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The R-value is the measure of a material's insulating value or resistance to heat flow. The higher the R-value the better the material acts as an insulator. This paper compares R-values between an Element wall versus a framed wall with batt insulation. The comparison demonstrates that, in practice, unless the insulation is constant throughout the wall section the overall R-value of the wall will be less than that provided by the insulation.

In this comparison, a 4" Element wall section is compared against a 6" stud wall with R-22 batt insulation. The wall sections, shown on the following pages, use only the bare components that make up the wall assembly plus drywall and interior air film.*

The calculations used to determine the overall R-value of each wall section are based on ASHRAE 1997 Handbook – Fundamentals, which considers the insulating value proportionately contributed from each material component in the wall assembly. The end result is a more realistic R-value - overall thermal resistance.

As shown, Element walls maintain a constant R-value due to the continuity of the wall section. In addition, the thermal mass property of concrete, not included in the calculations, will further increase the R-value of Element. On the other hand, the total R-value of the framed wall is less than that provided by the R-22 batt insulation. The R-value is reduced in the framed wall due to the lack of insulation at the stud sections. For a framed wall to maintain a constant R-value that is equivalent or higher than that provided by the batt insulation, a continuous layer of insulation would be needed. In addition, unless properly sealed, air and moisture can leak through the joints of framed walls further reducing the R-value of the wall.

	Overall Thermall Resistance, R-value (RSI)
4" Element ICF	23.4 (4.1)
6" Stud wall w/ R-22 batt insulation	17.7 (3.1)

For further information contact your local Element representative or e-mail info@logixbrands.com.

*The comparison does not include exterior cladding.

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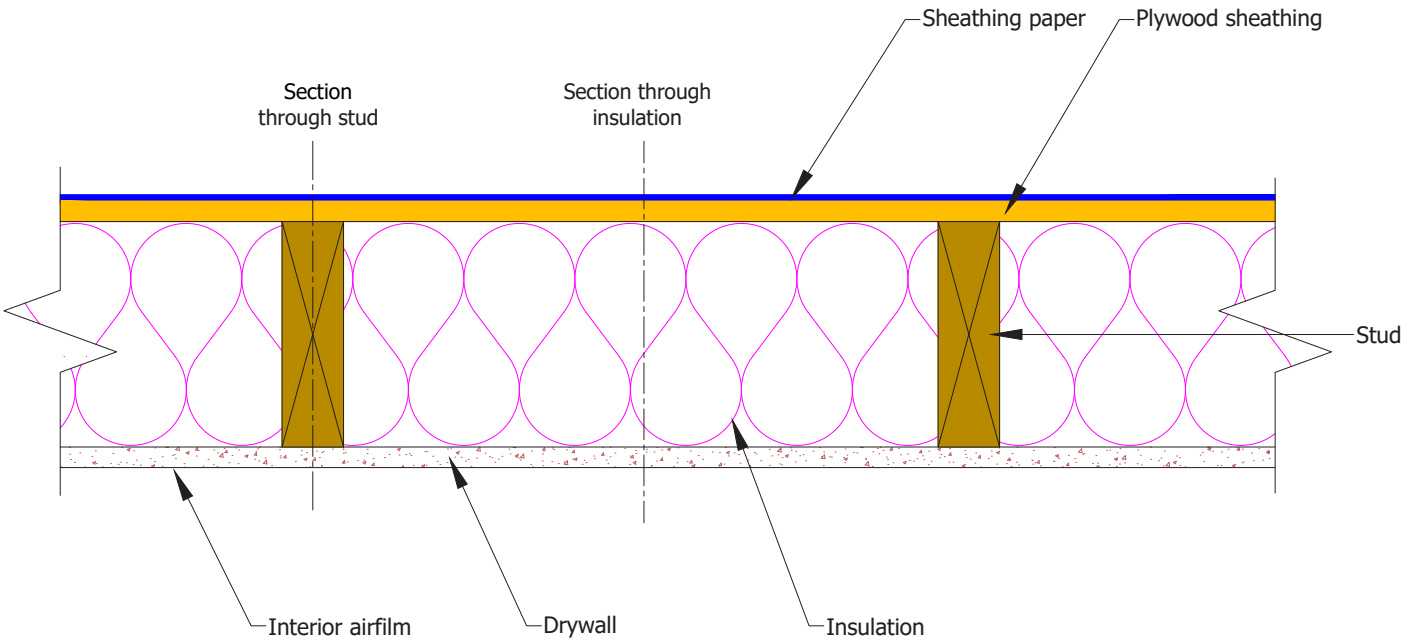

