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Product Information Bulletin

EnerSpan® EFS Insulation - Canadian Applications

This bulletin provides material properties and manufacturing requirements for ***EnerSpan® EFS*** insulation as per CAN/ULC-S701.1:2017[1] for use as an expanded polystyrene (EPS) insulation component in exterior insulation and finish systems (EIFS). Plasti-Fab Product Information Bulletin No. 359 provides recommendations for handling, storage and installation of ***EnerSpan EFS*** insulation.

EnerSpan EFS insulation is manufactured using ***Neopor® F5300 GPS Plus***, a graphite-enhanced expandable polystyrene (GPS) raw material provided by ***BASF***. The graphite within the silver-gray cellular structure of ***EnerSpan EFS*** insulation reduces radiation heat transfer and results in an enhanced thermal resistance compared to standard white EPS insulation manufactured to CAN/ULC-S701.1.

Table 1 – *EnerSpan EFS* Insulation Material Property Values

Material Properties	Test Method	Units	Values
Thermal Resistance[2] *Minimum*	ASTM C518	m^2•°C/W (ft^2•hr•°F/BTU)	0.82 (4.7)
Water Vapour Permeance[3] *Maximum*	ASTM E96	ng/Pa•s•m^2 (perms)	300 (5.2)
Dimensional Stability *Maximum*	ASTM D2126	% linear change	1.5
Water Absorption *Maximum*	ASTM D2842	% by volume	6.0 Note 4
Flexural Strength *Minimum*	ASTM C203	kPa (psi)	170 (25)
Compressive Resistance *Minimum @ 10% Deformation*	ASTM D1621	kPa (psi)	70 (10)
Limiting Oxygen Index *Minimum*	ASTM D2863	%	24
Additional Material Properties for *EnerSpan* EFS Insulation			
Water Absorption *Maximum*	ASTM D2842	% by volume	2.0
Dimensional Stability *Maximum*	ASTM D2126	% linear change	0.5
Tensile Strength *Minimum*	ASTM D1623	kPa (psi)	103 (15)

[1] ***EnerSpan EFS*** material properties meet or exceed requirements as per CAN/ULC-S701.1:2017, ***Standard for Thermal Insulation, Polystyrene Boards***, and are third party certified under a quality listing program administered by Intertek. Intertek Code Compliance Research Report CCRR-1033 confirms compliance with the National Building Code of Canada 2010 and 2015.
[2] Values are minimum per 25-mm (1-inch) of thickness at mean temperature of 24 °C (75 °F).
[3] Values are maximum for 25-mm (1-inch) thick samples with natural skins intact. Lower values will result for thicker materials.
[4] The water absorption laboratory test method involves complete submersion under a head of water for 96 hours. The water absorption value above is applicable to specific end-use design requirements only to the extent that the intended end-use conditions are similar to test method requirements.

The dimensions, dimensional tolerances and block aging requirement for ***EnerSpan EFS*** insulation meet requirements specified in CAN/ULC-S701.1, ***ANNEX B – Expanded Polystyrene (EPS) Thermal Insulation Requirements For Use In Exterior Insulation and Finish Systems (EIFS)*** as detailed in Tables 2 and 3 below.

Table 2 - CAN/ULC-S701.1, ANNEX B – Dimensions and Dimensional Tolerances

CAN/ULC-S701, Annex A – Standard Dimensions		
Length	1219.2 mm (48)	
Width	609.6 mm (24 inches)	
Thickness	19.1 to 127.0 mm (3/4 to 5 inches)	
CAN/ULC-S701, Annex A – Dimensional Tolerances		
Length	±1.6 mm (±1/16 inch)	
Width	±1.6 mm (±1/16 inch)	
Thickness	19.1 to 25.4 (3/4 to 1 inch)	-0/+1.6 mm (-0/+1/16 inch)
	>25.4 to 127.0 mm (>1 to 5 inch)	±1.6 mm (±1/16 inch)
Squareness	When measured on the large flat face from one corner to the opposing corner, dimensional variations shall not exceed 0.8 mm (1⁄32 in.) in 305 mm (12 in.)	
Edge Trueness	When measured with a straight edge, edges shall not deviate more than 0.8 mm (1⁄32 in.) in 305 mm (12 inch)	
Face Flatness	When measured across the face with a straight edge, maximum deviation from the straight edge shall not exceed more than 0.8 mm (1⁄32 in.)	

Table 3 - CAN/ULC-S701.1, ANNEX B – Block Aging Requirements Prior to Cutting

Storage Condition	Average Temperature	Minimum Storage Period
Low Pentane (<4.5% pentane) Raw Materials and Vacuum Mould Technology		
Plant Aging	Ambient Temperature 20 °C (68 °F) and RH	12 Days
Full Pentane (nominal 6% pentane) Raw Materials and Vacuum Mould Technology		
Plant Aging	Ambient Temperature 20 °C (68 °F) and RH	18 Days
Full Pentane (nominal 6% pentane) Raw Materials and Non-Vacuum Mould Technology		
Plant Aging	Ambient Temperature 20 °C (68 °F) and RH	42 Days
Heat Aging	Elevated Temperature 60 °C (140 °F)	5 Days

The flame spread rating and smoke developed classification for ***EnerSpan EFS*** insulation is determined in *accordance with* CAN/ULC-S102.2 as per ***National Building Code of Canada*** 2010 and 2015. Flame spread rating and smoke developed classification in Table 4 are third party certified under a quality listing program administered by Intertek Testing Services.

Table 4 - Flame-Spread Rating and Smoke Developed Classification

Material Properties	CAN/ULC-S102.2
Flame Spread Rating	220
Smoke Developed Classification	Over 500