

PLAST-CLAD

As per the guidelines of NZS 4214:2006 the thermal calculation for 40mm H-grade Polystyrene System (over a 20mm drained cavity) installed over the surface of a 2.4 m high timber framed wall incorporating an R=1.8 wall batt is as follows:

	R (m²°C/W)
Rse (exterior surface resistance).....	= 0.03
Layer 1 5mm Cement based exterior plaster	= 0.01
Layer 2 40mm H-grade Polystyrene based Cladding (derated by 45%).....	= 0.50*
Layer 3 For the frame area (studs @ 600 centres – dwangs @ 800)	
R1 (90mm thick R 1.8 insulation + derated 20mm air space)	1.80 + 0.09 = 1.89
R2 (90mm deep timber framing, k = 0.12 W/mK + derated 20mm air space)	0.75 + 0.09 = 0.84
$f1 = \frac{(600-47) \times (2400 - 4 \times 47)}{600 \times 2400} = 0.849$	
$f2 = 1 - 0.849 = 0.151$	
$\frac{1}{Rb} = \frac{f2}{R1} + \frac{f1}{R2} = \frac{0.151}{0.84} + \frac{0.849}{1.89} = 0.63$	
Therefore Rb = $\frac{1}{0.63}$	= 1.59
Layer 4 Internal 9.5mm Plasterboard Lining	= 0.05
Rsi (interior surface resistance)	= 0.09
Total thermal resistance, RT	= 2.27

* Based on a thermal conductivity of 0.035 W/mK