


**Instytut Techniki Budowlanej**
**GROUP OF TESTING LABORATORIES**  
 accredited by Polish Center for Accreditation

 accreditation certificate  
 N° AB 023


AB 023

Page 1 / 5

 THERMAL PHYSICS, ACOUSTICS AND ENVIRONMENT DEPARTMENT  
 THERMAL PHYSICS, ACOUSTICS AND ENVIRONMENT LABORATORY

## TEST REPORT N° LZF01-01901/20/R40NZF

This report was released in triplicate, two copies received the Client and one copy remained at ITB.

**Client:** Profile VOX Sp. z o.o. Sp. k.

**Client address:** Gdyńska 143 St. , 62-004 Czerwonak, Poland

### INFORMATION ABOUT PRODUCT

**Manufacturer (name and address):** Profile VOX Sp. z o.o. Sp. k.  
 Gdyńska 143 St. , 62-004 Czerwonak, Poland

**Product:** Linerio Slat Panels

**Information about product, intended use, and the number of the applicable system of assessment and verification of constancy of performance** Decorative interior wall covering

**Unique identification code of the product-type:** Information about unique identification code of the product-type has not been provided by client.

**Assortment:** Linerio Slat Panels group with endings:  
 S-line type + right and left finishing strip  
 L-line type + right and left finishing strip  
 M-line type + right and left finishing strip  
 U universal starting strip

### Information about test item

**Test item: name, description, condition, identification** To the test was provided two Linerio slat panels L-line type with dimensions 240 x 12,5 cm.

**Date of receipt:** 07.08.2020

**Receipt procedure:** Receipt procedure according to PZ ZLB 18.

**N° of receipt protocol:** LZF00-01901/20/R40NZF

### Information about tests:

**Test commencement date:** 29.09.2020

**Test completion date:** 07.10.2020

LABORATORY THERMAL PHYSICS, ACOUSTICS AND ENVIRONMENT

 02-656 Warszawa | Ksawerów 21 | tel. +48 22 566 41 33 | fax +48 22 566 42 76 | e-mail: fizyka@itb.pl  
 00-611 Warszawa | Filtrowa 1 | tel. +48 22 825 92 29 | fax +48 22 57 96 486 | e-mail: chemia@itb.pl

Instytut Techniki Budowlanej: 00-611 Warsaw | Filtrowa 1 | tel. +48 22 825 04 71 | fax +48 22 825 52 86 | Director tel. +48 22 825 28 85 | +48 22 825 13 03 | fax +48 22 825 77 30 | 02-656 Warsaw | Regon: 000063650 | VAT: PL5250009358 | www.itb.pl | instytut@itb.pl

**Further information about tests:**

Date of opening the product: 29.09.2020

Date of placing the sample in the laboratory chamber: 29.09.2020

**Test conditions:**

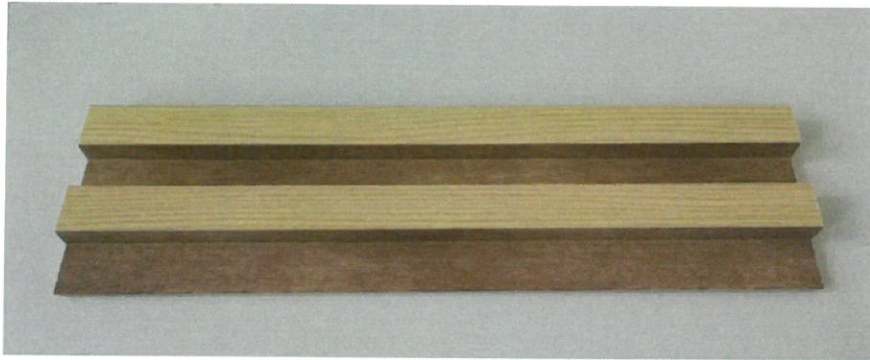
Stainless steel chamber, capacity 0.225 m<sup>3</sup>,

Loading factor: 1.0 m<sup>2</sup>/m<sup>3</sup>,

Sample area: 0.225 m<sup>2</sup> / 4 pieces with dimension 45 x 12,5 cm

Temperature: (23 ± 1) °C, Relative humidity: (50 ± 5)%,

Air exchange: 0.5 h<sup>-1</sup>.



