

STEEL FRAMING FACT SHEET

Insulating Steel-Framed Homes

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INSULATING STEEL-FRAMED HOMES

One of the more frequent questions builders and others have regarding steel framing relates to meeting the requirements of energy codes. Fortunately, a steel-framed home can be built to comply with energy codes, although the approach may be somewhat different than with other framing materials.

The American Iron and Steel Institute's *Thermal Design Guide* provides suggested R-values for steel framed homes to be able to meet the CABO Model Energy Code. Since steel studs are usually C-sections, the cavity is wider than wood framing. Thus it is important to select batts that are full width or to use spray-applied insulation that completely fill the cavity.

Table 1 shows some of the products that are available from various manufacturers. In colder regions the guide recommends additional insulation on the outside of the home using foam sheathing. Depending on the extra R-value required, the thickness of the foam will vary.

Table 2 shows some of the foam products available today.

The foam board is attached to the exterior of the house using screws, adhesives or nails, depending on the type of sheathing or siding that is installed. For stucco houses, the

TABLE 1
Representative Cavity Insulation Products for Steel Framing

Manufacturer	Product Type	R-Value	Thickness	Width	Length	Face
CertainTeed	Batt	R-19	6¼"	24	48"	Unfaced
CertainTeed	Batt	R-19	6¼"	16 & 24	96"	Unfaced
CertainTeed	Batt	R-19	6¼"	16 & 24	96" or 48"	Kraft or Foil
CertainTeed	BIBS	R-15	3½"	Variable	Variable	Unfaced
CertainTeed	Batt	R-13	3½"	16 & 24	96"	Unfaced or Kraft
CertainTeed	Batt	R-11	3½"	16 & 24	96" or 48"	Kraft or Foil
Owens Corning	Batt	R-22	6¼"	16 & 24	96"	Unfaced, Kraft, or Foil
Owens Corning	Batt	R-19	6¼"	16 & 24	96"	Unfaced, Kraft, or Foil
Owens Corning	Batt	R-13	3½"	16 & 24	96"	Unfaced, Kraft, or Foil
Owens Corning	Batt	R-11	3½"	16 & 24	96"	Unfaced, Kraft, or Foil
Icynene	Spray-applied foam	R 3.6 per inch	Applied to fit	Applied to fit	Applied to fit	Unfaced
Knauf Fiber Glass	Batt	R-11	3½"	16 & 24	96"	Unfaced, Kraft, or Foil
Knauf Fiber Glass	Batt	R-13	3½"	16 & 24	96"	Unfaced, Kraft, or Foil
Knauf Fiber Glass	Batt	R-15	3½"	16 & 24	96"	Unfaced, Kraft, or Foil
Knauf Fiber Glass	Batt	R-19	6¼"	16 & 24	96"	Unfaced, Kraft, or Foil

TABLE 2
Representative Foam Sheathing Products

Product	Nominal Board Thickness				
	½"	¾"	1"	1½"	2"
Celotex Tuff-R	4.0	5.6	8.0	12.0	16.0
Celotex Thermax	3.6	5.4	7.2	10.8	14.4
Dow Styrofoam	3.0	4.0	5.0	7.5	10.0
Owens Corning Foamular	2.5	3.8	5.0	7.5	10.0
Owens Corning Foamular IS	3.0	4.0	5.0	—	—

R-Values at 75°F Mean Temp.

foam is attached to the steel using a long screw with a plastic washer. The metal lath is attached to the foam using a screw with a special attachment that holds the lath in place. For houses that are sheathed with plywood or OSB, the foamboard is attached to the sheathing with roofing nails or adhesives. The siding is attached over the foam with nails or screws that penetrate through the foam into the sheathing or studs. For vinyl siding, nails or screws may be used to attach the siding into the sheathing or studs in accordance with manufacturers' recommendations.

Table 3 shows some of the available fasteners for these applications.

The information in this fact sheet is a partial list of products available from a group of manufacturers who participated in a workshop in March 1996. It is not intended as an endorsement of the products listed here. These products are representative of the group of products used for insulating steel-framed homes. For more information on the thermal performance of steel framing call the Steel Hotline at 800-79-STEEL.

TABLE 3
Fasteners for Various Exterior Finishes Using Foam Sheathing¹

Application	To Structural Sheathing ²	To Steel Studs
Foam Sheathing	Roofing Nails	Grabber Bugle Head Self-Drilling #6 min with plastic washer Compass Darts 'SD' Point Bugle Head Phillips #6 min with plastic washer
Vinyl Siding	Roofing Nails Grabber Wafer Head Streaker #8 Compass Self-Piercing Modified Truss Phillips #8	Grabber Wafer Head Self-Drilling #8 Compass Darts Self-Drilling K-Lath #8
Lap Siding, Hardboard/OSB	Ribbed Head Deck Grabber #8 Compass CW-Drill #8	Ribbed Head Exterior Grabber Gard Driller with #3 pt #8 Compass C-Wing #8
Fiber Cement Board	Ribbed Head Deck Grabber #8 Compass CW-Drill #8	Ribbed Head Exterior Grabber Gard Driller with #3 pt #8 Compass C-Wing #8
Panel Siding	Ribbed Head Deck Grabber #8 Compass CW-Drill #8	Ribbed Head Exterior Grabber Gard Driller with #3 pt #8 Compass C-Drill #8
Stucco with Metal Lath	Grabber Wafer Head Streaker #8 with Grabber Claw Compass Self-Piercing Modified Truss Phillips #8	Grabber Wafer Head Self-Drilling #8 with Grabber Claw Compass Darts Self-Drilling K-Lath #8
Brick Ties	Grabber Hex Head Streaker #8 Compass RPS Self-Piercing Hex Washer Head #8	Grabber Hex Head Self-Drilling #10 Compass Darts 'SD' point Hex Washer Head #10
Wood Shingles	Grabber Bugle Head Streaker #6 Plated Compass Marker 'S' point Bugle Head Phillips #6 Plated	N/A

¹ Screw length is determined by thickness of materials. It must penetrate siding, foam, structural sheathing, steel studs plus a minimum of exposed 3 threads. No. of screws to be specified by engineer. Plated screws recommended.

² Where structural sheathing (rated plywood or OSB) is used, foam and exterior finish may not be required to be fastened to the stud. Refer to the manufacturers' recommendations for fastening requirements of siding.