

SIA Silk Plaster Group
Balta iela 27
1055 Riga
LV

Test Report No. 52602-001 III

Test objective:	Evaluation according to French VOC- and CMR-regulation
Sample description by client:	Silk Plaster Prestige
Sampled by:	Nikolay Arutyunov, SIA Silk Plaster Group
Date of sampling:	06.09.2017
Location of sampling:	at the client
Date of production:	06.09.2017
Date of arrival of sample:	06.10.2017
Test period:	06.10.2017 - 04.12.2017
Date of report:	04.12.2017
Number of pages of report:	15
Testing laboratory:	eco-INSTITUT Germany GmbH, Cologne except ‡ subcontracted # outside accreditation
Test objective fulfilled:	✓ Class A+

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Sample View

Internal Sample-no.	Description by customer	Condition upon delivery	Type of sample
A001	Silk Plaster Prestige	without objection	interior wall covering



A001: Silk Plaster Prestige

Remark: The test results refer to the submitted test sample exclusively. The validity of the report is three years at most and will end immediately at any alternation of material composition or in manufacturing process. Publishing in parts requires authorization.

Expert Evaluation

The product **Silk Plaster Prestige** has been tested on behalf of **SIA Silk Plaster Group**.

This evaluation bases on the test criteria of the decree no. 2011-321 of March 23rd, 2011 (VOC regulation) and executive decisions of May 28th, 2009 and April 30th, 2009 (CMR regulation) of the French Ministry of Ecology, Sustainable Development, Transport and Housing.

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

VOC regulation

Emission analysis	Concentration (Test chamber air) [µg/m ³]	Class			
		C	B	A	A+
Substance	after 28 days				
Formaldehyde	2	> 120	< 120	< 60	< 10
Acetaldehyde	< 2	> 400	< 400	< 300	< 200
Toluene	< 1	> 600	< 600	< 450	< 300
Tetrachlorethylene	< 1	> 500	< 500	< 350	< 250
Xylene	< 1	> 400	< 400	< 300	< 200
1,2,4-Trimethylbenzene	< 1	> 2000	< 2000	< 1500	< 1000
1,4-Dichlorbenzene	< 1	> 120	< 120	< 90	< 60
Ethylbenzene	< 1	> 1500	< 1500	< 1000	< 750
2-Butoxyethanol	< 1	> 2000	< 2000	< 1500	< 1000
Styrene	< 1	> 500	< 500	< 350	< 250
TVOC_{tot}	36	> 2000	< 2000	< 1500	< 1000

CMR regulation

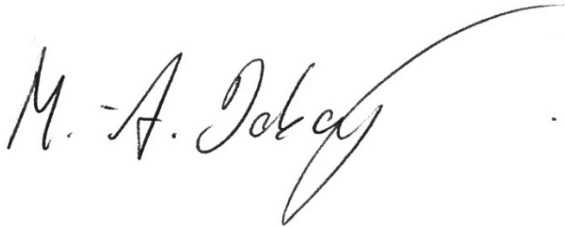
Emission analysis	Concentration (Test chamber air) [µg/m ³]	Requirement [µg/m ³]
Substance	after 28 days	after 28 days
Benzene	< 1	< 1
Trichlorethylene	< 1	< 1
Di(2-ethylhexyl)phthalate (DEHP)	< 1	< 1
Dibutylphthalate (DBP)	< 1	< 1

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Summary evaluation

The product **Silk Plaster Prestige** meets the requirements of the **Class A+** of the decree no. 2011-321 of March 23, 2011 (VOC regulation) and executive decisions of May 28th, 2009 and April 30th, 2009 (CMR regulation) of the French Ministry of Ecology, Sustainable Development, Transport and Housing.

Cologne, 04.12.2017

A handwritten signature in black ink, reading "M. -A. Dobaj". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Marc-Anton Dobaj, M.Sc. Crystalline Materials
(Project Manager)

Evaluation d'expert

Le produit **Silk Plaster Prestige** a été testé sous la responsabilité du **SIA Silk Plaster Group**. Cette évaluation est basée sur les critères du décret n° 2011-321 du 23 mars 2011 (COV décret) et arrêté du 28 mai 2009 et 30 avril 2009 (CMR arrêté) par le Ministère de l'écologie, du développement durable, des transports et du logement.

