ICC-ES Evaluation Report

ESR-1660

Reissued February 1, 2012
This report is subject to renewal in two years.

www.icc-es.org | (800) 423-6587 | (562) 699-0543 *A Subsidiary of the International Code Council®*

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 54 00—Thermoplastic Membrane Roofing

REPORT HOLDER:

DURO-LAST ROOFING, INC.
525 MORLEY DRIVE
SAGINAW, MICHIGAN 48601
(800) 248-0280
www.duro-last.com

EVALUATION SUBJECT:

DURO-LAST FIRE-RETARDANT ROOF COVERING SYSTEMS

1.0 EVALUATION SCOPE

Compliance with the following code:

2006 *International Building Code*® (IBC)

Properties evaluated:

- Roof covering classification
- Weather resistance
- Wind resistance
- Impact resistance

2.0 USES

Duro-Last Fire-retardant Roof Covering Systems are classified, single-ply membrane roofing systems installed over combustible or noncombustible roof decks.

3.0 DESCRIPTION

3.1 General:

Duro-Last Fire-retardant Roof Covering Systems consist of the components specified in Tables 1-4, covering one of the Duro-Last membranes specified in Section 3.2.1.

3.2 Material:

3.2.1 Duro-Last Membranes: The Duro-Last membrane is a nominally 40-, 50-, or 60-mil-thick (1.0, 1.2 or 1.5 mm), single-ply roof covering membrane having a 35-ounce-per-square-yard (1187 g/m^2), weft-inserted, polyester-base fiber mat laminated with a thermoplastic film. The membrane is produced with 3- or 6-inch (76 or 152 mm) tabs continuous along the length of the membrane and spaced every 120, 84, 60, 57, 28, 27 or 25 inches (3048, 2133, 1524, 1448, 711, 686 or 635 mm) along the width for mechanical attachment purposes. The roof covering is supplied in 64-inch-wide (1.63 m) rolls, which can be fabricated into one-piece membrane sheets up to a maximum size of 3000 square feet (279 m^2).

3.2.2 Insulation: Polyisocyanurate and polystyrene rigid cellular foam plastic thermal insulation specified in Tables 1 through 4 must comply, respectively, with ASTM C 1289 or ASTM C 578. Foam plastic insulation, where used, must have a flame-spread index of not more than 75 when tested in accordance with ASTM E 84 at the maximum thickness intended for use. Wood fiberboard must comply with ASTM C 208. See Tables 1 through 4 for insulations for use with specific roof covering systems.

3.2.3 Barrier Layer Coverboard and cover Sheets: Barrier layer materials, coverboards and cover sheets (which include DensDeck and DensDeck Prime) must be as specified in Tables 1 and 2.

3.2.4 Fasteners and Stress Plates: Fasteners and stress plates used to attach barrier layer materials, insulation boards and the roof covering membrane must be corrosion-resistant. Fasteners may be any of Duro-Last insulation and membrane fasteners and plates summarized in this section or shown in Tables 3 and 4.

3.2.4.1 Duro-Last #14 HD Fasteners: Fasteners must be #14 diameter, corrosion-resistant, threaded fasteners with drill or pinch points and P-3 truss heads.

3.2.4.2 Duro-Last #15 Fasteners: Fasteners must be #15 diameter, corrosion-resistant, threaded fasteners with drill points and P-3 truss heads.

3.2.4.3 Duro-Last Concrete Screws: Screws are corrosion-resistant, dual-threaded fasteners with pinch points and #3 square drive truss heads.

3.2.4.4 Duro-Last Concrete Nails: Nails are corrosion-resistant roofing fasteners having 0.22-inch-diameter (5.6 mm) shanks; they are of various lengths and have flat top pan heads.

3.2.4.5 Duro-Last Poly-Plate: A 2-inch-diameter (51 mm) polycarbonate plate having ten prongs on the underside that extend down 0.26 inch (6.6 mm), and a centrally located 0.245-inch-diameter (6.22 mm) hole.

