



Structural Insulated Panel Association

PO Box 1699 / Gig Harbor, WA 98335 / ph 253.858.7472 / fax 253.858.0272 / www.sips.org

SIPA Published R-Value Guidelines

The Federal Trade Commission (FTC) has published a number of requirements regulating how the R-values of insulation materials are determined and communicated to the public. These requirements are detailed in 16 C.F.R. Part 460—Labeling and Advertising of Home Insulation, available at:

<http://law.justia.com/cfr/title16/16-1.0.1.4.55.html#16:1.0.1.4.55.0.38.5>. Noncompliance with the FTC requirements is deemed a deceptive business practice and offenders are subject to sizable fines from the FTC.

In an effort to provide consistent R-value data for SIPs that meets the FTC requirements, SIPA has issued the following guidelines for members when communicating R-value information.

- 1) SIPA members should only advertise or otherwise publicly display R-values and make thermal performance claims based on the following limitations:**
 - a) R-values should be based on testing conforming to ASTM standards C177-10, C518-10, C1114-06, or C1363-11
 - b) Displayed R-values should only reference surface-of-SIP-to-surface-of-SIP values
 - c) The R-values should be those obtained at a mean temperature of 75 degrees F plus or minus 2 degrees F and a temperature differential of 50 degrees F plus or minus 10 degrees F. Values derived from tests conducted at different temperatures may be displayed if:
 - i. The values at 75 degrees F and a temperature differential of 50 degrees F plus or minus 10 degrees F are also shown
 - ii. The values are based on actual testing
 - iii. The temperature and temperature differential is clearly stated
 - d) The R-values should be for the full thickness of the SIP. Per inch R-values should only be published if they meet the FTC requirements and are based on actual test results demonstrating that the R-value per inch of the product does not drop as it gets thicker; or, if R-values decrease with thickness, it must be stated exactly how much the R-value drops with greater thickness. The FTC requires that per inch R-values be accompanied by the following statement: “The R-value per inch of this insulation varies with thickness. The thicker the insulation, the lower the R-value per inch.”
- 2) SIPA member manufacturers making R-value and thermal performance claims are required by the FTC to provide a fact sheet to their dealers and installers for SIPs and/or other insulation products that includes the following information:**



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- a) Name and address of the manufacturer
- b) The SIP thickness and foam core type. If the fact sheet covers more than one thickness or core material, a chart or table should clearly indicate the R-value for the SIP in question.
- c) The FTC requires that all fact sheets carry this statement, boxed, in 12-point type:

Read This Before You Buy

What You Should Know About R-values

The chart shows the R-value of this insulation. R means resistance to heat flow. The higher the R-value, the greater the insulating power. Compare insulation R-values before you buy.

There are other factors to consider. The amount of insulation you need depends mainly on the climate you live in. Also, your fuel savings from insulation will depend upon the climate, the type and size of your house, the amount of insulation already in your house, and your fuel use patterns and family size. If you buy too much insulation, it will cost you more than what you'll save on fuel.

To get the marked R-value, it is essential that this insulation be installed properly.

3) SIPA will display the below calculated R-values on the SIPA website:

SIP R-Values (Calculated R-Values)

SIP Thickness	4 1/2"	6 1/2"	8 1/4"	10 1/4"	12 1/4"
EPS*	14	21	28	35	42
XPS*	20	30	38	48	58
Polyurethane**	*	*	*	N/A	N/A

*R-values vary between SIP manufacturers slightly

**Consult panel manufacturers to obtain R-values

- Calculated R-values for generic structural insulated panel (SIP), including 7/16" oriented strand board (OSB) on each side. The R-value of each OSB facing is R-0.55.
- Expanded polystyrene (EPS) is Type I per ASTM C578-11.
- Extruded polystyrene (XPS) is Type IV – Type X per ASTM C578-11.



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- For polyurethane, polyisocyanurate, and extruded polystyrene, the tests must be done on samples that fully reflect the effect of aging on the product's R-value. To age the sample, manufacturers must follow the procedure in paragraph 4.6.4 of GSA Specification HH-I-530A, or another reliable procedure.
- R-Values may vary by manufacturer and will vary by actual SIP thickness. Please consult SIP manufacturers for individual product R-value information and SIP thicknesses available.
- R-values do not include wall coverings (interior or exterior) and/or air film values.
- All listed R-values are at mean temperature of 75° F.
- For further explanation on SIP thermal performance and whole wall R-values, please see R-values in the Real World

References

ASTM C177, 2010, "Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus," ASTM International, West Conshohocken, PA, 2010, DOI: 10.1520/C0177-10, www.astm.org

ASTM C518, 2010, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus," ASTM International, West Conshohocken, PA, 2010, DOI: 10.1520/C0518-10, www.astm.org.

ASTM C1114, 2006, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus," ASTM International, West Conshohocken, PA, 2006, DOI: 10.1520/C1114-06, www.astm.org.

ASTM C1363, 2011, "Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus," ASTM International, West Conshohocken, PA, 2011, DOI: 10.1520/C1363-11, www.astm.org.

ASTM C578, 2011, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation," ASTM International, West Conshohocken, PA, 2011, DOI: 10.1520/C0578-11, www.astm.org.