

User Instructions for Pontyak RSI Calculator:

Note to the user: Calculations are performed only after all fields have been populated.

Please type in or select the inputs (from drop-down menus) in the following proper order:

1. **Company Name:** Type in your project or company name.
2. **Component Name:** Type in an informative name for the component, e.g. Wall Type W1-1.
3. **Building Component:** Select Ceiling, Floor, Roof, or Wall from drop-down menu.
4. **Component Type:** From the drop-down menu, select the option that best-qualifies the Building Component that you selected in the previous step. Note that this menu only appears after a Building Component is selected, and only reveals options that are tied to the Building Component.
5. **Framing Type:** Select from the drop-down menu. Your selection determines how the effective thermal resistance is calculated.
6. **Assembly Type:** This selection brings up a value for the Framing Percentage (at the next input slot). Please do not override the default value unless you are very knowledgeable on matters framing.
 - a. If Framing Type is “No Framing”, select “All Assemblies, No Framing” for Assembly Type. This assigns a value of 0 (zero) to the Framing Percentage.
 - b. If Framing Type is “Steel Framing”, other fields open up to allow inputs for Steel Framing Coefficients. Select the appropriate Assembly Type. Assembly Types are named to align with Building Component, framing material, and framing O.C. separation. From the drop-down menu, select a “Steel Framing Coefficient” type that aligns with your design O.C. value and sheathing type. Note the options that are specific to sheet-steel walls. If you have enough knowledge about steel framing, you may select the “Other” option and enter your own Steel Framing Coefficients.
 - c. Similarly, if the Framing Type is “Wood Framing”, select an Assembly Type that matches the description of your selection. Do not override the default Framing Percentage unless you are sufficiently knowledgeable. When applying ASHRAE’s Parallel Path Method, the factors for studs/plates/sills and heads are summed into one.
7. **Framing Percentage:** You are advised to use the default values that are provided for each Assembly Type.
8. **Steel Framing Coefficient:** These coefficients relate to steel framing only and are entered as described above.
9. You may now construct your assembly, layer-by-layer:
 - a. Select a suitable outside surface film type from the Material Description drop-down menu. Type “external,” in the slot to shorten the menu. A value comes up in the Resistance RSI column. Note that the calculation will not be performed without this input.
 - b. Select a suitable inside surface film type from the Material Description drop-down menu. Type “internal,” in the slot to shorten the menu. A value comes up in the Resistance RSI column. Note that the calculation will not be performed without this input.

- c. To create a new row between the external and internal surface films, left-click on the “+” in the “Action” column. Select a new material from the dropdown menu **OR** (if the material is not on the drop-down list) select “Other...” and fill the columns with the properties of your material, obtained either from the **Material Properties Library**, a vendor, or other reference. The objective is to obtain the resistance (RSI) value of the material/layer. The material must have either a Resistance RSI, or a Resistivity RSI/mm, or a Thermal Conductivity value. A material thickness is not required if Resistance RSI is available. Otherwise, a thickness is required to calculate Resistance RSI from either Resistivity RSI/mm or Thermal Conductivity. Resistivity RSI/mm takes precedence over Thermal Conductivity if both parameters are provided.
- d. Use the drop-down menu in the “Layer Type” column to assign a correct role to each layer in the assembly. This is crucial in the calculation of the effective thermal resistance of the assembly. “Cavity Insulation” is the infill material between the frames. “Framing, Level 1” is the frame associated with the Framing Type entered in 5 above. “Framing, Level 2” is applied to a second layer of framing in a double wall. Double walls do occur, albeit rarely. Only simple double wall cases, where the two levels of framing lie in parallel planes, have the same O.C. separation, and are in a symmetrical but staggered pattern, are considered. The selection “Other (...)” is assigned to assembly layers that are common to both the cavity insulation and the framing thermal conduction paths.
- e. Repeat steps 9c and 9d until all layers in your envelope assembly are accounted for.
- f. Left click on the Calculate tab when all inputs are in. The results pop up at the bottom of the form. Any errors and omissions that show on the forms must be fixed before the calculation is executed.
- g. Use the control tabs on the right edge of the form to perform various functions. These are **Refresh**, **Copy**, **Save**, **Calculate**, and **Print**. Some control tabs may not be active currently.