SYNERGY PARS Co.

Extruded Polystyrene (XPS) Rigid Foam Insulation Technical Data Sheet

Extruded Polystyrene (XPS) Rigid foam insulation

Description

Extruded Polystyrene (XPS) is a thermal insulation made of general purpose polystyrene (GPPS), having smooth, embossed and grooved surface with production availability also as tongue and groove connections with outstanding thermal and strength properties.

The XPS foam with its closed-cell structure, is highly resistant to moisture, has high R-value* and it retains this value for years even when exposed to moisture and freeze/thaw cycling.

Features

- High compressive strength designed for use in heavy loads.
- Unique moisture resistance and its efficient use in cold and humid environment such as cold storage.
- Long-term durability
- Stable and long-term R-value: excellent resistance to heat flow
- 25 years warranty of maintaining 90% of R-value
- 100 % Reusable and recyclable
- Protection against molds and mildews growth
- Lightweight and easy cut and installation
- Free of harmful substances
- Produced with accurate dimensions

Applications

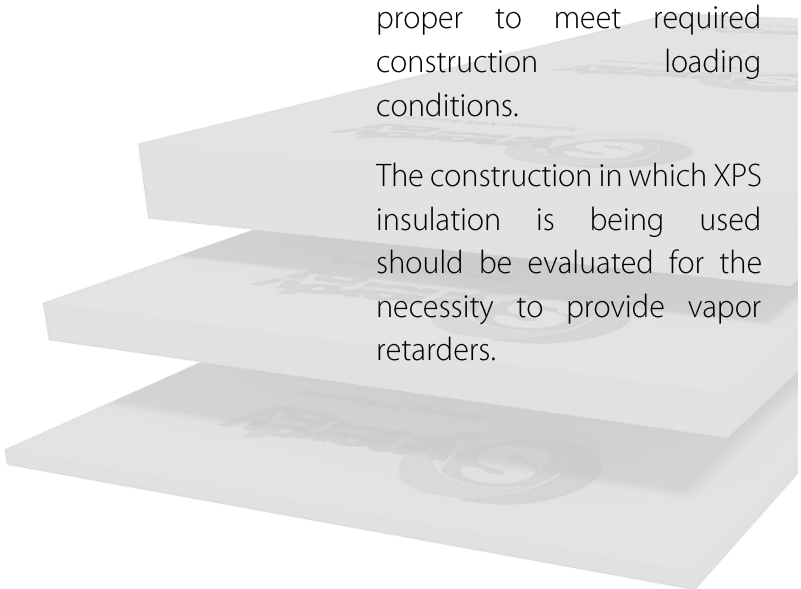
- Floor insulation
- Roof insulation
- Wall insulation
- Cold storage installations
- Roadways and rail beds
- Foundations
- Portal frames and hatcheries
- Other high load-bearing applications

Technical Information

Although this product is flame retarded, it is considered combustible and hence protective barrier is required when needed in an appropriate way. For further consultation call Synergy Pars at +98(21)22254091-3.

XPS foams are non-structural materials and must be on framing which is structurally proper to meet required construction loading conditions.

The construction in which XPS insulation is being used should be evaluated for the necessity to provide vapor retarders.



* R means the resistance to heat flow; the higher the R-value, the greater the insulating power.

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Synergy XPS Insulation Foam Physical Properties

Property	Unit	Value	Test Method Iran Standard	Test Method International Standard
Thermal Resistance (R-Value) [1]	$m^2.k/W$		ISIRI 8261	ASTM C518
25mm Thickness		0.83		
40mm Thickness		1.33		
50mm Thickness		1.66		
60mm Thickness		2		
80mm Thickness		2.67		
Compressive Strength [2]	kN/m^2 (kPa)		ISIRI 7117	ASTM D1621
Density : 32 kg/m^3		352		
Density : 35 kg/m^3		414		
Density : 38 kg/m^3		434		
Density : 48 kg/m^3		685		
Water Absorption	% by Volume	0.048	ISIRI 7300	ASTM C272
Water Vapor Permeance [3]	$ng/m^2.Pa.s$	1.13	ISIRI 7299	ASTM E96
Dimentional Stability	% Linear change	2.0		ASTM D2126
Flame Spread [4]			7271- 4	ASTM E84
Required		< 75		
Test result International (Iran)		2 (E)		
Smoke Developed [5]				ASTM E84
Required		< 450		
Test result		45 - 175		
Density	kg/m^3	30 - 50		
Width	mm	600 , 900 , 1200		
Thickness	mm	20 - 100		

1. R means the resistance to heat flow; the higher the value, the greater the insulation power.
2. Values at yield or 10% deflection.
3. Water vapor permeance decreases as thickness increases.

4,5. The ASTM E84 Tunnel test measures the Flame Spread and Smoke Developed fire properties of a given material. The International Building Code (IBC) defines maximum flame spread and smoke developed index limits for a foam plastic to be used in commercial construction: Flame Spread less than 75, Smoke Developed less than 450. Exterior Walls places more stringent requirements on foam plastics: a flame spread of less than 25 and a smoke developed of less than 450. This requirement must be met regardless of meeting other fire test requirements.
The test takes place in a tunnel and is colloquially known as the Steiner tunnel test. The material to be tested is installed on the ceiling of the tunnel. A precisely metered fan draws air through the tunnel and the flames from a carefully metered burner are drawn into the tunnel and provide the fire source to conduct the test. The indexed rate of flame travel down the tunnel due to the combustion of the sample is known as the flame spread index and the indexed amount of smoke produced by the sample (measured by an electric eye) is known as the smoke developed index.

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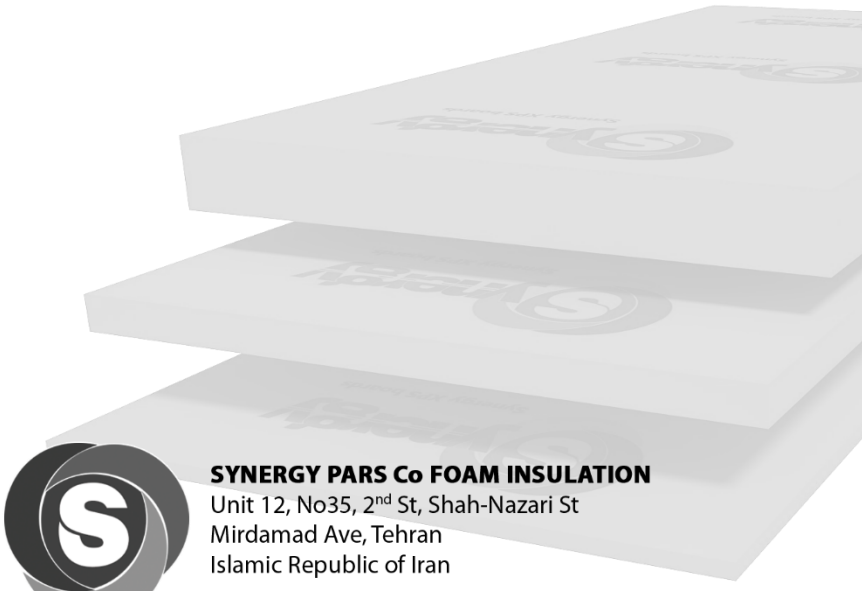
XPS insulation foams are best maintained if covered and not exposed to UV (sunlight) to minimize degradation and dusting of the polystyrene surface. The better they covered the less deterioration to the cells below the top surface layer and hence better insulation properties.



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