SYNTHOS XPS PRIME 30 (I, L, N)

Extruded polystyrene board

Declaration of Performance
No SK/P30/2015/01
Date of compilation: 2015-07-01

1. **Unique identification code of the product-type:**
   SYNTHOS XPS Prime 30

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 30 (I, L, N)
   SYNTHOS Kralupy a.s.
   O. Wichterleho 810
   278 01 Kralupy nad Vltavou
   Czech Republic

4. **System of assessment and verification of constancy of performance:**
   System 3

5. Harmonised standards: EN 13164:2012; EN 14307+A:2013; EN 14934:2007

   Notified body: Centrum stavebního inženýrství, a.s., [Centre of Building Construction Engeneering Inc.,] (nr 1390). EN 13164:2012

   Intytut Techniki Budowlanej (number 1488) - EN 14307+A:2013; EN 14934:2007

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

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

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Durability of thermal resistance against high temperature	No changes with time until maximum service temperature of 70°C	EN 14307+A:2013
Reaction to fire	Euroclass E	EN 13164: 2012 EN 14307+A:2013 EN 14934:2007
Reaction to fire of the product in standardized assemblies simulating end-use applications	NPD	EN 13164:2012
Durability of reaction to fire against ageing degradation and high temperature	No changes with time until maximum service temperature of 70°C	EN 14307+A:2013
Durability of reaction to fire against heat, weathering, ageing/ degradation	No changes	EN 13164: 2012 EN 14934:2007
Durability of reaction to fire against heat, weathering, ageing/ degradation and high temperature	No changes	EN 14307+A:2013
Contionus glowing combustion	NPD	EN 13164:2012 EN 14307+A:2013 EN 14934:2007
Length and width	At nominal length and width ≤ 1500 mm: ± 8 mm > 1500 mm: ± 10 mm	EN 13164: 2012 EN 14307+A:2013 EN 14934:2007
Thickness within T1 thickness tolerance class	40 ÷ 160 mm	EN 13164:2012 EN 14307+A:2013 EN 14934:2007
Squareness on length and width	5 mm/m	EN 13164: 2012 EN 14307+A:2013 EN 14934:2007
Flatness	At nominal length and width 6 mm/m	EN 13164: 2012 EN 14307+A: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 EN 14934:2007
Dimensional stability at 70°C	NPD	EN 14934:2007
Dimensional stability at 23°C and 90% relative humidity	NPD	EN 14307+A:2013 EN 14934:2007
Deformation under specific conditions of compressive load of 40 kPa and at temperature of 70°C	≤ 5%	EN 13164:2012 EN 14307+A:2013 EN 14934:2007

Compressive strength at 10% of deformation	≥300 kPa	EN 13164: 2012 EN 14307+A:2013 EN 14934:2007
Compressive strength at 5% of deformation	>200 kPa	EN 14934:2007
Compressive strength at 2% of deformation	>100 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 110 kPa	EN 13164:2012 EN 14934:2007
Tensile strength perpendicular to faces	≥ 200 kPa	EN 13164:2012 EN 14307+A:2013
Shear strength	≥ 170 kPa	EN 13164:2012 EN 14307+A:2013 EN 14934:2007
Bending strength	Table No. 4 below	EN 13164:2013 EN 14307+A: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
Short term water absorption by partial immersion	<0,1 kg/m2	EN 14307+A:2013
Long term water absorption by total immersion	≤ 0.7%	EN 13164:2012 EN 14934:2007
Long term water absorption by diffusion	Table No. 7 below	EN 13164: 2012
Durability of thermal resistance against heat, weathering, ageing/degradation - freeze- thaw resistance after long term water diffusion test	≤ 1 %	EN 13164:2012
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 and degradation - freeze - thaw resistance after long term water absorption by total immersion	≤ 1 %	EN 13164:2012

Water vapour diffusion resistance factor	≥ 100	EN 13164:2012 EN 14307+A:2013 EN 14934:2007
Rate of release of corrosive substances – water –soluble chlorides	< 27 ppm	EN 14307+A:2013
Rate of release of corrosive substances – water –soluble fluorides	< 5 ppm	EN 14307+A:2013
Rate of release of corrosive substances – water –soluble silicates	< 27 ppm	EN 14307+A:2013
Rate of release of corrosive substances – water –soluble sodium ions	< 5 ppm	EN 14307+A:2013
Rate of release of corrosive substances – pH	7,0 ± 0,5	EN 14307+A:2013
Release of dangerous substances	NPD	EN 13164:2012 EN 14307+A: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,
- C appendix to EN 14934:2007,
- B appendix to EN 14307+A:2013,

the declared values of thermal resistance factor (as in table 2) comprise changes of thermal conductivity of Synthos XPS Prime 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	≤ 0,032	≥ 1,15
50	≤ 0,032	≥ 1,45
60	≤ 0,032	≥ 1,75
80	≤ 0,034	≥ 2,25
100	≤ 0,035	≥ 2,75
120	≤ 0,036	≥ 3,20
140	≤ 0,036	≥ 3,75
150	≤ 0,036	≥ 4,05
160	≤ 0,036	≥ 4,30

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	0,025	0,032	0,040
50	0,025	0,032	0,040
60	0,025	0,032	0,040
80	0,027	0,034	0,040
100	0,027	0,035	0,045
120	0,027	0,036	0,049
140	0,027	0,036	0,049
150	0,027	0,036	0,049
160	0,027	0,036	0,049

Table No. 4. Bending strength for particular thickness

Thickness [mm]	Bending strength [kPa]
40	≤ 500
50	≤ 400
60	≤ 300
80	≤ 300
100	NPD
120	NPD
140	NPD
150	NPD
160	NPD

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)220	CLR(5/2×10^6)195
50	CLRT(5/2×10^6)200	CLR(5/2×10^6)180
60	CLRT(5/2×10^6)180	CLR(5/2×10^6)165
80	CLRT(5/2×10^6)160	CLR(5/2×10^6)145
100	CLRT(5/2×10^6)140	CLR(5/2×10^6)125
120	CLRT(5/2×10^6)135	CLR(5/2×10^6)120
140	CLRT(5/2×10^6)130	CLR(5/2×10^6)115
150	CLRT(5/2×10^6)125	CLR(5/2×10^6)110
160	CLRT(5/2×10^6)120	CLR(5/2×10^6)105

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

Thickness [mm]	Resistance against cyclic compressive loading using square - wave load
40	$CL(2/2\times10^6)150$
50	$CL(2,5/2\times10^6)150$
60	$CL(3/2\times10^6)150$
80	$CL(4/2\times10^6)150$
100	$CL(5/2\times10^6)150$
120	$CL(5/2\times10^6)150$
140	NPD
150	NPD
160	NPD

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

Thickness [mm]	Long term water absorption by diffusion [%]
40	≤ 3
50	≤ 3
60	≤ 2
80	≤ 2
100	≤ 1
120	≤ 1
140	≤ 1
150	≤ 1
160	≤ 1

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

HSE&Q Manager

Norbert Eichler

Chairman of the Board

Jolanta Brudnicka

Kralupy nad Vltavou, 2015-07-01

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