3.2.4.6 Duro-Last Insulation Plate: A 3-inch-diameter (76 mm) polypropylene plate with a recessed, centrally located, 0.28-inch-diameter (7.1 mm) hole.

3.2.4.7 Duro-Last 3-inch Metal Plate: A 3-inch-square (76 mm), 0.24-inch-thick (6.1 mm) galvalume plate with a centrally located, 0.25-inch-diameter (6.4 mm) hole.

3.2.4.8 Duro-Last 2.4-inch Barbed Metal Plate: A 0.038-inch-thick (0.97 mm), 2.4-inch-diameter (61 mm) galvalume plate.

3.2.4.9 Duro-Last Cleat Plate: A $2^{3}/_{8}$-inch-diameter (60 mm), 0.035-inch-thick (0.89 mm) galvalume ribbed stress plate. The plate is stamped with "cleats" to hold the membrane in place without tearing or puncturing the membrane.

3.2.4.10 NTB Magnum Fastener: The fastener is a one-piece, glass-reinforced nylon fastener with a 0.75-inch (19.1 mm) diameter and a double 0.375-inch (9.1 mm) hex recess. The fastener has two internal galvanized wires and a plastic plunger. When the plunger is seated, the wires extend out from the side ports on the fastener shank and curl up for assisting in anti-backout. The fastener is available with either a 1-inch- (25.4 mm) or 2-inch-diameter (51 mm) head.

3.2.4.11 Spin Weld Plates: Two-inch-diameter (51 mm) amorphous nylon plates having a 0.23-inch-deep (5.8 mm), 1-inch-diameter (25.4 mm) recess in the plate center and a $^{3}/_{4}$-inch-diameter (19.1 mm), centrally located hole, and sixteen spikes on the underside. The Spin Weld Plate is for use with the NTB Magnum fastener with 1-inch-diameter (25.4 mm) head.

3.2.4.12 Liquid Auger Fastener: The fastener is a composite nylon and fiberglass fastener/plate system with a modified perforated hollow shank to allow epoxy injected into the shank to seep into the surrounding decking material.

3.2.5 Adhesives: Duro-Last adhesives must not be thinned. Adhesives used to secure Duro-Last Membrane are as follows:

3.2.5.1 Duro-Last SB I Adhesive: A solvent-based bonding adhesive for adhering Duro-Last membrane to the approved substrate. SB I Adhesive is applied to each surface at 1.5 gal/square/surface (5.68 L). Allow the adhesive on the membrane to produce strings to the touch (Do not allow to dry) and broom into place after the adhesive is dry to the touch.

3.2.5.2 Duro-Last SB II Adhesive: A solvent-based bonding adhesive for adhering Duro-Last membrane to the approved substrate. SB II Adhesive is applied to each surface at 2.0 gal/square/surface (7.57 L). The membrane is applied onto the wet adhesive and broomed into place.

3.2.5.3 Duro-Last WB I Adhesive: A water-based bonding adhesive for adhering Duro-Last membrane to the approved substrate. WB I Adhesive is applied to each surface at 0.5 gal/square/surface (1.9 L). The membrane is applied and broomed into place after the adhesive is dry to the touch.

3.2.5.4 Duro-Last WB II Adhesive: A water-based bonding adhesive for adhering Duro-Last membrane to the approved substrate. WB II Adhesive is applied to the substrate only at 0.7 gal/square/surface (2.65 L). The membrane is applied onto the wet adhesive and broomed into place.

3.2.5.5 Duro-Last Tab Sealer 4725: A solvent-based contact-bonding agent for use in the Hybrid lap fastening method for the mechanically attached membranes. See Section 4.2.2.

3.2.6 Perimeter Flashing: Duro-Last fascia systems, gravel stop edging and drip edge edging are fabricated from rigid exterior vinyl and metal two-piece composite and snap-on metal.

3.3 Impact Resistance:

The Duro-Last Fire-retardant Roof Covering Systems described in this report comply with requirements for impact resistance in accordance with FM 4470.

