SYNTHOS XPS PRIME S 70 (I, L, N)

Extruded polystyrene board

Declaration of Performance
No SD/PS70/2016/01
Date of compilation: 2016-03-01

1. **Unique identification code of the product type:**

   Synthos XPS Prime S 70

2. **Intended use:**

   Thermal insulation for buildings.
   Thermal insulation for building equipment and industrial installations.
   Thermal insulation and light weight fill products for civil engineering applications.

3. **Manufacturer:**

   SYNTHOS XPS PRIME S 70
   Synthos Dwory 7 spółka z ograniczoną odpowiedzialnością spółka jawna
   ul. Chemików 1
   32-600 Oświęcim
   Poland

4. **System of AVCP:**

   System 3

5. **Harmonised standards**: EN 13164:2012+A1:2015; EN 14307:2009+A1:2013; EN 14934:2007

   Notified body: Instytut Techniki Budowlanej (nr 1488)

6. **Declared performances – Table No. 1**

Essential characteristics	Performance	Harmonized technical specification:
Thermal resistance and thermal conductivity	Table No. 2 below	EN 13164:2012+A1:2015 EN 14934:2007
Maximum service temperature	70°C	EN 14307:2009+A1:2013
Minimum service temperature	-60°C	EN 14307:2009+A1:2013
Durability of thermal resistance against ageing/degradation and high temperature - thermal conductivity in whole service temperature range	Table No. 3 below	EN 14307:2009+A1:2013

Durability of thermal resistance against ageing/degradation	(a)	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Durability of thermal resistance against high temperature	No changes with time until maximum service temperature of 70°C	EN 14307:2009+A1:2013
Reaction to fire	Euroclass F	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Reaction to fire of the product in standardized assemblies simulating end-use applications	NPD	EN 13164:2012+A1:2015
Durability of reaction to fire against ageing degradation and high temperature	No changes with time until maximum service temperature of 70°C	EN 14307:2009+A1:2013
Durability of reaction to fire against heat, weathering, ageing/ degradation	No changes	EN 13164:2012+A1:2015 EN 14934:2007
Durability of reaction to fire against heat, weathering, ageing/ degradation and high temperature	No changes	EN 14307:2009+A1:2013
Continuous glowing combustion	NPD	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934: 2007
Length and width	At nominal length and width - less than 1500 mm: ±8 mm - more than 1500 mm: ±10 mm	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Thickness within T1 thickness tolerance class	40 ÷ 100 mm	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Squareness on length and width	5 mm/m	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Flatness	At nominal length and width 6 mm/m	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Dimensional stability at 70°C and 90% relative humidity	Relative changes in length, width and thickness not exceeding 5%	EN 13164:2012+A1:2015 EN 14934:2007
Dimensional stability at 70°C	NPD	EN 14934:2007
Dimensional stability at 23°C and 90% relative humidity	NPD	EN 14307:2009+A1:2013 EN 14934:2007

Deformation under specific conditions of compressive load of 40 kPa and at temperature of 70°C	≤5%	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Compressive strength at 10% deformation	≥700 kPa	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Compressive strength at 5% deformation	≥600 kPa	EN 14934:2007
Compressive strength at 2% deformation	≥200 kPa	EN 14934:2007
Durability of compressive strength against ageing/ degradation - compressive creep	Value not exceeding 1,5 % for compressive creep and 2 % for total thickness reduction after extrapolation at 50 years under a declared stress of 250 kPa	EN 13164:2012+A1:2015 EN 14934:2007
Tensile strength perpendicular to faces	≥200 kPa	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013
Shear strength	≥270 kPa	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Bending strenght	Table No. 4 below	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Durability of resistance against dynamic loads - resistance to cyclic compressive load	Table No. 5 below	EN 14934:2007
Behaviour under cyclic loading	Table No. 6 below	EN 13164:2012+A1:2015
Short term water absorption by partial immersion	<0,1 kg/m2	EN 14307:2009+A1:2013
Water permeability - long term water absorption by total immersion	≤ 0,7%	EN 13164:2012+A1:2015 EN 14934:2007
Long term water absorption by diffusion	Table No. 7 below	EN 13164:2012+A1:2015
Durability of thermal resistance against heat, weathering, ageing/degradation - freeze- thaw resistance after long term water diffusion test	≤1%	EN 13164:2012+A1:2015
Freeze - thaw resistance (durability of thermal resistance against heat, weathering, ageing/degradation and durability of compressive strength against ageing/ degradation)	≤1%	EN 14934:2007

