CERTIFIED TRANSLATION FROM POLISH

[The original certified translation from Czech into Polish of a seven-page official Czech document has been submitted for this translation. The sworn translator from Czech into Polish was consulted regarding the layout and content of this translation based on the Czech original document. Translator's comments in square brackets in italics]

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Włodzimierz Białczyk Sworn Translator of Czech; No. TP/1744/05

TRANSLATION FROM CZECH

[Czech translator's comment that English text in the Czech document is not quoted in the translation]

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*[logo:]***TZÚS®; Technical and Test Institute for Construction Prague, SOE**
Accredited Testing Laboratory, Authorized Body, Notified Body, Technical Assessment Body, Certification Body, Inspection Body. Prosecká 811/76a, 190 00 Praha 9 – Prosek, Czech Republic

Notified Body 1020
Branch 0700 – Ostrava

REPORT

on the assessment of performance

according to the Regulation (EU) 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), Annex V, Clause 1.4 (system 3)

No. 1020 – CPR – 070054480

Product name:
EPS 70 (EPS 038)
type/variant: expanded polystyrene board

Manufacturer:
SEMPRE Farby Sp. z o.o.

Company ID: 5471995321
Address: ul. Gen. J. Kustronia 60, 43-301 Bielsko-Biała, Poland

Production plant: SEMPRE Farby Sp. z o.o.
Address: ul. Gen. J. Kustronia 60, 43-301 Bielsko-Biała, Poland
Order No.: Z070180205

Number of Report pages including title page: 7 Number of Annexes: 4

The person taking responsibility for the content of this Report: *[illegible signature]*
Ing. Tomáš Klepáč, Test Technician – Specialist

The person taking responsibility for correctness of this Report: *[illegible signature]*
Ing. Vojtěch Šebak, Deputy Manager of the Notified Body 1020

Stamp of the of Notified Body 1020 *[centre, red round stamp with TZÚS logo in the centre and circumscription:]* Technical and Test Institute for Construction Prague; Notified Body 1020

Ostrava, 9 August 2018

1. Specification of tested subject

Description and intended use of the product: EPS 70 (EPS 038) (expanded polystyrene boards) are thermal insulation boards made of expanded polystyrene and primarily intended for the thermal insulation of buildings

Technical specification: EN 13163:2012+A1:2015

Manufacturer: SEMPRE Farby Sp. z o.o., ul. Gen. J. Kustronia 60, 43-301 Bielsko-Biała, Poland,

Production plant: SEMPRE Farby Sp. z o.o., ul. Gen. J. Kustronia 60, 43-301 Bielsko-Biała, Poland,

2. Sampling

Date of sampling: 18 June 2018

Place of sampling: SEMPRE Farby Sp. z o.o., ul. Gen. J. Kustronia 60, 43-301 Bielsko-Biała, Poland,

Sampling made by: Representative of AZL No. 1018.7, Ing Tomáš Klepáč; in the presence of the manufacturer's representative Aleksandra Dróżdż

Sampling procedure: random sampling from the product warehouse

Taken over by: Representative of AZL No 1018.7 , Ing. Tomáš Klepáč

Date of the taking over: 18 June 2018

Sample identification number: the test sample was marked with a number from the Sample Register: VZ070180392.

3. The assessment of performance on the basis of testing, calculation, tabulated values, documentation

The assessment of performance was carried out on the basis of testing.

3.1. The assessment of performance on the basis of testing

3.1.1. Reaction to fire

Sample specification: EPS 70 (EPS 038) (expanded polystyrene boards)

The tests were carried out in accordance with the following standards:

- ČSN EN 13501-1+A1: 2010 Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire
- ČSN EN ISO 11925-2: 2011 Reaction to fire tests – Ignitability of building products subjected to direct impingement of flame – Part 2: Single-flame source test

The classification report was approved by: Ing. Jaroslav Dufek

Test completion date: 25 June 2018

Additional information about the tests: This classification was carried out in accordance with Article 11 of ČSN EN 13501-1+A1: 2010

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The test result is presented in the following table.