4.0 INSTALLATION

4.1 General:

Installation of Duro-Last Fire-retardant Roof Covering Systems must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation. Substrates must be free of standing water, gross irregularities and sharp projections. The insulation must be tightly butted and fastened to the substrate using fasteners and plates noted in Section 3.2.4 and the tables of this report.

For systems using mechanically attached Duro-Last membrane, insulation boards must be attached to the substrate using two fasteners for insulation boards that have no dimension measuring more than 4 feet (1219 mm), and using four fasteners for insulation boards having any one dimension measuring more than 4 feet (1219 mm).

For systems using fully adhered Duro-Last membrane, insulation boards must be attached in accordance with Table 4 of this report.

4.2 Mechanically Attached Membrane:

For mechanically attached Duro-Last membrane, the membrane must be rolled out on the substrate and mechanically attached to the roof deck through the slip sheet, insulation, barrier board and/or existing roof covering, if present, using fasteners and stress plates as noted in Section 3.2.4 and Table 3. The fasteners must be placed along and through the fastening tabs. See Table 4 for fastener and lap details. The two lap types are as follows:

4.2.1 Standard: Standard lap consists of fastener/plate placement in the 3-inch- or 6-inch-wide (76 mm or 152 mm) preformed tabs. Unless otherwise noted, fastener placement must be through the centerline of the tab width.

4.2.2 Hybrid: Hybrid lap consists of fastener/plate placement in the 6-inch-wide (152 mm) preformed tabs. Unless otherwise noted, fastener placement must be through the centerline of the tab width. Prior to the pulling of the membrane for the next lap, Duro-Last Tab Sealer 4725 must be applied (see Section 3.2.5.5) over the tab membrane and to the underside of the overlying membrane (two-sided application) at an approximate rate of 30 ft^2/gal/side. Care must be used to avoid wrinkles and air pockets.

4.3 Fully Adhered Membrane:

For fully adhered Duro-Last membrane, the prefabricated roof section is positioned over the area to be covered. The roof section is folded back onto itself to expose half of the roof area to be covered by that section. Adhesive is applied in front of the fold along its length in accordance with Section 3.2.5 of this report. Care must be taken not to apply more of the adhesive than can be covered prior to the adhesive setting up. The top layer of membrane is lifted and, starting at the fold, a stiff squeegee or broom is used to push the membrane into the adhesive. Care must be used to avoid wrinkles and air pockets. As each new roof section is added, the adjacent sheets are overlapped a minimum of 3 to 6 inches (76 mm or 152 mm), with care taken to avoid contamination of the membrane where seams will be welded together.

4.4 Seam Welding:

After the membrane is fastened or bonded, sheets must be welded (heat-fused) together using hot air supplied by either a handheld or self-propelled welder. Each membrane sheet overlaps the adjacent sheet 3 to 6 inches (76 mm to152 mm). Field welds must be a minimum of $1^1/_2$ inches (38 mm) wide. The welded seam must be checked for continuity and integrity.

4.5 Vents, Parapets, Protrusions and Edge Details:

All vents, parapets, protrusions and edge details must be flashed in accordance with Duro-Last's published installation instructions.

4.6 Fire Classification:

The mechanically fastened and adhered PVC single-ply membrane roofing systems, when installed in accordance with this report, are Class A, B or C roof covering systems in accordance with UL 790 (ASTM E 108), as noted in Table 1 and 2.

