

## INSULATION ATTACHMENT TABLE FOR MECHANICALLY ATTACHED SYSTEMS

(Meets FM attachment requirements\*)

NUMBER OF FASTENERS					
Insulation Type	Board Size (feet)	Thickness	Fasteners/Board		
			Field	Perimeter	Corner
Isocyanurate	4x4	any	4	4	4
	4x8	1/2" - 1.2"	6	6	6
	4x8	≥1.3"	5	5	5
Perlite	4x4	any	4	4	4
Wood fiber	4x4	any	4	4	4
	4x8	any	6	6	6
Extruded Polystyrene***	4x4	any	4	4	4
	4x8	1/2" - 1.2"	6	6	6
	4x8	≥1.3"	5	5	5
Expanded Polystyrene****	4x4	any	4	4	4
	4x8	1/2" - 1.2"	6	6	6
	4x8	≥1.3"	5	5	5
Fanfold – TPO or Fleece-back PVC only	Fanfold**	3/8" min.	2-1-2-1-2	2-1-2-1-2	2-1-2-1-2
Gypsum Board*****	4x8	1/4" - 5/8"	6	6	6
TYPE OF INSULATION FASTENER					
Deck	Fastener	Plate	Penetration (minimum)		
Steel – all gauges	DRILL-TEC™ HD (#14) or Standard (#12)	3" Galvalume	3/4" through the deck		
Wood – plank and sheathing	DRILL-TEC™ HD (#14) or Standard (#12)	3" Galvalume	1" thread into/through the deck		
Structural Concrete	DRILL-TEC™ HD (#14) or DRILL-TEC™ Spike	3" Galvalume	1" thread/shank into the deck		
Insulating Concrete	DRILL-TEC™ HD (#14)	3" Galvalume	3/4" thread through steel form		
Gypsum Concrete	DRILL-TEC™ Polymer Screw	3" Galvalume	1 1/2" thread into the deck		
Cementitious Wood Fiber	DRILL-TEC™ Polymer Screw	3" Galvalume	1 1/2" thread into the deck		

\*Attachment requirements to meet determined uplift resistance are dependent on deck type, specific fastener, etc.

\*\*Fanfold attachment spacing is for each 2'x4' (0.6 m x 1.8 m) section.

\*\*\*Smooth PVC must have 3/6 oz. (85/170 gr) polymat separator sheet.

\*\*\*\*Gypsum installed over steel decks should be placed perpendicular to the deck flutes with the edges over the flute surface for proper bearing support.

## TPO MEMBRANE ATTACHMENT TABLE FOR MECHANICALLY ATTACHED SYSTEMS

(10' field sheets, except when noted)

Deck Type	Minimum Pull-out Values (lbs)	Fastener Type	Plate	Penetration	Standard Pattern	90 psf* Pattern
<b>22 ga. standard (33 ksi)</b>	450	DRILL-TEC™ XHD(#15)	2 3/8" barbed XHD	3/4" through the deck	12" o.c.	6" o.c.
	450	DRILL-TEC™ XHD (#15)	2" double barbed	3/4" through the deck	12" o.c.	6" o.c.
	450	DRILL-TEC™ XHD (#15)	2 3/4" double barbed SXHD	3/4" through the deck	12" o.c.	6" o.c.
	350	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	3/4" through the deck	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2" double barbed	3/4" through the deck	6" o.c.	
<b>22 ga. high strength (80 ksi)</b>	750	DRILL-TEC™ SXHD (#21)	2 3/4" double barbed SXHD	3/4" through the deck	12" o.c.	12" o.c.
	450	DRILL-TEC™ XHD (#15)	2 3/4" double barbed SXHD	3/4" through the deck	12" o.c.	12" o.c. (8' wide field sheets only)
	450	DRILL-TEC™ XHD (#15)	2 3/4" double barbed SXHD	3/4" through the deck	12" o.c.	6" o.c.
<b>24 ga. standard</b>	350	DRILL-TEC™ XHD(#15)	2 3/8" barbed XHD	3/4" through the deck	6" o.c.	
	350	DRILL-TEC™ XHD (#15)	2" double barbed	3/4" through the deck	6" o.c.	
	350	DRILL-TEC™ XHD (#15)	2 3/4" double barbed SXHD	3/4" through the deck	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	3/4" through the deck	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2" double barbed	3/4" through the deck	6" o.c.	
<b>2" Nominal Wood Plank</b>	800	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	1" into the deck	12" o.c.	6" o.c.
	800	DRILL-TEC™ (#14)	2" double barbed	1" into the deck	12" o.c.	6" o.c.
<b>1" Nominal Wood Plank</b>	450	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	Through the deck	9" o.c.	
	450	DRILL-TEC™ HD (#14)	2" double barbed	Through the deck	9" o.c.	
<b>3/4" Nominal Wood Plank</b>	525	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	Through the deck	12" o.c.	6" o.c.
	525	DRILL-TEC™ HD (#14)	2" double barbed	Through the deck	12" o.c.	6" o.c.

