CE 1301

BRONYA®

DECLARATION OF PERFORMANCE

according Annex III of the Regulation (EU) No 305/20111
amended by Commissions delegated Regulation (EU) No 574/2014

No. 002-2016/04

1. Unique identification code of the product-type: **«Bronya Facade»**
2. Intended use: **Extra-fine ceramic thermal insulating material**
3. Manufacturer: **«NPO «BRONYA» LLC**
   13 A Batalionnaya str.,
   400005 Volgograd, Russian Federation
4. Authorised representative: **Nanoisolierung UG,**
   63263 Neu-Isenburg Schönbornring 10
   www.nanoisolierung.com Info@nanoisolierung.com
5. System of assessment and verification of constancy of performance: **System 4**
6. Harmonised standard: **EN 1504-2**
   Notified body: **Technický a skúšobný ústav stavebný, n. o.**
   Štefánikova 24, 059 41 Tatranská Štrba,
   Slovak Republic
   NB 1301
7. Declared performances:

Essential characteristics	Performance	Test Standard	Harmonised technical specification
Permeability to CO_2	$S_D > 50$ m	EN 1062-6	EN 1504-2: 2004
Water vapour permeability	$S_D < 5$ m (class I)	EN ISO 7783	
Capillary absorption and permeability to water	$W < 0{,}1$ kg/m^2 x h^{0,5}	EN 1062-3	
Thermal compatibility: - Freeze-Thaw cycling:	$\leq 0{,}8$ N/mm^2	EN 13687-3	
Adhesion strength by pull-off test	$\geq 1{,}0$ (0,7) N/mm^2	EN 1542	
Reaction to fire	Class F	EN 13501-1	

The performance of the product identified above is in conformity with the set of declared performances. The product is acceptable according to hygienic criteria according to the hygienic certificate No.HK/B/0019/01/2016 from February 4, 2016.
This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

НПО «Броня»

22.04.16
date

NPO «BRONYA» LLC CEO Boyarincev A.
name ,surname and sign of the authorized person

ВОЛГОГРАДСКИЙ ИННОВАЦИОННЫЙ РЕСУРСНЫЙ ЦЕНТР

БРОНЯ
СВЕРХТОНКАЯ ТЕПЛОИЗОЛЯЦИЯ

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Water vapour permeability	S_D < 5 m (class I)	EN ISO 7783	
Capillary absorption and permeability to water	W< 0,1 kg/m^2 x h^{0,5}	EN 1062-3	
Thermal compatibility: - Freeze-Thaw cycling:	≤0,8 N/mm^2	EN 13687-3	
Adhesion strength by pull-off test	≥1,0 (0,7) N/mm^2	EN 1542	
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Signed for and on behalf of the manufacturer by:

22.04.2016
date

NPO «BRONYA» LLC, CEO Boyarincev A.
name ,surname and sign of the authorized person

Составлено и согласовано согласно договору № 2015-12-65326-TSEE-SC Бояринцев А.А.

SERCONS

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e-mail: info@serconsrus.com, www.serconsrus.ru

Исх. № 385

От 22.04.2916

Генеральному директору ООО НПО «Броня»

Бояринцеву Александру Валерьевичу

Уважаемый Александр Валерьевич,

Подтверждаем, что в соответствии с п.32 Регламента ЕС №305/2011, применимого к строительной продукции, маркировка CE должна наноситься на всю строительную продукцию, для которой производитель составил декларацию характеристик качества на основании испытаний, проведённых в нотифицированной европейской лаборатории.

Вывод:

На основании протокола испытаний № 002-2016/04, проведенных в рамках договора №2015-12-65326-TSEE-SC, а также руководствуясь п.32 Регламента №305/2011, применимого к строительной продукции, ООО НПО «Броня» имеет право наносить на продукцию «Броня Фасад» маркировку CE.

Приложение №1 - согласованная в рамках договора №2015-12-65326-TSEE-SC декларация соответствия.