4.7 Wind Resistance:

When the Duro-Last membranes specified in Section 3.2.1 are installed in accordance with this report, the allowable uplift capacities for the PVC single-ply membrane roofing systems are as noted in Tables 3 and 4. In accordance with IBC Section 1504.5, metal edge securement systems for low-slope roofs (roof slope less than 2:12) must be designed in accordance with ANSI/SPRI ES-1. The Duro-Last edge flashing systems, components and details specified in Sections 3.2.6 and 4.5 provide edge securement for mechanically attached membranes. When tested in accordance with Test RE-1 of ANSI/SPRI ES-1, the systems and components provide the following maximum load resistances: 666 plf (992 kg/m) for the Duro-Last 4-inch Facia System (Edge Detail 3040); 895 plf (1333 kg/m) for the Duro-Last 4-inch Drip Edge (Edge Detail 3070); 900 plf (1341 kg/m) for the Duro-Last 4-inch Gravel Stop (Edge Detail 3100); and 455 plf (678 kg/m) for the 2-piece Duro-Guard Metal Compression System (Edge Detail 3110).

5.0 CONDITIONS OF USE

The Duro-Last Fire-retardant Roof Covering Systems described in this report comply with, or are suitable alternates to that specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 The roof covering system must be installed by applicators authorized and trained by Duro-Last, Inc.

5.3 For applications where foam plastic insulation is installed directly over a steel deck, an ICC-ES evaluation report recognizing the specific foam plastic insulation for direct-to-steel-deck applications must be required.

5.4 Foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.1.5, except for installations in accordance with Section 5.3 and Footnote 7 to Table 1 and Footnote 8 to Table 2.

5.5 Foam plastic insulation, where used, must bear the label of an approved agency indicating that the foam plastic has a flame-spread index of not more than 75 when tested at the maximum thickness intended for use in accordance with ASTM E 84, subject to the approval of the code official.

5.6 The allowable wind uplift loads in Tables 3 and 4 are for the roof covering system only. The deck and framing to which the system is attached must be designed for the applicable components and cladding wind loads in accordance with the IBC.

5.7 Wind uplift pressure on any roof area, including edge and corner zones, must not exceed the allowable wind uplift pressure for the system installed in that particular roof area.

5.8 Duro-Last membranes are manufactured in Saginaw, Michigan; Grants Pass, Oregon; Jackson, Mississippi; and Sigourney, Iowa, under a quality control program with inspections by Underwriters Laboratories Inc. (AA-668).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Membrane Roof-covering Systems (AC75), dated April 2007.

7.0 IDENTIFICATION

The Duro-Last Fire-retardant Roof Covering System components (membrane, fasteners and adhesives) described in this report are identified with a label indicating the manufacturer's name (Duro-Last Roofing, Inc.), the product type, the name of the inspection agency (Underwriters Laboratories Inc.) and the evaluation report number (ESR-1660).

TABLE 1—MECHANICALLY ATTACHED MEMBRANE ROOFING CLASSIFICATION[8]

SYSTEM NO.	CLASS[1]	SUBSTRATE[2,3]	MAX. SLOPE	EXISTING ROOF	BARRIER, INSULATION AND/OR COVERBOARD		
					Barrier	Insulation[4,5,6,7]	Coverboard[6] or Coversheet
1	A	Combustible	1/4:12	Class A, B or C roof	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II[9]	None
2	B	Combustible	1:12	Class B smooth surface BUR	One layer ASTM D 226, type II, or D 4601, type II felt, Atlas FR10, 1/2-inch-thick. GreenGuard P14, PB4 or PB6, 1/2-inch-thick. Carpenter Foamfold, min. 1/4-inch DensDeck or DensDeck Prime or 3-mil polyethylene film	None	None
3	B	Combustible	3/4:12	None	Two layers Atlas FR10	None	None
4	A	Combustible	3:12	None	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck	(Optional) 1-inch min. to 4-inch max., Atlas ACFoam II	None
5	C	Combustible	1:12	None	One layer Atlas FR10 or min. 1/4-inch DensDeck or DensDeck Prime	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II or Rmax Multi-Max-3	None
6	A	Combustible	1/4:12	Class A, B or C roof	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime	(Optional) Any thickness UL Classified polystyrene[9]	Min. 1/4-inch DensDeck or DensDeck Prime
7	Per existing roof	Combustible	2:12	Class A, B or C roof (classification retained)	None	None	None
8	A	Combustible	3:12	None	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime	(Optional) Any thickness UL Classified polystyrene.	Min.1/4-inch DensDeck or DensDeck Prime
9	A	Noncombustible	3:12	Class A gravel surface roof	None	None	None
10	A	Noncombustible	3:12	None	None	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II	None
11	A	Noncombustible	3:12	None	None	(Optional) Any thickness UL Classified polystyrene.	Min. 1/4-inch DensDeck or DensDeck Prime or Atlas FR10
12	Per existing roof	Combustible	2:12	Class A, B or C roof (classification retained)	None	None	None
13	A	Noncombustible	1/4:12	Class A, B or C roof	None	(Optional) Any thickness UL Classified polystyrene[9]	Min. 1/4-inch DensDeck or DensDeck Prime or Atlas FR10
14	B	Combustible	No limit	None	UL Classified Class C mineral-surfaced roll roofing followed by two layers Atlas FR10	None	None