Durability of thermal resistance against heat, weathering, ageing/degradation - freeze – thaw resistance after long term water absorption by total immersion	≤1%	EN 13164:2012+A1:2015
Water vapour diffusion resistance factor	≥100	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Rate of release of corrosive substances – water – soluble chlorides	<27 ppm	EN 14307:2009+A1:2013
Rate of release of corrosive substances – water – soluble fluorides	<5 ppm	EN 14307:2009+A1:2013
Rate of release of corrosive substances – water – soluble silicates	<27 ppm	EN 14307:2009+A1:2013
Rate of release of corrosive substances – water – soluble sodium ions	<5 ppm	EN 14307:2009+A1:2013
Rate of release of corrosive substances – pH	7,0 ± 0,5	EN 14307:2009+A1:2013
Release of dangerous substances	NPD	EN 13164:2012+A1:2015 EN 14307:2009+A1:2013 EN 14934:2007
Durability of resistance against chemical and biological agents	NPD	EN 14934:2007

(a) According to
- C appendix to EN 13164:2012+A1:2015,
- C appendix to EN 14934:2007,
- B appendix to EN 14307:2009+A1:2013,

the declared values of thermal resistance factor (as in table 2) comprise changes of thermal conductivity of Synthos XPS Prime S in time.

Table No. 2. Heat values for particular thickness

Thickness [mm]	Coefficient of heat conductivity λ_D [W/mK]	Thermal resistance R_D [m^2K/W]
40	≤ 0,033	≥ 1,10
50	≤ 0,033	≥ 1,50
60	≤ 0,034	≥ 1,65
80	≤ 0,034	≥ 2,25
100	≤ 0,034	≥ 2,85

Table No. 3. Heat values for particular thickness in whole temperature service range

Thickness [mm]	Coefficient of heat conductivity λD [W/mK] at -60°C	Coefficient of heat conductivity λD [W/mK] at +10 °C	Coefficient of heat conductivity λD [W/mK] at +70 °C
40	0,026	0,033	0,040
50	0,027	0,033	0,040
60	0,027	0,034	0,040
80	0,027	0,034	0,040
100	0,027	0,034	0,045

Table No. 4. Bending strenght for particular thickness

Thickness [mm]	Bending strenght [kPa]
40	≥ 700
50	≥ 500
60	≥ 400
80	≥ 400
100	≥ 300

Table No. 5. Resistance against cyclic compressive loading

Thickness [mm]	Resistance against cyclic compressive loading using square - wave load: 5% deformation after 2 x 10^6 cycles	Resistance against cyclic compressive loading using sinusoid - wave load: 5% deformation after 2 x 10^6 cycles
40	CLRT(5/2×10^6)570	CLR(5/2×10^6)540
50	CLRT(5/2×10^6)550	CLR(5/2×10^6)520
60	CLRT(5/2×10^6)530	CLR(5/2×10^6)500
80	CLRT(5/2×10^6)490	CLR(5/2×10^6)460
100	CLRT(5/2×10^6)450	CLR(5/2×10^6)420

Table No. 6. Behaviour under cyclic loading of 150 kPa

	Resistance against cyclic compressive loading using square - wave load
40	CL(0,5/2×10^6)150
50	CL(0,5/2×10^6)150
60	CL(0,5/2×10^6)150
80	CL(0,5/2×10^6)150
100	CL(0,5/2×10^6)150

Table No. 7. Long term water absorption by diffusion for particular thickness

Thickness [mm]	Bending strenght [kPa]
40	≥ 700
50	≥ 500
60	≥ 400
80	≥ 400
100	≥ 300

The performance of the product identified above is in conformity with the set of declared performance/s. 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:

Head of Systems Management Department

Sylwester Jachna

Chairman of the Board

Marek Rościszewski

Oświęcim, March 1, 2016