Генеральный директор ООО «СЕРКОНС» Григорьев А.А.

М.П.

TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
Test laboratory
Studená 3, 821 04 Bratislava

Reg. No. 004/S-045

Laboratory branch in: Štefánikova 24, 059 41 Tatranská Štrba, Slovak Republic, tel. +421-52-4484 471, fax: +421-52-4484 472, e-mail: lab.ts@tsus.sk

TEST REPORT No. 90-16-0081

JOB

No.: 90160035

Client: SERCONS
Derbenevskaya embankment 11, Office 60
115114 Moscow
Russian Federation

OBJECT OF TESTING

Product: "Bronya Facade" extra-fine ceramic thermal insulating material

- coating for principles 1 - method 1.3 of EN 1504-2

Manufacturer: "NPO "BRONYA" LLC
13 A Batalionnaya st.
400005 Volgograd
Russian Federation

Standard of product: EN 1504-2: 2004 Products and systems for the protection and repair of concrete structures. Definitions, requirements, quality control and evaluation of conformity. Part 2: Surface protection systems for concrete

PRODUCT SAMPLE

Description of sample: one-component white coating material in a plastic bucket, 6 pcs of 500 ml
Designation of sample by client: "Bronya Facade"
Sampler: client
Place and date of delivery: Laboratory branch in Tatranská Štrba, on 19th February 2016
Designation of sample by lab.: 026/16

TESTS

Preparation and coating: "Bronya Facade" was prepared and applied in accordance with the manufacturer's instructions. Undiluted coating was applied to clean and dry substrate by brush in one layer, mean consumption 1 l per m^2.The used substrates are specified below under the relevant tests.
Concrete substrates were prepared and cured according to EN 1766. The surface was sandblasted prior to treatment.
Determination of dry film thickness was carried out in accordance with EN 2808, wedge cut method.

Carbon dioxide permeability - accredited test

Test procedure: STN EN 1062-6: 2003 Paints and varnishes. Coating materials and coating systems for exterior masonry and concrete. Part 6: Determination of carbon dioxide permeability (idt EN 1062-6:2002)

Description of test specimens: three treated circular test specimens with a diameter of 90 mm, the coating applied on one face
- test substrate: unglazed ceramic tiles with a thickness of 6 mm
- application of coating: as described on page 1
- curing time after application: 7 days at (23±2)°C and (50±5)% relative humidity

- conditioning prior to testing: in accordance with STN EN 1062-11, Clause 4.3. (The test specimens were subjected to three cycles comprising 24 h storage in water at (23± 2)°C and 24 h drying at (50± 2)°C). Afterwards the test pieces were dried over desiccant to constant mass.)
- sealing compound: paraffin SASOLWAX 7837 (Manufacturer: Sasol Wax, Hamburg, Germany) mixed with refined crystalline paraffin
- In parallel, the diffusion resistance was determined against a CO_2 reference film. Parallel measurement has been established without deviations from the predetermined tolerance.

Test specimens prepared by: Milan Ševčík

Test conditions:

- method A: Gravimetric method	
- exposed area of the test specimen **A**	0,005 m^2
- time interval between two weighings of the test specimens	24 h
- used sodium hydroxide granulated for elemental analysis	
- test temperature	23°C
- test concentration of carbon dioxide in chamber	10 % (V/V)
- mean barometric pressure during test $\mathbf{p}_{amb}$	100,22 kPa
- the diffusion coefficient of carbon dioxide in air D_{CO2}	1,38 m^2/d
- the difference in concentration of carbon dioxide $\|\Delta c\|$	180 g/m^3

Deviations from the standard: none

Date of test: from 16th to 24th March 2016

Test personnel: Milan Ševčík

Permeability to water vapour - accredited test

Test procedure: STN EN ISO 7783: 2012 Paints and varnishes. Determination of water-vapour transmission properties. Cup method (idt EN ISO 7783:2011)