TABLE 1—MECHANICALLY ATTACHED MEMBRANE ROOFING CLASSIFICATION[8] (Continued)

SYSTEM NO.	CLASS[1]	SUBSTRATE[2,3]	MAX. SLOPE	EXISTING ROOF	BARRIER, INSULATION AND/OR COVERBOARD		
					Barrier	Insulation[4,5,6,7]	Coverboard[6] or Coversheet
15	Per existing roof	Combustible	2:12	Class A, B or C BUR, smooth surface, cap sheet or gravel surfaced with gravel at 400 lbs/sq. (classification retained)	None	1/2-inch-thick. Plymouth Ultra-Fold TPM[9]	None
16	A	Noncombustible	1/4:12	Class A, B or C roof	None	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II[9]	None
17	B	Combustible	2:12	None	UL Classified Class C mineral-surfaced roll roofing followed by two layers Atlas FR10	None	None
18	A	Min. 3/4-inch plywood	1/4:12	Class A roof	None	None	None
19	Per existing roof	Noncombustible	1/2:12	Class A, B or C roof (classification retained)	None	Min. 1-inch UL Classified polyisocyanurate[9]	Leggett & Platt Nova Rollout
20	A	Combustible	3/4:12	None	Four layers Atlas FR10	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II or Rmax Multi-Max-3	None
21	A	Noncombustible	No limit	None	None	None	None
22	B	Noncombustible	3:12	None	None	1-inch min. to 4-inch max. thickness, Rmax Multi-Max-3	None
23	A	Combustible	1/4:12	Class A, B or C gravel surface roof with gravel at 400 lbs/sq	One layer ASTM D 226, type II, or D 4601, type II felt, Atlas FR10, 1/2-inch-thick. GreenGuard P14, PB4 or PB6[9], or min. 1/4-inch DensDeck or DensDeck Prime	None	None
24	A	Combustible	3/4:12	Class A, B or C smooth surfaced BUR	Two layers Atlas FR10	None	None
25	A	Combustible	2:12	None	UL Classified Class C mineral-surfaced roll roofing followed by four layers Atlas FR10	None	None
26	A	Combustible	1:12	Class A gravel surface roof with gravel at 400 lbs/sq	None	1/2-inch-thick Carpenter Insulation Foamfold[9]	None
27	A	Combustible	No limit	Class A, B or C roof	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime	None	None
28	A	Combustible	No limit	None	None	Any thickness, UL Classified polystyrene or polyisocyanurate	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime
29	B	Noncombustible	No limit	None	None	1-inch min. to 4-inch max. thickness, Atlas ACFoam II	One layer Atlas FR50

TABLE 1—MECHANICALLY ATTACHED MEMBRANE ROOFING CLASSIFICATION[8] (Continued)