Component	R-value (RSI) Through Stud	R-value (RSI) Through Insulation
Sheathing paper[1]	0.06 (0.01)	0.06 (0.01)
5/8" Plywood sheathing[1]	0.79 (0.14)	0.79 (0.14)
Studs @ 16" o.c.[1]	6.41 (1.13)	-
Insulation	-	22 (3.87)
1/2" drywall[1]	0.45 (0.08)	0.45 (0.08)
Interior air film[1]	0.68 (0.12)	0.68 (0.12)
Total	**8.39 (1.48)**	**24 (4.2)**
Percent of Total Area	**19**	**81**
Overall Thermal Resistance	**17.7 (3.12)**	

1. Model National Energy Code of Canada for Houses.

$$Overall\ thermal\ resistance = \frac{100\%}{\frac{\%\ area\ with\ framing}{Rvalue\ framing} + \frac{\%\ area\ without\ framing}{Rvalue\ without\ framing}} = \frac{100\%}{\frac{19\%}{8.39} + \frac{21\%}{24}} = 17.7\ (3.12)$$

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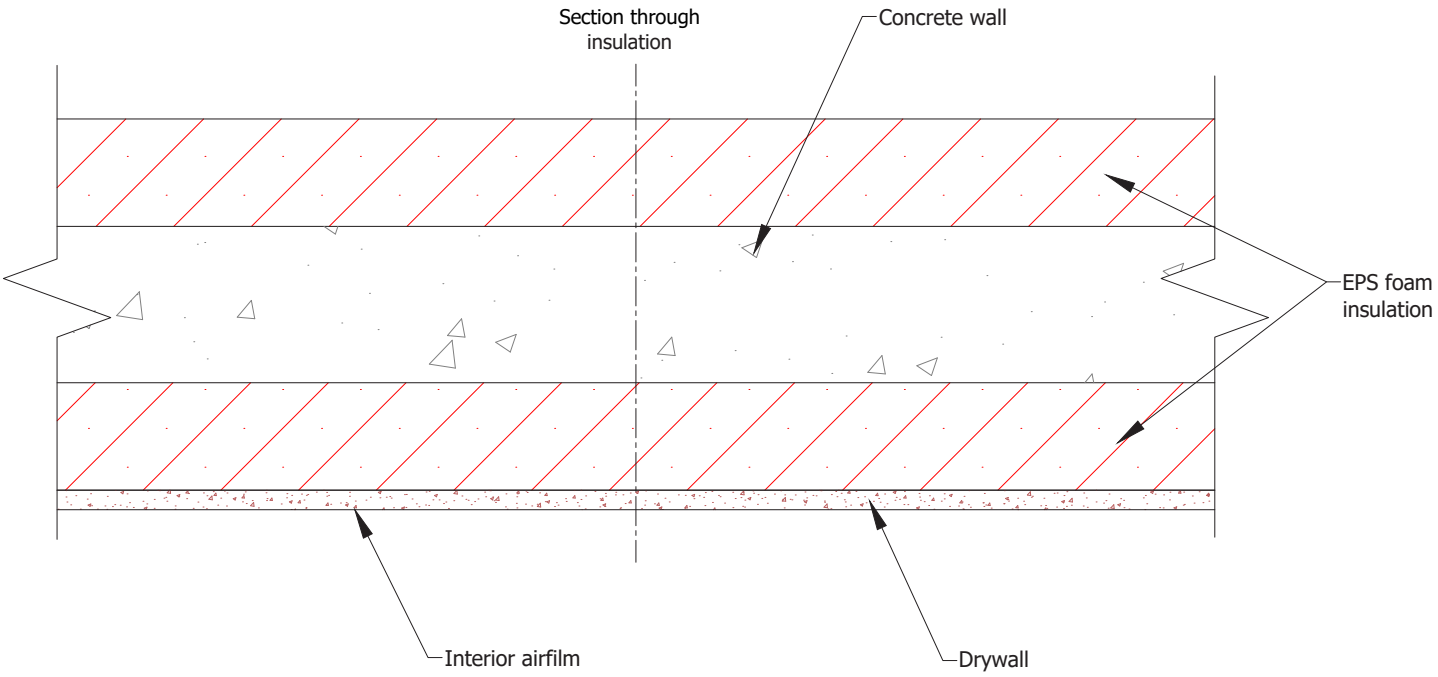

Component	R-value (RSI) Through Stud	
2.75" EPS foam insulation	11 (1.94)	
4" concrete wall (normal weight)	0.28 (0.05)	
2.75" EPS foam insulation	11 (1.94)	
1/2" drywall	0.45 (0.08)	
Interior air film	0.68 (0.12)	
Total	**23.41 (4.12)**	
Percent of Total Area	**100**	
Overall Thermal Resistance	**23.4 (4.1)**	

1. Model National Energy Code of Canada for Houses.

$$Overall\ thermal\ resistance = \frac{100\%}{\frac{\%\ area\ with\ framing}{Rvalue\ framing} + \frac{\%\ area\ without\ framing}{Rvalue\ without\ framing}} = \frac{100\%}{0 + \frac{100\%}{23.4}} = 23.4\ (4.1)$$