Colori Decora Srl
Via degli Olmi 10 Zona Ind.le
06083 Bastia Umbra PG
ITALY

Eurofins Product Testing Denmark A/S
Smedeskovvej 38
8464 Galten
Denmark

DK-CustomerSupport@cpt.eurofinseu.com
www.eurofins.com

VOC EMISSION TEST REPORT
Italian CAM Edilizia

28 October 2024

1 Sample Information

Sample name	DECORMATT
Batch no.	-
Stated production date	28/08/2024
Product type	Paint, water based
Sample reception	09/09/2024

2 Brief Evaluation of the Results

Regulation or protocol	Conclusion	Version of regulation or protocol
Italian CAM Edilizia	Pass	DM 23 giugno 2022 n. 256, GURI n. 183 del 6 agosto 2022

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

Frederik Foged Haugaard
Analytical Service Manager

Rasmus Verdier
Analytical Service Manager

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

Table of contents

1		**Sample Information**	**1**
2		**Brief Evaluation of the Results**	**1**
3		**Applied Test Methods**	**3**
	3.1	General Test References	3
	3.2	Specific Laboratory Sampling and Analyses	3
4		**Test Parameters, Sample Preparation and Deviations**	**4**
	4.1	VOC Emission Chamber Test Parameters	4
	4.2	Preparation of the Test Specimen	4
	4.3	Picture of Sample	4
	4.4	Deviations from Referenced Protocols and Regulations	5
	4.5	Air Samplings from the Test Chamber	5
5		**Summary and Evaluation of the Results**	**6**
	5.1	Comparison with Limit Values of the Italian CAM Regulation	6
6		**Appendices**	**7**
	6.1	Chromatogram of VOC Emissions after 28 Days	7
	6.2	How to Understand the Results	8
	6.3	Description of VOC Emission Test	9
	6.4	Quality Assurance	9
	6.5	Accreditation	10
	6.6	Uncertainty of the Test Method	10
	6.7	Decision Rules	10
	6.8	Version History	10

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

3 Applied Test Methods

3.1 General Test References

Regulation, protocol or standard	Version	Reporting limit VOC [µg/m³]	Calculation of TVOC	Combined uncertainty¤ [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	-	-	-
Italian CAM Edilizia	Decree 6 August 2022	2	Toluene equivalents	22%

3.2 Specific Laboratory Sampling and Analyses

Procedure	External Method	Internal SOP	Quantification limit / sampling volume	Analytical principle	Uncertainty¤ [RSD(%)]
Sample preparation	ISO 16000-11:2024, EN 16516:2017+A1:2020, AgBB:2021, EMICODE:2022	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%
Sampling of phthalates*	ISO 16000-33:2017, MEL-09:2003	71M549812	60 L	Florisil	-
Analysis of phthalates*	ISO 16000-33:2017	71M546060	0.6 µg/m³	GC/MS	10%