SYSTEM NO.	CLASS[1]	SUBSTRATE[2,3]	MAX. SLOPE	EXISTING ROOF	BARRIER, INSULATION AND/OR COVERBOARD		
					Barrier	Insulation[4,5,6,7]	Coverboard[6] or Coversheet
30	A	Noncombustible	1:12	None	None	1-inch-min. to 4-inch max. thickness, Atlas ACFoam II	None
31	A	Noncombustible	3:12	Insulated or non-insulated ballasted single ply membrane with or without ballast removed	One layer Atlas FR10 or Elk Versashield 1S or min. $^1/_4$-inch DensDeck or DensDeck Prime	None	None
32	B	Combustible	1:12	None	One layer Atlas FR10 or min. $^1/_4$-inch DensDeck or DensDeck Prime	2-inch min. to 4-inch max. thickness, Atlas ACFoam II, Firestone ISO 95+GW or Rmax Multi-Max FA-3	None
33	B	Combustible	1:12	None	One layer Atlas FR50	None	None
34	A	Noncombustible	No limit	None	None	Any thickness, UL Classified polystyrene	One layer, Atlas FR10 or min. $^1/_4$-inch DensDeck or DensDeck Prime
35	A	Noncombustible	21/2:12	None	None	1-inch min. to 4-inch max. thickness, Rmax Multi-Max-3	None
36	A	Combustible	2:12	Class A, B or C BUR, smooth surface, cap sheet or gravel-surfaced (gravel may be removed)	(If gravel is removed) Min. $^1/_2$-inch Type X gypsum or min. $^1/_4$-inch DensDeck or DensDeck Prime	$^1/_2$-inch-thick Plymouth Ultra-Fold TPM[9]	None
37	A	Combustible	2:12	Class A smooth or gravel-surfaced BUR (gravel maintained at 400 lbs/sq.)	None	$^1/_2$-inch-thick. GreenGuard PB6, PB6W, PG38, PG39 or Duro-Fold[9]	None
38	B	Combustible	2:12	None	Min. two layers Elk Versashield Underlayment	None	None
39	B	Combustible	2:12	None	Min. one layer Elk Versashield Underlayment	None	None
40	A	Combustible	$1^1/_2$:12	None	Min. $^1/_2$-inch Type X gypsum or min. $^1/_4$-inch DensDeck or DensDeck Prime	(Optional) 1-inch min. to 4-inch max. thickness, Atlas ACFoam II or Rmax Multi-Max-3	None
41	B	Combustible	$1^1/_2$:12	None	One layer Elk Versashield FB-2S	None	None
42	A	Noncombustible	3:12	None	None	Any thickness, UL Classified polystyrene	Min. $1^1/_2$-inch Atlas ACFoam III
43	A	Noncombustible	3:12	None	None	1-inch min. to 4-inch max. thickness, Atlas ACFoam II	None
44	A	Noncombustible	No limit	None	None	Any thickness, UL Classified polystyrene	One layer Atlas FR10 or min. $^1/_4$-inch DensDeck or DensDeck Prime
45	A	Combustible	No limit	None	Four layers Atlas FR10	None	None

TABLE 1—MECHANICALLY ATTACHED MEMBRANE ROOFING CLASSIFICATION[8] (Continued)

SYSTEM NO.	CLASS[1]	SUBSTRATE[2,3]	MAX. SLOPE	EXISTING ROOF	BARRIER, INSULATION AND/OR COVERBOARD		
					Barrier	Insulation[4,5,6,7]	Coverboard[6] or Coversheet
46	A	Noncombustible	1:12	None	None	1/2-inch-thick Carpenter Insulation Foamfold	None
47	A	Combustible	3:12	None	Min. 1/4-inch DensDeck	None	None
48	A	Noncombustible	2:12	None	None	1-inch min. to 4-inch max. thickness, Hunter H-Shield	None
49	A	Noncombustible	2:12	None	None	1/2-inch-thick Plymouth Ultra-Fold TPM	None
50	A	Combustible	2:12	None	Min. 1/2-inch Type X gypsum or min. 1/4-inch DensDeck or DensDeck Prime	1/2-inch-thick Plymouth Ultra-Fold TPM	None
51	A	Noncombustible	1:12	None	None	1-inch min. to 4-inch max. thickness, Firestone ISO 95+GL	None
54	A	Combustible	1/4:12	None	Three layers Elk Versashield FB-1S	Any thickness, UL Classified polyisocyanurate	None
55	A	Combustible	3/4:12	None	One or more layers Elk Versashield FB-1S	1-inch min. to 4-inch max. thickness, Rmax Ultramax	None
56	A	Combustible	1/4:12	None	Two layers Elk Versashield FB-1S	Any thickness, UL Classified polyisocyanurate	None
57	A	Combustible	3:12	None	None	(Optional) Any thickness, UL Classified polyisocyanurate	Min. 1/4-inch DensDeck
58	A	Noncombustible	1/2:12	None	None	Min. 1-inch UL Classified polyisocyanurate	Leggett & Platt Nova Rollout

