

EPS NO. 1024

SUBJECT: FURRING ATTACHMENT

DATE: JANUARY 2016 (REVISED JANUARY 2019)

The International Building Code (IBC) and International Residential Code (IRC) have stringent requirements for the energy use of new buildings. Historically, wall insulation has primarily been cavity insulation placed between wood or steel framing members. However, the loss of energy from the framing members can be significant. Therefore, the use of continuous insulation is now specified in the latest building codes to reduce the loss of heat through walls.

The use of furring attached over foam plastic insulation is a method builders commonly employ when attaching cladding products. Builders must understand the fastener requirements for installing furring over foam plastic continuous insulation. The 2015 IBC and 2015 IRC address this issue for builders by providing prescriptive tables for the attachment of furring over foam plastics, such as R-Shield insulation. The tables in this bulletin are a summary of the information contained in 2015 IBC Table 2603.12.2 and 2015 IRC Table R703.15.2. For additional detailed information, please refer to the 2015 IBC and IRC.

FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT ^{a,b}										
FURRING MATERIAL	FURRING MEMBER	FASTENER TYPE AND MINIMUM SIZE	MINIMUM PENETRATION INTO WALL FRAMING (inches)	FASTENER SPACING IN FURRING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING ^d (inches)					
					16" o.c. Furring ^e			24" o.c. Furring ^e		
					Siding Weight:			Siding Weight:		
					3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Minimum 1x Wood Furring ^c	Minimum 2x Wood Stud	0.131" diameter nail	1-1/4	8	4	2	1	4	1.5	DR
				12	4	1.5	DR	3	1	DR
				16	4	1	DR	3	0.5	DR
		0.162" diameter nail	1-1/4	8	4	4	1.5	4	2	0.75
				12	4	2	0.75	4	1.5	DR
				16	4	1.5	DR	4	1	DR
	No. 10 wood screw	1	12	4	2	0.75	4	1.5	DR	
			16	4	1.5	DR	4	1	DR	
			24	4	1	DR	3	DR	DR	
	1/4" lag screw	1-1/2	12	4	3	1	4	2	0.5	
			16	4	1.5	DR	4	1.5	DR	
			24	4	1.5	DR	4	0.75	DR	

DR = Design Required; o.c. = on center.

- Wood framing and furring shall be Spruce-Pine-Fir or any wood species with a specific gravity of 0.42 or greater in accordance with AWC NDS.
- Nail fasteners shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths.
- Where the required cladding fastener penetration into wood material exceeds 3/4 inch and is not more than 1-1/2 inches, a minimum 2X wood furring or an approved design shall be used.
- Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.
- Furring shall be spaced not more than 24 inches on center, in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.

FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT ^a										
FURRING MATERIAL	FURRING MEMBER	FASTENER TYPE AND MINIMUM SIZE ^b	MINIMUM PENETRATION INTO WALL FRAMING (inches)	FASTENER SPACING IN FURRING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING ^d (inches)					
					16" o.c. Furring ^e			24" o.c. Furring ^e		
					Cladding Weight:			Cladding Weight:		
					3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Minimum 33 mil Steel Furring or Minimum 1x Wood Furring ^c	33 mil steel stud	#8 screw	Steel thickness plus 3 threads	12	3	1.5	DR	3	0.5	DR
				16	3	1	DR	2	DR	DR
				24	2	DR	DR	2	DR	DR
		#10 screw	Steel thickness plus 3 threads	12	4	2	DR	4	1	DR
				16	4	1.5	DR	3	DR	DR
				24	3	DR	DR	2	DR	DR
	43 mil or thicker steel stud	#8 screw	Steel thickness plus 3 threads	12	3	1.5	DR	3	0.5	DR
				16	3	1	DR	2	DR	DR
				24	2	DR	DR	2	DR	DR
		#10 screw	Steel thickness plus 3 threads	12	4	3	1.5	4	3	DR
				16	4	3	0.5	4	2	DR
				24	4	2	DR	4	0.5	DR

DR = Design Required; o.c. = on center.

- a. Wood furring shall be Spruce-Pine-Fir or any softwood species with a specific gravity of 0.42 or greater. Steel furring shall be minimum 33 ksi steel. Steel studs shall be minimum 33 ksi steel for 33 mil and 43 mil thickness and 50 ksi steel for 54 mil steel or thicker.
- b. Screws shall comply with the requirements of AISI S200.
- c. Where the required cladding fastener penetration into wood material exceeds 3/4 inch and is not more than 1-1/2 inches, a minimum 2-inch nominal wood furring shall be used or an approved design.
- d. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.
- e. Furring shall be spaced not more than 24 inches on center, in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.