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Experimental Department

TEST REPORT

Report Number	: 123/26/EXPO
Order Number	: 2600 J 309
Date of Issuance	: July 24, 2026
Number of pages in the report	: 5
Test Client	: ALPHA CZECH s. r.o. U plynárny 348/83 141 00 Prague 4 - Michle
Subject of the Test	: Thermal and Moisture Behavior of Construction materials and products—Determination of water vapor permeability – silicate Abamal plaster mixes
Test method identification:	ČSN EN ISO 12 572
Number of copies / Copy No.	: 4 / <u>1</u> 2 3 4
Responsible Person	: Lukáš Balík, Ph.D. 
Test conducted by	: Ing. Nikola Prodanovič, Jiří Havel
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Director	: Czech Technical University in Prague Czech Technical University in Prague Prof. Ing. Jiří Kolisko, Klokner, Ph.D., Institute (3) 166 08 Prague 6, Šolínova 7 Company ID No. 68407700, Tax ID No. CZ68407700

1. Subject of the Test

Based on the order, staff at the accredited testing laboratory of the Klokner Institute at the Czech Technical University in Prague conducted accredited tests on the Abamal plaster mixture to determine water vapor permeability in accordance with ČSN EN ISO 12572

2. References

- [1] ČSN EN ISO 12572 – Thermal and moisture behavior of building materials and products – Determination of water vapor permeability
- [2] ČSN EN ISO 7783 – Coatings – Determination of water vapor permeability – Pan method

3. Test Equipment and Accessories

- 3 plastic insulation chambers
- Kern electronic scale, 6.2 kg
- Sample clamping cells
- 150 mm digital Vernier caliper, Somet
- COMET S3120 digital thermometer and hygrometer
- metrological numbers P 04 009, P 04 010, P 04 018–021 M
- metrological number P 01 114 M
- metrological number P 10 001 M - P 10 003 M

4. Test Samples – Preparation and Handling

On April 9, 2026, the client delivered 9 pre-prepared and labeled samples to the Klokner Institute laboratories. These consisted of 7 samples of plaster mixture applied by contact to gas silicate discs and 2 separate samples of hardened plaster mixture. Conditioning and testing of the test specimens were performed in accordance with ČSN EN ISO 12572 [1]. For the final 28 days of curing, the plasters were stored under laboratory conditions: $50 \pm 2\%$ relative humidity and a temperature of $21 \pm 2^\circ\text{C}$.

Table 1: Description of the supplied samples and test dates

Designation Sample	Sample description	Sample form	Date of determination Water Vapor Permeability according to ČSN EN ISO 12572
VP26S2-13	ALPHA INNER HISTORIC, ALPHA FACADE HISTORIC	Coating on gas silicate	June 13, 2026 – June 14, 2026
VP26S2-25	ALPHA INNER HISTORIC, ALPHA FACADE HISTORIC	Coating for gas silicate	June 13, 2026 – June 14, 2026
VP26S1-10 g	ALPHA FACADE, COVER, INNER, ABAMAL Anti-mold, ABAMAL	Coating for gas silicate	June 14, 2026 – June 15, 2026
VP26S2-19 g	ALPHA ISOLATION 1.5 + ALPHA FACADE 0.4	coating for gas silicate	June 14, 2026 – June 15, 2026
03+VS-10g	ALPHA ISOLATION	Coating for gas silicate	June 13, 2026 – June 15, 2026
03-9g	ALPHA INNER acrylic + 8% mi	Coating for gas silicate	June 13, 2026 – June 14, 2026
VZ3	ALPHA FACADE acrylic	Coating only	June 26, 2026 – June 27, 2026
VZ5	ALPHA FACADE acrylic + 10% mi	Coating only	June 26, 2026 – June 27, 2026
II-05	ALPHA ISOLATION 4 akr + 20% mi	Coating for gas silicate	June 25, 2026 – June 26, 2026

Table 2: Number and Markings of Test Specimens

Types of test specimens	Number of test specimens and their marking	Test procedure
Discs approx. Ø 115 mm	7 pieces – coating on gas silicate disc	Determination of water vapor permeability according to ČSN EN ISO 12572
Thin-film coating, approx. Ø 115 mm	2 pieces – cured coating alone	Determination of water vapor permeability according to ČSN EN ISO 12572

5. Determination of Water Vapor Permeability

Test procedure	:	June 10, 2026 – June 29, 2026
Test procedure	:	ČSN EN ISO 12572
Performed by	:	Ing. Nikola Prodanovič, Jiří Havel
Test specimens	:	7 x coated discs, 2 x coating alone

Table 3: Dimensions of Samples for the Water Vapor Permeability Test

Sample of the sample	Weight of the sample [g]	Ø [mm]		Diameter [mm]	Thickness of the sample [mm]		Diameter [mm]
VP26S2-13	88	114.5	114.2	114.35	20.9	21.9	21.4
VP26S2-25	94.62	114.9	114.7	114.8	22.8	22.9	22.85
VP26S1-10	99.22	114.5	114.7	114.6	21	21.1	21.05
VP26S2-19	88.13	115.2	114.8	115	21.8	21	21.4
03+VS-10	95.34	114.7	114.6	114.65	21	21.8	21.4
03-9	86.48	114.7	114.7	114.7	20.7	20.6	20.65
VZ3	3.67	115	116.5	115.75	1	0.9	0.95
VZ5	4.86	117.1	117.5	117.3	1	1.1	1.05
II-05	87.51	114.8	114.6	114.7	20.6	21.4	21