For **SI:** 1 inch = 25.4 mm, 1 pcf =16.018 kg/m^3, 1 sq. ft. = 0.093 m^2, 1 gal/100 sq. ft. = 0.41 L/m^2.

[1]New insulated or noninsulated roof systems may be installed over existing noninsulated roof systems provided the resulting classification is taken as the lower of the new or existing roof classification.
[2]Noncombustible deck system classifications are permitted for use over combustible decks when minimum 1/4-inch DensDeck or DensDeck Prime is applied directly over the combustible deck or directly over the insulation with all joints in the barrier of coverboard staggered 6 inches from plywood joints.
[3]Noncombustible substrates include structural concrete, lightweight concrete, gypsum and steel.
[4]All foam plastic insulation must be UL Classified foam plastic, and must be limited to the maximum thickness in accordance with Section 5.5 of this report or the maximum thickness in accordance with this table, whichever is less.
[5]Unless otherwise noted, polyisocyanurate insulation must be Type II in accordance with ASTM C1289 and expanded polystyrene must comply with ASTM C 578.
[6]Unless otherwise noted, the top insulation layer (insulation or coverboard) must be presecured with four fasteners per board for a board having any dimension greater than 4 feet and two fasteners per board for a board having a maximum dimension of 4 feet.
[7]Foam plastic insulation is permitted to be installed over a steel deck without a thermal barrier when an ICC-ES evaluation report on the specific foam plastic insulation allowing direct to metal deck applications is provided for approval of the code official. See Sections 5.3 and 5.4 of this report for conditions of use.
[8]Unless otherwise specified, the barrier, insulation, coverboard, coversheet, membrane adhesive and membrane must be UL Classified for roofing system application.
[9]Roof coverings containing foam plastic insulation must not be installed over existing roof coverings containing foam plastic insulation.

TABLE 2—FULLY ADHERED MEMBRANE ROOFING CLASSIFICATION [8]

SYSTEM NO.	CLASS[1]	SUBSTRATE[2,3]	MAX. SLOPE	EXISTING ROOF	BARRIER, INSULATION AND/OR COVERBOARD			MEMBRANE ADHESIVE
					Barrier	Insulation[4,5,6,7]	Coverboard[6] or Coversheet	
1	A	Noncombustible	$2^1/_2$:12	None	None	Any thickness, UL Classified polystyrene	Min. $^1/_4$-inch DensDeck or DensDeck Prime	WB I
2	A	Noncombustible	2:12	None	None	1-inch min. to 4-inch max. thickness, Atlas AC Foam II	None	WB I
3	A	Noncombustible	$2^1/_2$:12	None	None	Any thickness, UL Classified polyisocyanurate in hot asphalt	Min. $^1/_4$-inch DensDeck Prime in hot asphalt	WB I

For **SI:** 1 inch = 25.4 mm, 1 pcf =16.018 kg/m^3, 1 sq. ft. = 0.093 m^2, 1 gal/100 sq. ft. = 0.41 L/m^2.