Les résultats documentés dans le rapport du test sont évalués comme suit.

COV décret

Analyse des émissions	Concentration (air de la chambre d'essai) [µg/m³]	Classe			
		C	B	A	A+
Substance	au bout de 28 jours				
Formaldéhyde	2	> 120	< 120	< 60	< 10
Acétaldéhyde	< 2	> 400	< 400	< 300	< 200
Toluène	< 1	> 600	< 600	< 450	< 300
Tétrachloréthylène	< 1	> 500	< 500	< 350	< 250
Xylène	< 1	> 400	< 400	< 300	< 200
1,2,4-Triméthylbenzène	< 1	> 2000	< 2000	< 1500	< 1000
1,4-Dichlorobenzène	< 1	> 120	< 120	< 90	< 60
Ethylbenzène	< 1	> 1500	< 1500	< 1000	< 750
2-Butoxyéthanol	< 1	> 2000	< 2000	< 1500	< 1000
Styrène	< 1	> 500	< 500	< 350	< 250
COV_{tot}	36	> 2000	< 2000	< 1500	< 1000

CMR arrêté

Analyse des émissions	Concentration (air de la chambre d'essai) [µg/m³]	Valeur limite
		[µg/m³]
Substance	au bout de 28 jours	au bout de 28 jours
Benzène	< 1	< 1
Trichloréthylène	< 1	< 1
Phthalate de bis (2-éthylhexle) (DEHP)	< 1	< 1
Phthalat de dibutyle (DBP)	< 1	< 1

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Résumé d'évaluation

Le produit **Silk Plaster Prestige** correspond aux exigences de la **classification A+** sur les critères du décret n° 2011-321 du 23 mars 2011 (COV décret) et arrêté du 28 mai 2009 et 30 avril 2009 (CMR arrêté) par le Ministère de l'écologie, du développement durable, des transports et du logement.

Cologne, 04.12.2017

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Marc-Anton Dobaj, M.Sc. Crystalline Materials
(Chef de projet)

Laboratory report

1 Emission analysis

Test method

prEN 16516 | Testing and evaluation of the release of dangerous substances; determination of emissions into indoor air

A001, Preparation of test sample

Date: 26.10.2017
Pre-treatment: Application on glass surface smoothed with a straight trowel; mixing ratio sample A001 and water 1:6; mixed by hand and left for 12h; application thickness: 2 mm; transfer of the test specimen into the test chamber immediately after preparation
Masking of backside: not applicable
Masking of edges: no
Relationship of unmasked edges to surface: not applicable
Loading: related to area
Dimensions: 2 x [25 cm x 25 cm]; thickness 2 mm

A001, Test chamber conditions according to DIN ISO 16000-9

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: 1 m²/m³
Specific air flow rate: 0.5 m³/(m² · h)
Air sampling: 28 days after test chamber loading

Analytics

Aldehydes and Ketones | DIN ISO 16000-3
Limit of determination: 2 µg/m³
Volatile Organic Compounds | DIN ISO 16000-6
Limit of determination: 1 µg/m³ (BIT: 5 µg/m³)
Note for analysis: not specified

1.1 Sample A001, Volatile Organic Compounds after 28 days

Test objective:

Volatile Organic Compounds (VOC), test chamber, air sampling 28 days after test chamber loading

Test result:

Sample: A001: Silk Plaster Prestige

No.	Substance	CAS No.	RT [min]	Concentration (test chamber air) Substances ≥ 1 µg/m³ 28 days [µg/m³]	Toluene- equivalent Substances ≥ 5 µg/m³ 28 days [µg/m³]
1	Aromatic hydrocarbons				
1-1	Toluene	108-88-3		< 1	< 5
1-2	Ethyl benzene	100-41-4		< 1	< 5
1-4	p-Xylene (including m-Xylol)	106-42-3		< 1	< 5
1-6	o-Xylene	95-47-6		< 1	< 5
1-11	1.2.4-Trimethylbenzene	95-63-6		< 1	< 5
1-25	Styrene	100-42-5		< 1	< 5
6	Glycols, Glycol ethers, Glycol esters				
6-3	Ethylene glycol-monobutylether (2-Butoxyethanol)	111-76-2		< 1	< 5
7	Aldehyde				
7-20	Acetaldehyde	75-07-0		< 2	n.d.
7-22	Formaldehyde	50-00-0		2	n.d.
13	Other identified substances in addition to LCI list				
	Benzene	71-43-2		< 1	< 5
	1,4-Dichlorobenzene	106-46-7		< 1	< 5
	Trichlorethene	79-01-6		< 1	< 5
	Tetrachloroethene	127-18-4		< 1	< 5