Table 4: Water vapor permeability and diffusion resistance factor of the coatings themselves

Ref. sample	Sample description	Flow of water Vapor [*10 ⁻⁸ kg/s]	Permeability water vapor [*10 ⁻⁹ kg/(m ² .s.Pa)]	Factor diffusion resistance [-]
VP26S2-13	ALPHA INNER HISTORIC, ALPHA FACADE HISTORIC	1.406	1.04	33.4
VP26S2-25	ALPHA INNER HISTORIC, ALPHA FACADE HISTORIC	1.406	1.032	34.4
VP26S1-10g	ALPHA FACADE, COVER, INNER, ABAMAL Anti-mold, ABAMAL	1,377	1,098	52.7
VP26S2-19g	ALPHA ISOLATION 1.5 + ALPHA FACADE 0.4	1.035	0.82	114.6
03+VS-10g	ALPHA ISOLATION	1.014	0.829	81.7
03-9g	ALPHA INNER acrylic + 8% mi	0.816	0.661	143.2
VZ3	ALPHA FACADE akr	1,858	1.183	179.1
VZ5	ALPHA FACADE akr + 10% mi	0.903	5,597	342.3
II-05	ALPHA ISOLATION 4 akr + 20% mi	0.561	3.692	384.6

Measurement uncertainty:

The expanded measurement uncertainty of the diffusion resistance factor is ± 2.82 . The standard uncertainty was determined as a combined uncertainty. The uncertainty stated here is the expanded uncertainty, which was calculated using a coverage factor $k = 2$, corresponding to a confidence level of approximately 95%.

Table 5: Summary Results from the Water Vapor Permeability Test

Quantity	Variable Name	Unit	VP26S2-13	VP26S2-25	VP26S1-10
D	Sample diameter	[m]	0.114	0.115	0.115
d	Sample thickness	[m]	0.0214	0.0229	0.0211
G	Dependency guidelines	[kg/s]	1.41E-08	1.41E-08	1.38E-08
A	Specific area	[m ²]	1.03E-02	1.04E-02	1.03E-02
g	Diffusion flux density	[kg/(m ² .s)]	1.37E-06	1.36E-06	1.34E-06
W _c	Water vapor permeability	[kg/(m ² .s.Pa)]	1.04E-09	1.03E-09	1.10E-09
Z	Diffusion resistance	[m ² .s.Pa/kg]	9.62E+08	9.69E+08	9.11E+08
δ	Diffusivity	[kg/(m.s.Pa)]	2.23E-11	2.36E-11	2.31E-11
δ _a	Atmospheric pressure coefficient atmospheric pressure	[kg/(m.s.Pa)]	2.01E-10	2.01E-10	2.01E-10
μ	Diffusion resistance factor	[-]	33.4	34.4	52.7
S _d	Equivalent diffusion thickness	[m]	0.03	0.03	0.05
Parameter	Variable Name	Unit	VP26S2-19	03+VS-10	03-9
D	Sample diameter	[m]	0.115	0.115	0.115
d	Sample thickness	[m]	0.0214	0.0214	0.0207
G	Dependency guidelines	[kg/s]	1.04E-08	1.01E-08	8.16E-09
A	Specific surface area	[m ²]	1.04E-02	1.03E-02	1.03E-02

g	Diffusion flux density	[kg/(m ² *s)]	9.97E-07	9.83E-07	7.90E-07
W _c	Water vapor permeability	[kg/(m ² *s*Pa)]	8.20E-10	8.29E-10	6.61E-10
Z	Diffusion resistance	[m ² *s*Pa/kg]	1.22E+09	1.21E+09	1.51E+09
δ	Diffusivity coefficient	[kg/(m·s·Pa)]	1.75E-11	1.77E-11	1.37E-11
δ _a	coefficient of atmospheric pressure	[kg/(m·s·Pa)]	2.01E-10	2.00E-10	2.00E-10
μ	Diffusion resistance factor	[-]	114.6	81.7	143.2
S _d	Equivalent diffusion thickness	[m]	0.11	0.08	0.14
Quantity	Name of the quantity	Unit	VZ3	VZ5	II-05
D	Sample diameter	[m]	0.116	0.117	0.115
d	Sample thickness	[m]	0.0010	0.0011	0.0210
G	Dependency guideline	[kg/s]	1.86E-08	9.03E-09	5.61E-09
A	Specific area	[m ²]	1.05E-02	1.08E-02	1.03E-02
g	Diffusion flux density	[kg/(m ² *s)]	1.77E-06	8.35E-07	5.43E-07
W _c	Water vapor permeability	[kg/(m ² *s*Pa)]	1.18E-09	5.60E-10	3.69E-10
Z	Diffusion resistance	[m ² *s*Pa/kg]	8.46E+08	1.79E+09	2.71E+09
δ	Diffusivity coefficient	[kg/(m·s·Pa)]	1.12E-12	5.88E-13	7.75E-12
δ _a	n atmospheric pressure	[kg/(m·s·Pa)]	2.01E-10	2.01E-10	2.01E-10
μ	Diffusion resistance factor	[-]	179.1	342.3	384.6
S _d	Equivalent diffusion thickness	[m]	0.17	0.36	0.38

DECLARATION

The test results apply only to the test subject described in the "Test Subject" section. The results of this report do not replace other documents, such as administrative documents. The test report may be reproduced only in its entirety. Portions of the test report may be reproduced, published, or otherwise used only with the written approval of the Klokner Institute at the Czech Technical University in Prague.