Table – Determination of reaction to fire – Classification

Determination of reaction to fire – Classification of EPS 70 (EPS 038) (expanded polystyrene boards)	
Reaction to fire class	**E**

3.1.2. Thermal conductivity and thermal resistance, thickness

Sample specification: EPS 70 (EPS 038) (expanded polystyrene boards)

The tests were carried out in accordance with the following standards:

- ČSN EN 13163: 2013+A1: 2015 Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification
- ČSN EN 12667: 2001 Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance
- ČSN EN 823: 2013 Thermal insulating products for building applications – Determination of thickness

The tests were carried out by: Ing. Tomáš Klepáč (AZL No. 1018.7)

Test completion date: 2 August 2018

Additional information about the tests: The measurements of the thermal conductivity coefficient were carried out in accordance with the above standards at a medium temperature of measurement of 10°C using one set of samples; the set comprised in total 10 pieces of EPS 70 (EPS 038) samples.

The thickness determination test was carried out in accordance with the above standards at a temperature of measurement of 22°C using one set of samples; the set comprised in total 5 pieces of EPS 70 (EPS 038) samples, each 50 mm thick.

The test results are presented in the following tables.

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Table - Thermal conductivity

Thermal conductivity of EPS 70 (EPS 038) (expanded polystyrene boards)											
Sample marked by the author		EPS 70 (EPS 038)/1	EPS 70 (EPS 038)/2	EPS 70 (EPS 038)/ 3	EPS 70 (EPS 038)/4	EPS 70 (EPS 038)/5	EPS 70 (EPS 038)/6	EPS 70 (EPS 038)/7	EPS 70 (EPS 038)/8	EPS 70 (EPS 038)/9	EPS 70 (EPS 038)/10
Measured values of sample thermal conductivity coefficient λ_i	[W.m^{-1}.K^{-1}]	0.03601	0.03685	0.03610	0.03722	0.03712	0.03725	0.03714	0.03696	0.03705	0.03655
Mean values of sample thermal conductivity coefficient λ_{mean}	[W.m^{-1}.K^{-1}]	0.03683									
Standard deviation S_λ	[W.m^{-1}.K^{-1}]	0.00045									
Value k for 10 test results	[-]	2.07									
Thermal conductivity coefficient $\lambda_{90/90} = \lambda_{mean} + k \times S_\lambda$	[W.m^{-1}.K^{-1}]	0.03777									
Thermal conductivity coefficient $\lambda_{90/90}$ (rounded)	[W.m^{-1}.K^{-1}]	**0.038**									

Table - Thermal resistance

Thermal resistance of EPS 70 (EPS 038) (expanded polystyrene boards)		
Nominal thickness of the product d_N	[m]	0.050
Thermal conductivity coefficient $\lambda_{90/90}$	[W.m^{-1}.K^{-1}]	0.03777
Thermal resistance $R_{90/90} = d_N / \lambda_{90/90}$	[W.m^{-1}.K^{-1}]	1.324
Thermal resistance $R_{90/90}$ (rounded)	[W.m^{-1}.K^{-1}]	**1.3s**

Table - Thickness

Thickness of EPS 70 (EPS 038) (expanded polystyrene boards)							
Sample marked by the author			EPS 70 (EPS 038)/1	EPS 70 (EPS 038)/2	EPS 70 (EPS 038)/3	EPS 70 (EPS 038)/4	EPS 70 (EPS 038)/5
Sample thickness	[mm]		49.9	49.5	49.6	49.7	49.8
			49.7	49.7	49.8	49.8	49.6
			49.7	49.9	49.8	49.6	49.5
			49.7	49.6	49.9	49.8	49.4
Sample thickness - mean	[mm]		**49.8**	**49.7**	**49.8**	**49.7**	**49.6**

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3.1.3. Compressive strength – compressive stress at 10% strain

Sample specification: EPS 70 (EPS 038) (expanded polystyrene boards)

The tests were carried out in accordance with the following standards:

- ČSN EN 13163: 2013+A1: 2015 Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification.
- ČSN EN 826: 2013 Thermal insulating products for building applications – Determination of compression behaviour.

The tests were carried out by: Ing. Tomáš Klepáč (AZL No. 1018.7)

Test completion date: 2 August 2018

Additional information about the tests: The tests of compressive strength – compressive stress at 10% strain were carried out in accordance with the above standards using one set of samples; the set comprised in total 5 pieces of EPS 70 (EPS 038) samples.

The test results are presented in the following tables.