**Figure.** The sample of Linerio slat panels L-line type

**TEST METHODS**

**No 1) EN 16516:2017-11** Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air.

**No 2) EN ISO 16000-9: 2009** Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method

**No 3) ISO 16000-6: 2011** Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS/FID.

**No 4) ISO 16000-3: 2011** Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method

**CHARACTERISTICS EXAMINED**

Determination of emissions of volatile organic compounds (C<sub>6</sub>-C<sub>16</sub>) and volatile aldehydes (C<sub>1</sub>-C<sub>4</sub>) from the product in laboratory emission chamber.

**EMISSIONS TEST**

Volatile organic compounds were collected on Tenax TA sorbent - filled tubes and analyzed by thermal desorption and gas chromatography using MS. Organic compounds were identified by mass spectrum library. The limit of quantification - 1 µg/m<sup>3</sup>.

Volatile aldehydes were collected on to adsorbent cartridges coated with 2,4-dinitrophenylhydrazine (DNPH) and analyzed by high performance liquid chromatography (HPLC) with detection by ultraviolet absorption. The limit of quantification - 1 µg/m<sup>3</sup>.

**REQUIREMENT**

<sup>A</sup>Polish Regulation of the Minister of Health and Social Care of 12 March 1996 on permitted concentrations and intensities of factors harmful to health emitted by building materials, fittings and fixtures in premises intended for humans. (Polish Monitor from 1996 No. 19, item 231).



## TEST RESULTS

Table 1. Emissions of volatile organic compounds from Linerio slat panels L-line type		
Identified organic compounds	CAS No	Concentration in the test chamber air <sup>1)</sup>
		[µg/m³] after 3 days
Volatile organic compounds (C <sub>6</sub> – C <sub>16</sub> )		
<sup>A/</sup> Toluene	108-88-3	10 ± 2
<sup>A/</sup> Ethylbenzene	100-41-4	4 ± 1
<sup>A/</sup> Styrene	100-42-5	4 ± 1
Benzyl alcohol	100-51-6	5 ± 1
Acetophenone	98-86-2	7 ± 2
Unidentified compounds		12 ± 3
TVOC (Toluene)		42 ± 10
Volatile aldehydes (C <sub>1</sub> - C <sub>4</sub> )		
<sup>A/</sup> Formaldehyde	50-00-0	1 ± 1
Acetaldehyde	75-07-0	1 ± 1
Propionic aldehyde	123-38-6	1 ± 1
Butyraldehyde	123-72-8	<1
The expanded uncertainty calculated using a factor of k = 2, which corresponds to the level of confidence of approximately 95%.		

<sup>1)</sup>The standard toluene, styrene and ethylbenzene produced by LGC Standards GmbH was used for quantitative calculations. Standards purity above 99.5%. The concentration of toluene and styrene and ethylbenzene was calculated in relation to the standard solution of these compounds. The concentrations of the remaining identified chemical compounds were calculated in relation to the toluene standard.

*Uncertainty of the results was estimated on the basis of available data, including: data on the accuracy of the measurement system used and data on repeatability obtained experimentally.*

*Laboratory does not have knowledge about the variability of the product population, but only about the sample tested. This is related to the risk of incorrect assessment resulting from the fact that the examined products may be not representative of the product population.*

*The parties have agreed that conformity assessment with the criteria specified in the Polish Regulation <sup>A/</sup> resulting from the tests purpose, a simple acceptance rule will apply. The product will be considered as conforming specified requirements if the test result, without taking into account variability resulting from measurement uncertainty, meets the requirement. This is related to the risk of incorrect assessment resulting from the fact that uncertainty will not be taken into account in the assessment. The risk also arises from the fact that the laboratory does not have knowledge about the variability of the product population, but only about the sample tested.*

**OPINION (outside the scope of accreditation)**

Linerio Slat Panels L-Line type was selected to testing of emissions of volatile organic compounds from the Linerio slat panels group: type S-; M-; L-Line, based on the data provided by the manufacturer. According to the manufacturer's declaration all types Linerio slat panels: type S-; M-; L-Line have the same chemical composition, the same application and are produced in the same production plant.