\*90 psf is attachment pattern to provide 90 lbs. per square foot (439 kg/m<sup>2</sup>) of uplift resistance of the roof membrane from the deck.

Note: When designing for Factory Mutual requirements, please consult the current FM Approval ROOFNAV and FM Approvals Standard 4470.

## TPO MEMBRANE ATTACHMENT TABLE FOR MECHANICALLY ATTACHED SYSTEMS

(10' field sheets, except when noted)

Deck Type	Minimum Pull-out Values (lbs)	Fastener Type	Plate	Penetration	Standard Pattern	90 psf* Pattern
<b>1/2" Plywood</b>	350	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	Through the deck	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2" double barbed	Through the deck	6" o.c.	
<b>Structural Concrete</b>	700	DRILL-TEC™ HD (#14)	2 3/8" barbed HD	1" into the deck	12" o.c.	6" o.c.
	700	DRILL-TEC™ HD (#14)	2" double barbed	1" into the deck	12" o.c.	6" o.c.
	900	DRILL-TEC™ Spike	2 3/8" barbed HD	1" into the deck	12" o.c.	6" o.c.
	900	DRILL-TEC™ Spike	2" double barbed	1" into the deck	12" o.c.	6" o.c.
	900	DRILL-TEC™ Spike	2 3/4" double barbed SXHD	1" into the deck	12" o.c.	12" o.c.
<b>Lightweight Insulating Concrete, 22 ga. standard form</b>	450	DRILL-TEC™ XHD (#15)	2 3/8" barbed XHD	3/4" through the form	12" o.c.	6" o.c.
	450	DRILL-TEC™ XHD (#15)	2" double barbed	3/4" through the form	12" o.c.	6" o.c.
	350	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	3/4" through the form	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2" double barbed	3/4" through the form	6" o.c.	
<b>Lightweight Insulating Concrete, 24 ga. standard form</b>	350	DRILL-TEC™ XHD (#15)	2 3/8" barbed XHD	3/4" through the form	6" o.c.	
	350	DRILL-TEC™ XHD (#15)	2" double barbed	3/4" through the form	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2 3/8" barbed XHD	3/4" through the form	6" o.c.	
	350	DRILL-TEC™ HD (#14)	2" double barbed	3/4" through the form	6" o.c.	
<b>Gypsum Concrete</b>	400	DRILL-TEC™ Polymer Screw	2" double barbed	1 1/2" into the deck	9" o.c.	6" o.c.
	400	DRILL-TEC™ Polymer Screw	2" barbed XHD	1 1/2" into the deck	9" o.c.	6" o.c.
<b>Cementitious Wood Fiber</b>	300	DRILL-TEC™ Polymer Screw	2" double barbed	1 1/2" into the deck	6" o.c.	
	300	DRILL-TEC™ Polymer Screw	2" barbed XHD	1 1/2" into the deck	6" o.c.	

\*90 psf is attachment pattern to provide 90 lbs. per square foot (439 kg/m<sup>2</sup>) of uplift pressure resistance and may equate to FM I-90. Refer to current FMRC Approval Guide.

NOTE: For designing at elevated uplift pressures, please consult the current FMRC Approval Guide/ROOFNAV.