Table – Compressive strength – compressive stress at 10% strain

Compressive strength - compressive stress at 10% strain of EPS 70 (EPS 038) (expanded polystyrene boards), nominal thickness 50 mm				
Sample marked by the author	Force corresponding to 10% relative strain F_{10}	Cross-section of sample A_o	Compressive strength σ_{10} $\sigma_{10} = 10^3 \times F_{10} / A_o$	Compressive strength σ_{10} $\sigma_{10} = 10^3 \times F_{10} / A_o$ (mean)
	[N]	[mm^2]	[kPa]	[kPa]
EPS 70 (EPS 038)/1a,b,c	3500	39820	87.9	87.0
	3480	40060	86.9	
	3460	40080	86.3	
EPS 70 (EPS 038)/2a,b,c	3380	39979	84.5	84.5
	3500	40301	86.8	
	3280	40020	82.0	
EPS 70 (EPS 038)/3a,b,c	3420	39960	85.6	86.5
	3460	39740	87.1	
	3480	40120	86.7	

EPS 70 (EPS 038)/4a,b,c	3560	39920	89.2	85.6
	3400	40240	84.5	
	3320	39960	83.1	
EPS 70 (EPS 038)/5a,b,c	3600	40200	89.6	87.4
	3560	39760	89.5	
	3340	40180	83.1	
Mean value of compressive strength – compressive stress at 10 % strain σ_{10d}			[kPa]	86.2
Mean value of compressive strength – compressive stress at 10 % strain σ_{10d} (rounded)			[kPa]	**86**

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3.1.4 Water permeability – long term water absorption by immersion

Sample specification: EPS 70 (EPS 038) (expanded polystyrene boards)

The tests were carried out in accordance with the following standards:

- ČSN EN 13163: 2013+A1: 2015 Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification
- ČSN EN 12087:2013 Thermal insulating products for building applications – Determination of long term water absorption by immersion

The tests were carried out by: Ing. Tomáš Klepáč (AZL No. 1018.7)

Test completion date: 2 August 2018

Additional information about the tests: The tests were carried out in accordance with the above standards on EPS 70 (EPS 038) samples using Methods 1A and 2A.

The test results are presented in the following tables.

Table – Water permeability – long term water absorption by immersion

Water permeability – long term water absorption by immersion of EPS 70 (EPS 038) (expanded polystyrene boards) – Method 1A		
Sample marked by the author		EPS 70 (EPS 038)/1 EPS 70 (EPS 038)/2 EPS 70 (EPS 038)/3 EPS 70 (EPS 038)/4
Water permeability – water absorption Method 1A W_{lp}	[kg/m^2]	0.4
		0.3
		0.3
		0.5
Water permeability – water absorption Method 1A W_{lp} (mean value)	[kg/m^2]	**0.4**

Water permeability – long term water absorption by immersion of EPS 70 (EPS 038) (expanded polystyrene boards) – Method 2A		
Sample marked by the author		EPS 70 (EPS 038)/1 EPS 70 (EPS 038)/2 EPS 70 (EPS 038)/3 EPS 70 (EPS 038)/4
Water permeability – water absorption Method 2A W_{lt}	[vol. %]	2.5
		2.7
		2.4
		2.2
Water permeability – water absorption Method 2A W_{lt} (mean value)	[vol. %]	**2.5**

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4. Annexes

4.1 Classification Report No. 070-054481 according to ČSN EN 13501-1+A1 for the product: EPS 70 (EPS 038) (polystyrene foam boards). Issued by TZÚS Praha, s.p., Testing Laboratory of TZÚS Praha, s.p., Ostrava Branch No. 1018.7.

4.2 Test Report No. 070-054482, Thermal conductivity, thermal resistance and thickness of EPS 70 (EPS 038) (expanded polystyrene boards). Issued by TZÚS Praha, s.p., Testing Laboratory of TZÚS Praha, s.p., Ostrava

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4.3 Test Report No. 070-054483, Compressive Strength – compressive stress at 10% strain of EPS 70 (EPS 038) (polystyrene foam plates). Issued by TZÚS Praha, s.p., Testing Laboratory of TZÚS Praha, s.p., Ostrava Branch No. 1018.7.

4.4 Test Report No. 070-054484, Water permeability – long term water absorption by immersion of EPS 70 (EPS 038) (expanded polystyrene boards). Issued by TZÚS Praha, s.p., Testing Laboratory of TZÚS Praha, s.p., Ostrava Branch No. 1018.7.

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[below, to the right, illegible signature on a rectangular red personal stamp:] /-/ Prof. dr hab. Włodzimierz Białczyk; Sworn Translator of Czech and Slovak; TP/1744/05

I, the undersigned Agnieszka Kuter, a duly sworn translator of Polish and English, hereby certify that the foregoing text is a true and faithful translation of the Polish document submitted to me. Bielsko-Biała, 27 February 2023, Repertory No. 8/2023.