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

4 Test Parameters, Sample Preparation and Deviations

4.1 VOC Emission Chamber Test Parameters

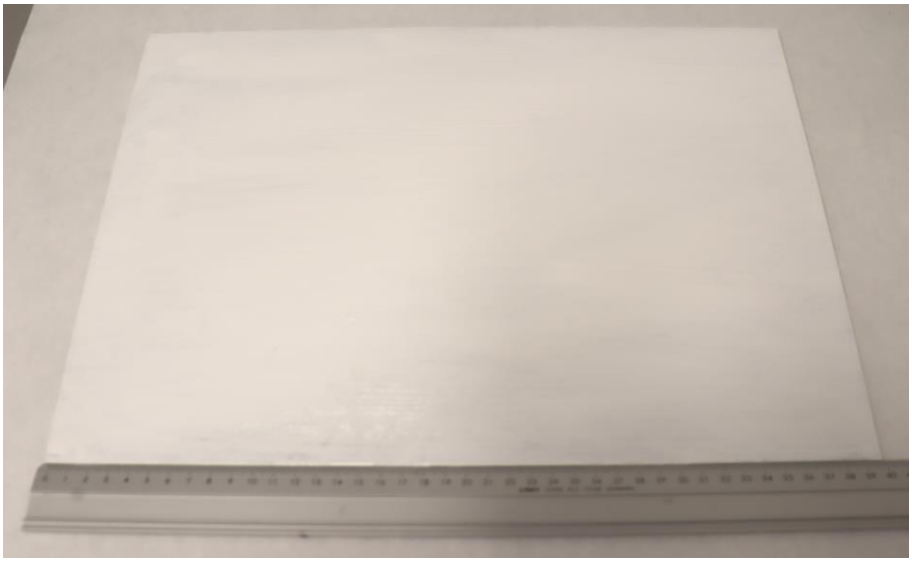
Parameters	Value	Sample Conditions	Value
Chamber volume, V[L]	119	Date and time of unpacking and start of sample preparation	23/09/2024 - 07:21
Air change rate, n[h^{-1}]	0.5	Preconditioning period	-
Air Velocity [m/s]	0.1	Chamber test period	23/09/2024 - 21/10/2024
Area specific ventilation rate, q [m/h or $m^3/m^2/h$]	0.5	Analytical test period	23/09/2024 - 24/10/2024
Relative humidity of supply air, RH [%]	50 ± 3	Exposed sample area [m^2]	0.120
Temperature of supply air, T [°C]	23 ± 1	Loading factor [m^2/m^3]	1.0
Background concentration of individual VOC's [µg/m^3]	< 2	Test scenario	Wall
Background concentration of TVOC [µg/m^3]	< 20		

4.2 Preparation of the Test Specimen

The sample was mixed in a ratio A : Water according to the client's instructions before it was homogenised and applied onto a glass plate.

Number of Layers	Application amount per layer, g/m^2	Mixing ratio, A : Water	Drying time, h
2	120	100 : 5	2

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).
This report may only be copied or reprinted in its entirety.

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	2024-10-21	10:52 - 12:39	35
28 Day-Res, DNPH silicagel	2024-10-21	10:53 - 12:40	36
28 Day, Tenax TA	2024-10-21	10:53 - 11:51	5.0
28 Day-Res, Tenax TA	2024-10-21	11:51 - 12:40	2.4
28 Day, Florisil	2024-10-21	07:48 - 10:17	60
28 Day-Res, Florisil	2024-10-21	07:48 - 10:17	61

