

XPS Insulation

Anaerobic Digesters - Technical Data Sheet

The high strength and excellent thermal properties of Sundolitt XPS make it the ideal solution for insulating Anaerobic Digesters helping to improve their performance.

Biomass or Anaerobic Digestion Plants produce heat and energy from a natural process where bacteria breaks down organic matter creating bio-methane.

Scientific research indicates that maintaining a temperature of around 70°C optimises the production of methane. It is therefore essential to insulate the construction to reduce heat loss and help maintain a stable internal temperature.

XPS Benefits

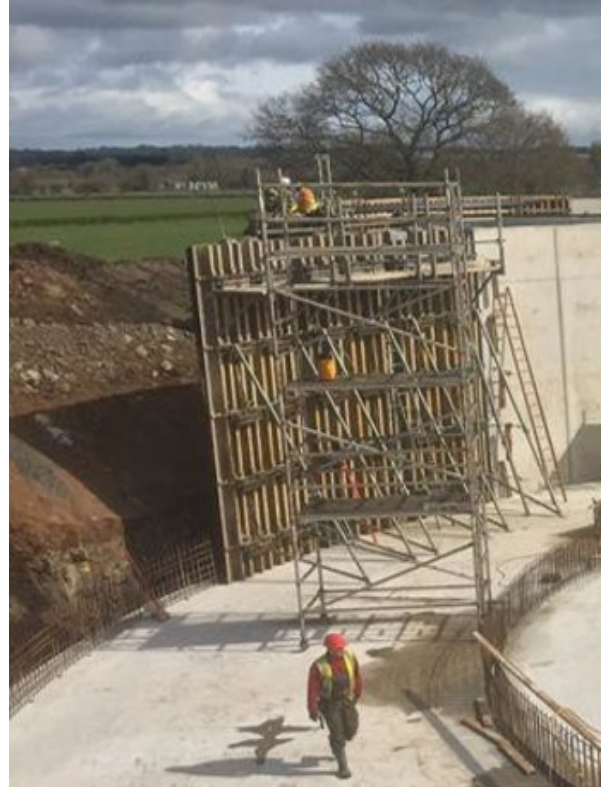
-  High compressive strengths up to 700 kPa
-  Excellent thermal insulating properties
-  Resistant to freeze/thaw
-  Flame Retardant available
-  ODP = 0 GWP = <5
-  Rated A in BRE Green Guide
-  Fully Recyclable

Why Insulate with XPS?

Renewable sources of energy are increasingly being developed along with research into their efficiency and overall sustainability.

Now it is understood energy production is more efficient at a higher temperature the structure has changed to incorporate an insulating element to help maintain the optimum working temperature.

Research suggests that where a higher and stable temperature is achieved a larger quantity of bio-gas is created in a shorter period of time. Sundolitt XPS used as insulation to the floor, side walls and roof plays a critical part in helping to achieve this.



Design Considerations

Sundolitt XPS is available in compressive strengths up to 700kPa, able to withstand the high loads at the base of the plant.

Whilst a higher grade of XPS is used under the base slab standard grades such as XPS200 may be used on the walls and roof. The grades and design loads available are listed on the following page.

The process of creating energy from plant waste and other organic matter also creates a high level of moisture. XPS is ideally suited as it is resistant to any effects from moisture.

There are many forms of structure for Anaerobic Digesters, most are at least partially below ground. Sundolitt XPS can be used below ground and continue up the vertical faces as it is not affected by ground moisture and does not support capillary action.

The roof may be insulated with XPS although some digesters are fitted with a flexible roof to allow for increasing the internal space to collect the Bio-Gas.

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Installation

Sundolitt XPS is easily installed and cut to size with a fine toothed saw. There are no special requirements for PPE when handling or cutting XPS.

A separating layer is recommended over the horizontal base slab insulation prior to pouring concrete. This prevents grout ingress in the joints between the XPS Panels.

Plant walls are often curved. It is recommended that tight curves are insulated with thin layers of insulation around 50mm thick. The thin insulation panels can be easily manipulated to fit the curve without leaving gaps.

To gain the maximum benefit from the insulation it should form a complete envelope of the structure. Ensure all boards are tightly butted and specify rebated edge boards to reduce the risk of cold bridging.

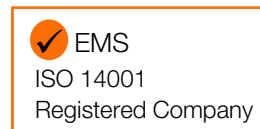
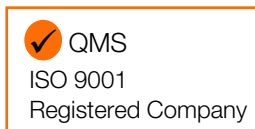


Thermal Resistance Values (m ² K/W)				
Thickness (mm)	XPS200	XPS300	XPS500	XPS700
30	0.909	0.909		
40	1.212	1.212		
50	1.515	1.515	1.471	1.471
60	1.765	1.765	1.765	1.765
75	2.206	2.206		
80	2.353	2.353	2.353	2.353
100	2.778	2.778	2.778	2.778
120	3.077	3.077	3.077	3.077
130	3.333	3.333	3.333	3.333
140	3.590	3.590	3.590	3.590
150	3.846	3.846	3.846	3.846
160	4.103	4.103	4.103	4.103

Standard Sizes Available		
Dimensions (mm)	Length	Width
Rebated Edge	2385	585
Square Edge	2400	600
Thickness	30, 40, 50, 60, 75, 80, 100, 120, 130, 140, 150 and 160mm	

Accreditation

Sundolitt XPS is manufactured in accordance with BS EN ISO 13164.



EPD Certificate – nepd-396-274-EN – demonstrates the excellent environmental performance of Sundolitt XPS which has emissions of 0.0073 kg CO₂ calculated in accordance with ISO 14025.

Sundolitt XPS - Physical Properties				
	XPS200	XPS300	XPS500	XPS700
Design Load at 2% nominal Compression (kPa)	90	140	225	250
Compressive Strength at 10% nominal Compression (kPa)	200	300	500	700
Thermal Conductivity (W/mK) at 50mm thickness	0.033	0.033	0.034	0.034

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