custody?</i>			
<i>Whenever the sample is handed over, please fill out the below information</i>			
Handed over between:	Initials + Signature	Date + Time	Condition
Handed over by	Dmitri Golubtsov 	01.07.13:00	Wrapped up
Handed over to	Urmas Linno, Ecobirch AS 37253443874 	01.07. 13:30	wrapped up
Handed over by			
Handed over to			
Handed over by			
Handed over to			
Laboratory receiving details (date, condition of package and sample, assigned lab no.): 06-07-2026 ok 392-2026-00366001			
Receptionist, Eurofins Product Testing A/S: 		Signature of receptionist: 	

7.2 How to Understand the Results

7.2.1 Acronyms Used in the Report

<	Means less than
>	Means bigger than
*	Not a part of our accreditation
α	Please see section regarding uncertainty in the Appendices
§	Deviation from method. Please see deviation section
SER	Specific Emission Rate

7.3 Description of VOC Emission Test

7.3.1 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.

7.3.2 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).

7.3.3 Testing of Aldehydes

The presence of aldehydes is tested by drawing air samples from the test chamber outlet through DNPH-coated silicagel tubes after the specified duration of storage in the ventilated test chamber. Analysis is performed by solvent desorption and subsequently by HPLC and UV-/diode array detection.

The absence of formaldehyde and other aldehydes is stated if UV detector response at the specific wavelength is lacking at the specific retention time in the chromatogram. Otherwise it is checked whether the reporting limit is exceeded. In this case the identity is finally checked by comparing full scan sample UV spectra with full scan standard UV spectra.

Conversions of specific aldehydes from $\mu\text{g}/\text{m}^3$ to ppm are done by the ideal gas law using a temperature of 23 degree Celsius and standard atmospheric pressure.

7.4 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.

7.5 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.

The customer is solely responsible for the accuracy and completeness of the sampling report and all associated information. Eurofins accepts no liability for any errors or consequences arising from customer-provided data. Results are based solely on the samples as received and the information provided by the customer.

7.6 Uncertainty of the Test Method

The relative standard deviation of the overall analysis is 22%. The expanded uncertainty U_m equals 2 x RSD. For further information please visit <https://www.eurofins.com/da-dk/product-testing/kontakt-os/usikkerhed-uncertainty/>.

7.7 Version History

Report date	Report number	Modification
21/09/2026	392-2026-00366001_QE_EN	Current version