Exterior Framed Wall RSI Calculation

MASTER

Zone 7A

No HRV

Assembly	RSI Value
*Exterior Air Film	
6.35mm Hardiboard Siding	
½" Strapping	
1" Extruded Polystyrene	
1 layer 60 min Building Paper	
½" Plywood Sheathing	
2"x6" Studs at 16"o.c.+ R22 Batt Insul	(Step 3)
6mil Poly VB	
½" GWB	
*Interior Air Film	

Total RSI
Required RSI (Step 2)

How to Determine the Total RSI value of the assembly listed above

Step 1:

You must know which Zone you are located in and if there is an HRV.

Step 2:

Determine the required RSI value for the opaque assembly by going to Table per the chart below the required RSI is

Table

Forming part of Sentence 9.36.2.6.(1)

Above-ground Opaque *Building* Assembly	Heating Degree-Days of *Building* Location,(1) in Celsius Degree-Days					
	Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000

Step 3:

Determine the RSI of each component:

1. The framing and cavity insulation is determined using the calculation provided in

$$\text{RSIparallel} = \frac{100}{\left(\frac{\%\ of\ area\ of\ framing}{RSI\ f}\right) + \left(\frac{\%\ of\ area\ of\ cavity}{RSI\ c}\right)}$$

$$\text{RSIparallel} = \text{———}$$

$$\text{RSIparallel} =$$

   a. Table is used to determine the % of cavity and framing used in the calculation above.

Table

Wood-frame Assemblies	Frame Spacing, mm o.c.									
	304		406		488		610		1220	
	% Area Framing	% Area Cavity	% Area Framing	% Area Cavity	% Area Framing	% Area Cavity	% Area Framing	% Area Cavity	% Area Framing	% Area Cavity

Insulation Materials[6]	Thickness of Material	Thermal Resistance (RSI), $(m^2 \cdot K)/W$ per mm	Thermal Resistance (RSI), $(m^2 \cdot K)/W$ for thickness listed

2. The value for most common components can just be taken from Table . The manufacture specification is required to be submitted for all items which are not listed here.

3. An exterior air film is added where applicable. For example, an attic assembly will have an exterior air film. A floor slab assembly will **not** have an exterior air film. The value is found in Table .

4. An interior air film is added to every assembly. The value is found in Table .

Table

Air Films	Thickness of Material	Thermal Resistance (RSI), $(m^2 \cdot K)/W$ per mm	Thermal Resistance (RSI), $(m^2 \cdot K)/W$ for thickness listed

Step 4:

1. Once you have determined all the values for the assembly, add them up and voilà, you have determined its RSI value☺