



## Regarding the installed “R-value “of Low-E Insulation in metal buildings

The insulation system R-value of Low-E Reflective Insulation in metal buildings is totally dependent on the airspace above and below the product.

To start, the 3/16” thick foam core of our standard Low-E Insulation product is an R 1. This R 1 is included in the calculations provided below.

When the Low-E Insulation is installed ”stand alone” (just Low-E Insulation) over metal purlins the product will naturally droop to some extent. This droop will generate an air space between it and the metal roof panels when they are installed. The depth of this air space modifies the R-value generated for the install. Typically, the longer the span between purlins, the more airspace will be benenerated.

Assuming NO other insulation is to be installed along with our product and it will be exposed to the interior of the structure we have indicated several calculations below that are derived from the **2013 ASHRAE Handbook of Fundamentals** Ch26. The calculations assume a typical 50 degree mean temperature with a 30 degree temperature difference. (Outside to inside heat flow) The actual “installed “R” value will vary if other air spaces are created than those shown below.

### “Low-E” (foil both sides) products

Air Space between exterior metal and Low-E Insulation	1.5”	Roof	11.18 R
Air Space between exterior metal and Low-E Insulation	3.5”	Roof	13.72 R
Air Space between exterior metal and Low-E Insulation	0.75”	Wall	5.72 R

### “Class A White” (foil on top, white on bottom) products

Air Space between exterior metal and Low-E Insulation	1.5”	Roof	7.55 R
Air Space between exterior metal and Low-E Insulation	3.5”	Roof	10.09 R
Air Space between exterior metal and Low-E Insulation	0.75”	Wall	4.70 R

**Modifiers:** There are factors that can change the R-value of the installed product such as if the location of the structure is in an extreme climate, code requirements, the addition of other insulation products (mass or spray) or if interior panels are to be applied in the structure. ESP can help determine an insulation systems performance and possibly make recommendations but ultimately the final system approval would rest in your code officials decision.

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