+ identified and calibrated substances, substance specific calculated

n.d.: not determinable

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TVOC, Total volatile organic compounds	Concentration after 28 days [µg/m³]	SERa [µg/(m² · h)]
Sum of VOC according to ISO 16000-6	36	18

2 Phthalates, chamber air analytics

Test parameter:

Phthalates, chamber air

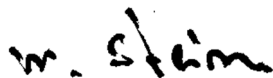
Test method:

Analytics: | DIN ISO 16000-6

Test result:

Sample	Substance	Concentration (test chamber air) [µg/m³]	Limit of determination (test chamber air) [µg/m³]
A001: Silk Plaster Prestige	Dibutylphthalate (DBP)	< 1	1
	Diethylhexylphthalate (DEHP)	< 1	1

Cologne, 04.12.2017



Michael Stein, Dipl.-Chem.
(Deputy Technical Manager)

Appendix

I Sampling sheet

Produktprüfung Product testing
 Zertifizierung Certification
 Beratung Consulting



eco-INSTITUT-Label
 Sampling Sheet*



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

52602-001

Test laboratory	eco-INSTITUT Germany GmbH Schanzenstr. 6-20, D-51063 Cologne Tel. +49 (0)221 - 931245-0 Fax +49 (0)221 - 931245-33	Sampler (Name, Company, Phone)	NIKOLAY ARUTYUNOV SIA SILK PLASTER GROUP +371 660 65710.
Name of the producer / distributor at the place of sampling (Address / Stamp)	SIA SILK PLASTER GROUP LV 1055 SPILVES G, RIGA, LATVIA	Customer / Invoice recipient (if different from the producer)	

Product name	SILK PLASTER	Product type (e.g. parquet, floor covering)	interior wall covering
Modell/Program /Series	PRESTIGE	Batch	
Article number	403	Production date of the batch	06.09.2017

Samples are taken ...	from current production <input checked="" type="checkbox"/> storage	Sampling date	06.09.2017
Storage location before sampling	Production <input checked="" type="checkbox"/> Storage Others	Sampling time	16:15:05
Storage location:	LV1055 SPILVES G, RIGA, LATVIA	Storage conditions before sampling	open <input checked="" type="checkbox"/> packaged
		Packaging material:	PE-PE

Special features (possible negative effects through emissions at the 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 guide for taking samples. The signer guarantees keeping the formula, the used raw materials, the product composition and the production procedure during the entire production process of the product designated above.

Date: 02.10.17
 Signature: (Stamp) NIKOLAY ARUTYUNOV.

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

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

eco-INSTITUT Germany GmbH / Schanzenstrasse 6-20 / Carlswerk Kupferzug 5.2 / D-51063 Köln / Germany
 Tel. +49 221.931245-0 / Fax +49 221.931245-33 / eco-institut.de / Geschäftsführer: Dr. Frank Kuebart, Daniel Tigges
 HRB 17917 / USt-ID: DE 122653308 / Raiffeisenbank Frechen-Hürth, IBAN: DE60370623651701900010, BIC: GENODE33HAN



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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 prEN 16516	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	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: K1 and K2, M1 and M2, R1 and R2 IARC: Group 1 and 2A DFG (MAK lists): Category III1 and III2
VVOC (very volatile organic compounds)	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 compounds)	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 prEN 16516	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)

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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 2015
R value according to AgBB 2015/DIBt	R value for all identified and calibrated VOC $\geq 5 \mu\text{g}/\text{m}^3$ with LCI, established by the AgBB in 2015
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 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 toluene signal.

The concentrations of substances that have been determined are corrected based on the recovery rate for an internal standard (d8 toluene). Identification and quantification of the substances is limited to 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. 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 prEN 16516. 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.

IV 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.