Description of test specimens: three treated circular test specimens with a diameter of 90 mm, the coating applied on one face
- test substrate: unglazed ceramic tiles with a thickness of 6 mm
- application of coating: as described on page 1
- curing time after application: 7 days at (23±2)°C and (50±5)% relative humidity
- conditioning prior to testing: in accordance with STN EN ISO 7783, method B (The test specimens were subjected to three cycles comprising 24 h storage in water at (23± 2)°C and 24 h drying at (50± 2)°C))
- sealing compound: paraffin SASOLWAX 7837 (Manufacturer: Sasol Wax, Hamburg, Germany) mixed with refined crystalline paraffin

Test specimens prepared by: Milan Ševčík

Test conditions:

- measuring: wet cup method	
- exposed area of the test specimen **A**	0,005 m^2
- time interval between two weighings of the test specimens	2 h
- used saturated aqueous solution - $NH_4H_2PO_4$	
- test temperature	23°C
- relative humidity in climate chamber	50%
- relative humidity in test cup	93%
- water vapour pressure difference $\Delta\mathbf{p}_v$	1207 Pa
- standard barometric pressure $\mathbf{p}_0$	1013,25 hPa
- mean barometric pressure during test **p**	1016,0 hPa
- gas constant of water vapour $\mathbf{R}_v$	462 Nm/(kg.K)
- test temperature **T**	296 K
- water-vapour transmission rate of the substrate	409,6 $g/(m^2.d)$
- water-vapour permeation coefficient of air δ_a [g/(m.d.Pa)]	0,0168 g/(m.d.Pa)

Deviations from the standard: none

Date of test: from 16th to 17th March 2016

Test personnel: Milan Ševčík

Capillary water absorption and water permeability water - accredited test

Test procedure:	STN EN 1062-3: 2008 Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete. Part 3: Determination of liquid water permeability (idt EN 1062-3:2008)
Description of test specimens:	three treated test specimens with dimensions of approximately 150 mm x 150 mm, thickness 30 mm, coating applied to one face - test substrate: calcium silicate bricks - application of coating: as described on page 1 - curing time after application: 7 days at (23±2)°C and (50±5)% relative humidity - the reverse side and the edges of the test specimens were sealed with two layers of two- component epoxy varnish, subsequently drying for further 7 days at (23±2)°C and (50±5)% relative humidity - conditioning prior to testing: in accordance with STN EN 1062-3, Clause 6.4.2 (The test specimens were subjected to three cycles comprising 24 h storage in water at (23± 2)°C and 24 h drying at (50± 2)°C))
Test specimens prepared by:	Milan Ševčík
Test conditions:	laboratory environment
Deviations from the standard:	none
Date of test:	from 07th to 08th March 2016
Test personnel:	Milan Ševčík

Thermal change compatibility – Freeze-thaw cycling without de-icing salt impact - accredited test

Test procedure:	STN EN 13687-3: 2002 Products and systems for the protection and repair of concrete structures. Test methods. Determination of thermal compatibility. Part 3. Thermal cycling without de-icing salt impact (idt EN 13687-3: 2002)
Description of test specimens:	two treated concrete slabs with dimensions of 300 mm x 300 mm, thickness 100 mm, the coating applied on one face - test substrate: concrete Type MC (0,40) - application of coating: as described on page 1 - curing time after application: 7 days at (23±2)°C and (50±5)% relative humidity - all surfaces of the specimens except the 300 mm x 300 mm test face were sealed with thermosetting resin, subsequently drying for further 7 days at (23±2)°C and (50±5)% relative humidity
Test specimens prepared by:	Milan Ševčík
Test conditions:	The test samples were subjected to 20 cycles of the freeze-thaw cycling according to EN 13687-3, Clause 7.1. One cycle took 24 h and comprised the following stages: - 2 h water storage at (21±2)°C - 4 h storage in air at (-15±2)°C: - 2 h water storage at (21±2)°C - 16 h storage in air at (60±2)°C After 10 cycles and after the end of the exposure were evaluated: - degree of blistering, method according to EN ISO 4628-2; - degree of cracking, method according to EN ISO 4628-4; - degree of flaking, method according to EN ISO 4628-5. 7 days after the end of the exposure was evaluated adhesion strength by pull-off test.
Deviations from the standard:	none
Date of test:	- exposure: from 07th March to 27th March 2016 - pull-off test: 04th April 2016
Test personnel:	Milan Ševčík

