

Product Information Bulletin

BULLETIN NO.

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ASTM C578 versus CAN/ULC-S701 EPS Insulation Material Properties

Material Property	Units	ASTM C578 ¹					
		I	VIII	II	IX	XIV	XV
Nominal Density	pcf	1.0	1.25	1.5	2.0	2.5	3.0
Compressive resistance <i>Minimum at 10% deformation</i> ASTM C165 or D1621	psi (kPa)	10 (69)	13 (90)	15 (104)	25 (173)	40 (276)	60 (414)
Thermal resistance² <i>Minimum</i> ASTM C518	ft ² ·hr·°F/BTU (°C·m ² /W)	3.6 (0.63)	3.8 (0.67)	4.0 (0.70)	4.2 (0.74)	4.2 (0.74)	4.3 (0.76)
Water vapour permeance <i>Maximum for 1-inch (25.4-mm)</i> ASTM E96	Perm (ng/Pa·s·m ²)	5.0 (287)	3.5 (201)	3.5 (201)	2.5 (143)	2.5 (143)	2.5 (143)
Flexural strength <i>Minimum</i> ASTM C203	psi (kPa)	25 (173)	30 (208)	35 (240)	50 (345)	60 (414)	75 (517)
Dimensional stability <i>Maximum</i> ASTM D2126	% linear change	2.0	2.0	2.0	2.0	2.0	2.0
Water absorption³ <i>Maximum</i> ASTM C272	% by volume	4.0	3.0	3.0	2.0	2.0	2.0
Oxygen index <i>Minimum</i> ASTM D2863	volume %	24	24	24	24	24	24
Density <i>Minimum</i> ASTM D1622 or C203	pcf (kg/m ³)	0.90 (15)	1.15 (18)	1.35 (22)	1.80 (29)	2.40 (38)	3.00 (48)
Material Property	Units	CAN/ULC-S701 ⁴					
		1	2	3	4	5	
Thermal resistance⁵ <i>Minimum</i> ASTM C518	m ² ·°C / W (ft ² ·hr·°F/BTU)	0.65 (3.75)	0.70 (4.04)	0.74 (4.27)			
Water vapour permeance <i>Maximum for 25-mm (1.0 in.)</i> ASTM E96	ng/Pa·s·m ² (Perm)	300 (5.2)	200 (3.5)	130 (2.3)			
Dimensional stability <i>Maximum</i> ASTM E2126	% linear change	1.5	1.5	1.5			
Water absorption⁶ <i>Maximum</i> ASTM D2842	% by volume	6.0	4.0	2.0			
Flexural strength <i>Minimum</i> ASTM D1622 or C203	kPa (psi)	170 (25)	240 (35)	300 (44)			
Compressive resistance <i>Minimum at 10% deformation</i> ASTM D1621 or C165	kPa (psi)	70 (10)	110 (16)	140 (20)			
Oxygen index <i>Minimum</i> ASTM D2863	volume %	24	24	24			

¹ ASTM C578, **Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.**

² R-value (RSI-value) per 1.0 inch (25.4-mm) thickness measured at mean temperature of 75 °F (24 °C).

³ ASTM Test Method C272 water absorption requires 24 hours submersion of specimen under water.

⁴ CAN/ULC-S701, **Thermal Insulation, Polystyrene, Board and Pipe Covering.**

⁵ RSI-value (R-value) per 25-mm (1.0 inch) thickness measured at a mean temperature of 24°C.

⁶ ASTM Test Method D2842 Water absorption requires 96 hour submersion under a head of water.