The study of the emission of volatile organic compounds from a sample of Linerio slat panels L-line type showed that it is a source of the emission of volatile organic compounds. Three days after the start of the test, small amounts of toluene, ethylbenzene, styrene, benzyl alcohol and acetophenone were detected in the air in the chamber. The total concentration of volatile organic compounds was  $42 \mu\text{g}/\text{m}^3$ , three days after the start of the test.

The test was performed with the chamber loading factor equal to  $1.0 \text{ m}^2/\text{m}^3$ . It corresponds to the application on all walls in the model room accordance with PN-EN 16516: 2017-11.

The results of the volatile organic compounds emission test were compared to:

- Polish Regulation of the Minister of Health and Social Care of 12 March 1996 on permitted concentrations and intensities of factors harmful to health emitted by building materials, fittings and fixtures in premises intended for humans (Polish Monitor from 1996 No. 19, item 231). The regulation distinguishes two types of rooms:
  - category A - residential, intended for the permanent stay of patients in health care buildings and intended for the permanent stay of children and adolescents in educational buildings, as well as rooms for storing food products,
  - category B - intended for the stay of people in public buildings other than those included in category A rooms and auxiliary rooms in apartments.

This regulation specifies the permitted concentrations in category A/B rooms for toluene vapors at the level of  $200/250 \mu\text{g}/\text{m}^3$ , ethylbenzene  $100/150 \mu\text{g}/\text{m}^3$ , styrene  $20/30 \mu\text{g}/\text{m}^3$  and formaldehyde at  $50/100 \mu\text{g}/\text{m}^3$ . For pairs of the detected compounds, the permitted concentrations we're determined. The permitted concentration for toluene, ethylbenzene, styrene and formaldehyde vapors wasn't exceeded in the chamber air.

Linerio slat panels meet the requirements of national regulations on the release of dangerous substances, in accordance with the Regulation of the Minister of Health and Social Care of 12 March 1996 and can be used in rooms of categories A and B intended for people. Rooms with Linerio slat panels can be used immediately after their installation.



- **A decree in force in France :** Arrêté du 19 avril 2011 relatif a l'étiquetage des produits de construction ou de revêtement de mur ou de sol et des peintures et vernis sur leurs émissions de polluants volatils (Ministère de l'écologie, du développement durable, des transports et du logement, Journal officiel de la Republique Francaise, Texte 15 sur 192, 13 mai 2011).

Tabele 2. Assessment of emissions of volatile organic compounds from wall lamella Linero type L-line						
Identified organic compounds	CAS No	Concentration [µg/m³]	Requirements for class [µg/m³]			
			C	B	A	A+
Formaldehyde	50-00-0	1	> 120	< 120	< 60	< 10
Acetaldehyde	75-07-0	1	> 400	< 400	< 300	< 200
Toluene	108-88-3	10	> 600	< 600	< 450	< 300
Tetrachloroethylene	127-18-4	<1	> 500	< 500	< 350	< 250
Xylene	1330-20-7	1	> 400	< 400	< 300	< 200
1,2,4-Trimethylbenzene	95-63-6	< 1	> 2000	< 2000	< 1500	< 1000
1,4-Dichlorobenzene	106-46-7	< 1	> 120	< 120	< 90	< 60
Ethylbenzene	100-41-4	4	> 1500	< 1500	< 1000	< 750
2-Butoxyethanol	111-76-2	< 1	> 2000	< 2000	< 1500	< 1000
Styrene	100-42-5	4	> 500	< 500	< 350	< 250
TVOC		42	> 2000	< 2000	< 1500	< 1000

Linerio lamella meet the requirements for A + class.

Other informations :-

Responsible for the test no 1) - 3)

M.Sc. Eng Anna Goljan

*Goljan*

Authorizing person  
M.Sc. Eng. Halina Deptuła

*Wepm*

Responsible for the test no 4)

PhD Eng. Adam Niesłochowski

*Niesłochowski*

The Head of the Laboratory of Thermal Physic, Acoustics and Environment Laboratory

PhD Eng. Agnieszka Winkler - Skalna

Podpis jest prawidłowy

Dokument podpisany przez Agnieszka Winkler-Skalna; ITB  
Data: 2020.12.18 15:51:13 CET

Warsaw, 18.12.2020.

Testing Laboratory declares that test results relate only to the object under test. Test Report should not be reproduced without a written permission of Testing Laboratory in any other form than as a whole.

Test Report is not substitute for documents required for placing on the market and making available of construction products.