Adhesion strength by pull-off test - accredited test

Test procedure:	STN EN 1542: 2001 Products and systems for the protection and repair of concrete structures. Test methods. Measurement of bond strength by pull-of (idt EN 1542:1999)
Description of test specimens:	one treated concrete slab with dimensions of 300 mm x 300 mm, thickness 100 mm, the coating applied on one face - test substrate: concrete Type C (0,70) - application of coating: as described on page 1 - curing time after application: 7 days at (23±2)°C and (50±5)% relative humidity
Test specimens prepared by:	Milan Ševčík
Test conditions:	laboratory environment
Deviations from the standard:	none
Date of test:	29th February 2016
Test personnel:	Milan Ševčík

Applied instrumentation:

ID	Name	Range	Unit	Division
M900007	Calliper	(0 - 250,00)	mm	0,01
M900008	Pull-off tester ERICHSEN 417	0 až 47,00	MPa	0,5
M900009	Balance Kern PRJ 6200-2NM	0 až 6200	g	0,01
M900011	Stopwatch	(0 - 1800)	s	0,1
M900018	Analytical balance Sartorius BP 300 S	(0 - 303,00)	g	0,0001
M900031	Digital calliper	(0 - 150,00)	mm	0,01
M900037	Coating thickness gauge PIG	0 až 2	mm	0.02
M900044	Automatic recorder of temperature and humidity	((-25) - 45)	°C	0,1
		(15 - 95)	%	1,0
Z900001	Climatized chamber Vötsch VC 4034	-40 až +180	°C	0,1
Z900002	Laboratory ventilated oven STERIMAT 354.3	+20 až +250	°C	1
Z900015	Aluminium cups with free test area of 0,005 m²			
Z900023	Barometer	960 až 1040	hPa	1
Z900024	Desiccator			
Z900028	Test chamber CO_2	+20 až +250	°C	1
Z900045	Moulds for preparing concrete plates			
Z900047	Concrete mixer 125 l			
Z900050	Scarecrows electric table for compacting concrete			

TEST RESULTS

1) Carbon dioxide permeability -

Test specimen No.	Mean value of the test specimen thickness s (m)	Mass difference of two weighings at constant change of mass d_m (g)	Carbon dioxide permeability i (g/(m².d))	Diffusion-equivalent air layer thickness s_d (m)	Diffusion resistance number μ (-)
1	0,000850	0,0145	2,89	85,61	100712
2	0,000967	0,0146	2,91	85,02	87950
3	0,000873	0,0127	2,53	97,75	111930
Average	0,000897	0,0139	2,78	**89,46**	100198
Extended uncertainty U			± 0,37	± 12,20	± 17098

2) Permeability to water vapour

Test specimen No.	Mean value of the test specimen thickness d (m)	Mass difference of two weighings at constant change of mass (g)	Rate of flow of water vapour G_{CS} (g/h)	Water-vapour transmission rate V (g/(m².d))	Water-vapour diffusion-equivalent air layer thickness s_d (m)	Water-vapour resistance factor μ (-)
1	0,001047	0,0097	$4{,}8500.10^{-3}$	24,754	0,82	784
2	0,000927	0,0094	$4{,}7000.10^{-3}$	23,944	0,85	915
3	0,000950	0,0087	$4{,}3500.10^{-3}$	22,064	0,92	969
Average	0,000974	0,00927	$4{,}6333.10^{-3}$	23,587	**0,86**	**889**
Extended uncertainty U					± 0,11	± 141