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

5 Summary and Evaluation of the Results

5.1 Comparison with Limit Values of the Italian CAM Regulation

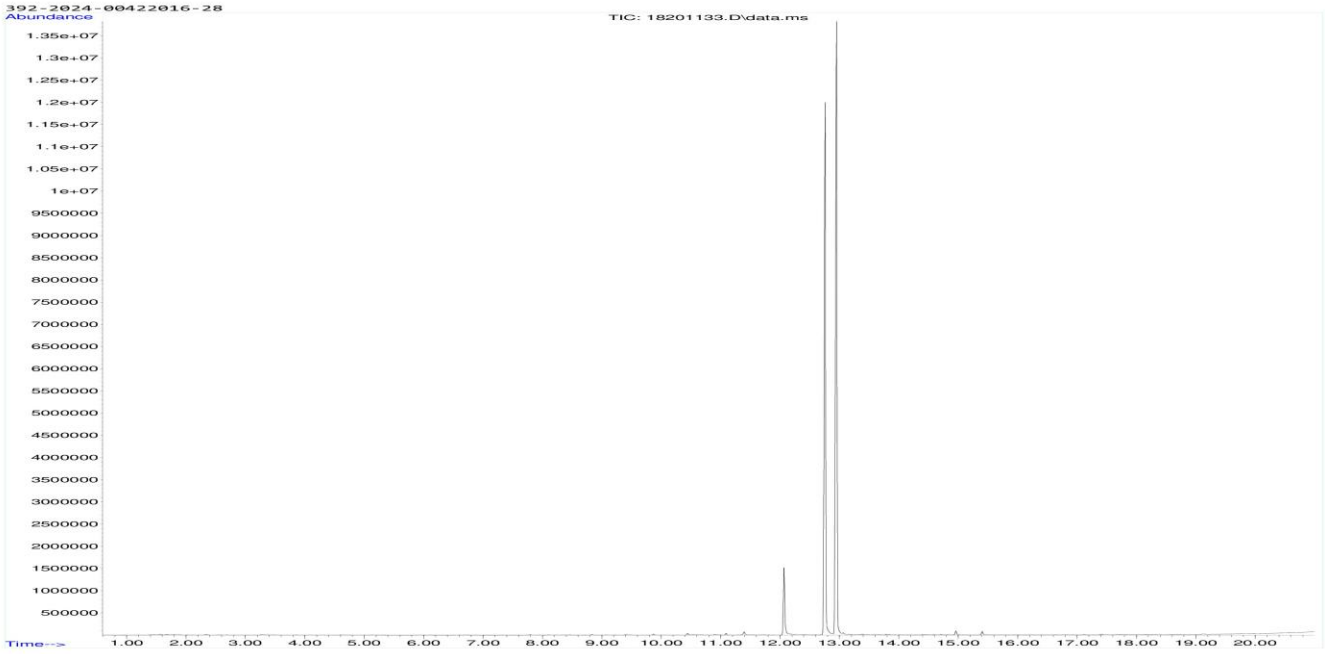
	CAS No.	Conc. 28 days µg/m³	Limit value 28 days µg/m³	Limit value Rewarding score 28 day µg/m³
TVOC	-	1100	< 1500	< 1000
Formaldehyde	50-00-0	14	< 60	< 10
Acetaldehyde	75-07-0	< 3	< 300	< 200
Toluene	108-88-3	< 2	< 450	< 300
Tetrachloroethylene	127-18-4	< 2	< 350	< 250
Ethylbenzene	100-41-4	< 2	< 1000	< 750
Xylene	1330-20-7	< 2	< 300	< 200
Styrene	100-42-5	< 2	< 350	< 250
2-Butoxyethanol	111-76-2	< 2	< 1500	< 1000
1,2,4-Trimethylbenzene	95-63-6	< 2	< 1500	< 1000
1,4-Dichlorobenzene	106-46-7	< 2	< 90	< 60
Benzene	71-43-2	< 1	< 1	
Trichloroethylene	79-01-6	< 1	< 1	
Dibutylphthalate (DBP)*	84-74-2	< 1	< 1	
Diethylhexylphthalate (DEHP)*	117-81-7	< 1	< 1	

The product was assigned a VOC emission class without taking into account the measurement uncertainty associated with the result.

The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

6 Appendices

6.1 Chromatogram of VOC Emissions after 28 Days



The analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

6.2 How to Understand the Results

6.2.1 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
SER	Specific Emission Rate

6.3 Description of VOC Emission Test

6.3.1 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.

6.3.2 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).

6.3.3 Testing of VOC

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).

6.3.4 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 µg/m³ to ppm are done by the ideal gas law using a temperature of 23 degree Celsius and standard atmospheric pressure.

6.3.5 Testing of Phthalates

The presence of phthalates is tested by drawing air samples from the test chamber outlet through tube with Florisil adsorbent after the specified duration of storage in the ventilated test chamber. Analysis is performed by solvent desorption and subsequently by GC/MS. Analysis of phthalates is not currently covered by the accreditation (Internal methods no.: 71M549812 / 71M546060).

6.4 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 analysis are carried out on the sample(s) as received and the result(s) are only valid for the tested sample(s).
This report may only be copied or reprinted in its entirety.

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.

6.5 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.

6.6 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/.

6.7 Decision Rules

Eurofins Product Testing A/S, declare statement of conformity based on the “Binary Statement for Simple Acceptance Rule” described in ILAC’s “Guidelines on decision Rules and Statements of Conformity” ILAC-G8:09/2019.

This means that results above the detection limit are always reported with two significant digits. Results are evaluated with the same number of significant digits as the corresponding limit values, and conformity is based on results being less than or equal to limit values.

For limit values with more than two significant digits, the third digit will be used to confirm whether a result is below or equal to the limit value. It will always be indicated in the evaluation table if this expanded evaluation is performed.

For further information, please visit www.eurofins.dk/product-testing/om-os/beslutningsregler/

6.8 Version History

Report date	Report number	Modification
28/10/2024	392-2024-00422016_W_EN	Current version