3) Capillary water absorption and water permeability water

Test specimen No.	Thickness of coating (mm)	Width of the test area (mm)	Length of the test area (mm)	Initial weight (g)	Weight after immersion test (g)	Weight increase (g)	Liquid water permeability w (kg/(m².h^{0,5}))
1	0,86	137	157	1106,4	1111,9	5,5	0,052
2	0,87	135	155	1144,9	1150,2	5,3	0,051
3	0,94	133	158	1031,8	1036,6	4,8	0,047
Average	0,89	135	157	1094,4	1099,6	5,2	**0,050**
Extended uncertainty U							± 0,004

4) Thermal change compatibility - Freeze-thaw cycling without de-icing salt impact (20 cycles)

4a) Visual assessment after exposure

Test specimen No.	Degree of blistering STN EN ISO 4628-2	Degree of cracking STN EN ISO 4628-4	Degree of flaking STN EN ISO 4628-5
after 10 cycles of freeze-thaw without de-icing salt immersion			
1	0 (S0)	0 (S0)	0 (S0)
2	0 (S0)	0 (S0)	0 (S0)
after 20 cycles of freeze-thaw without de-icing salt immersion			
1	0 (S0)	0 (S0)	0 (S0)
2	0 (S0)	0 (S0)	0 (S0)

4b) Adhesion strength by pull-off test after exposure

Test specimen No. 1

Number of measurement	Adhesion strength by pull-off (N/mm^2)	Type of Failure
1	1,3	B = 100 %
2	1,4	A/B : B = 10 % : 90 %
3	1,6	B = 100 %
4	1,4	B = 100 %
5	1,4	B = 100 %
Average	**1,4**	-
Extended uncertainty U	± 0,1	

Test specimen No. 2

Number of measurement	Adhesion strength by pull-off (N/mm^2)	Type of Failure
1	1,4	B = 100 %
2	1,2	B = 100 %
3	1,3	B = 100 %
4	1,6	A/B : B = 20 % : 80 %
5	1,4	A/B : B = 20 % : 80 %
Average	**1,4**	-
Extended uncertainty U	± 0,1	

Average value of adhesion strength by pull-off test after exposure of two test specimens	**1,4 N/mm^2**

Note:

A/B - adhesion failure between substrate and the first layer

B - cohesion failure in the layer

5) Adhesion strength by pull-off test

Number of measurement	Adhesion strength by pull-off (N/mm^2)	Type of Failure
1	0,9	A/B : B = 10 % : 90 %
2	1,0	B = 100 %
3	1,0	B = 100 %
4	1,0	B = 100 %
5	1,0	A/B : B = 10 % : 90 %
Average	**1,0**	-
Extended uncertainty U	± 0,05	

Note:

A/B - adhesion failure between substrate and the first layer

B - cohesion failure in the layer

Date of report: 05th April 2016

Prepared by: Ing. Erika Halčinová

Authorized by: .....

Ing. Erika Halčinová
Head of Laboratory Branch

Technický a skúšobný ústav stavebný, n. o., Bratislava
akreditované skúšobné laboratórium
TSUS
pracovisko Tatranská Štrba

Notes:

- Unless the Test Laboratory makes the sampling, data on the manufacturer, its manufacturing plant and about the sampling are presented according to information provided by the client.
- Testing was carried out according to the Operational procedure No. PP-007 of the Test laboratory in compliance with the listed test procedure.
- The given extended uncertainty U is based on the standard uncertainty multiplied by the coverage factor k = 2, that in case of the normal distribution provides the reliability in the order of 95%.
- Presented results are relevant to the product sample only.
- This report shall not be reproduced except in full without written approval of the Test Laboratory.

End of test report