[1]New insulated or noninsulated roof systems may be installed over existing noninsulated roof systems provided the resulting classification is taken as the lower of the new and existing roof classification.
[2]Noncombustible deck system classifications are permitted for use over combustible decks when minimum $^1/_4$-inch DensDeck or DensDeck Prime is applied directly over the combustible deck or directly over the insulation with all joints in the barrier of coverboard staggered 6 inches from plywood joints.
[3]Noncombustible substrates include structural concrete, lightweight concrete, gypsum and steel.
[4]All foam plastic insulation must be UL Classified foam plastic, and must be limited to the maximum thickness in accordance with Section 5.5 of this report or the maximum thickness in accordance with this table, whichever is less.
[5]Unless otherwise noted, polyisocyanurate insulation must be Type II in accordance with ASTM C 1289 and polystyrene must comply with ASTM C 578.
[6]Unless otherwise noted, the top insulation layer (insulation or coverboard) must be mechanically fastened.
[7]Foam plastic insulation is permitted to be installed over a steel deck without a thermal barrier when an ICC-ES evaluation report on the specific foam plastic insulation allowing direct-to-metal-deck applications is provided for approval of the code official. See Sections 5.3 and 5.4 of this report for conditions of use.
[8]Unless otherwise specified, the barrier, insulation, coverboard, coversheet, membrane adhesive and membrane must be UL Classified for roofing system application.

TABLE 3—ATTACHMENT METHODS FOR MECHANICALLY ATTACHED MEMBRANE[1]

SYSTEM NO.	DECK	INSULATION[1,2,3]	LAP TYPE	FASTENER[1]	SPACING (inches)			ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
					Tab Width	Tab Spacing	Fastener Spacing	
M1A	Min. $^3/_4$-inch plywood or min. 2-inch wood plank	None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	57	18	30
M1B			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	60	12	30
M1C			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	27	18	45
M1D			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	57	12	45
M2A	Min. $^{19}/_{32}$-inch plywood or min. 2-inch wood plank	(Optional) One or more layers, foam plastic insulation	Hybrid	Duro-Last #14 HD Fastener and Poly Plates	3	60	6	45
M2B		None	Standard	Duro-Last #15 HD Fastener and 2.4-inch Barbed Seam Plates	6	57	6 (Fastener line located 2.7-inch from tab edge)	52
M2C			Hybrid	Duro-Last #14 HD Fastener and 3-inch Metal Plates	6	57	6	52
M3	Nom. 1 x 6-inch T&G board decking	One or more layers, foam plastic insulation	Hybrid	Duro-Last #15 Fasteners with ITW Buildex $2^3/_8$-inch Eyehook Plates	6	25	6	98

TABLE 3—ATTACHMENT METHODS FOR MECHANICALLY ATTACHED MEMBRANE1 (Continued)

SYSTEM NO.	DECK	INSULATION[1,2,3]	LAP TYPE	FASTENER[1]	SPACING (inches)			ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
					Tab Width	Tab Spacing	Fastener Spacing	
M4A	Min. 22 ga. Grade 33 steel	None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	57	18	30
M4B			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	60	12	30
M4C			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	27	18	45
M4D			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	57	12	45
M5A	Min. 22 ga. Grade 80 steel	None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	60	18	30
M5B		1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Standard	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	120	12 (Fastener line located 1.75-inch from tab edge)	38
M5C			Standard	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	120	6 (Fastener line located 1.75-inch from tab edge)	45
M5D		None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	60	12	45
M5E			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	84	6	45
M5F		1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Hybrid	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	120	12	45
M5G		None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	120	6	52
M5H			Standard	Duro-Last #14 HD Fastener and Poly Plates	3	28	18	52
M5J			Hybrid	Duro-Last #15 Fastener and 3-inch Metal Plates	6	57	6	52
M5K			Hybrid	Duro-Last #15 Fastener and 3-inch Metal Plates	6	84	6	52
M5L		1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Hybrid	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	84	12	52
M5M		None	Standard	Duro-Last #15 Fastener and 2.4-inch Barbed Seam Plates	3	84	6	60

TABLE 3—ATTACHMENT METHODS FOR MECHANICALLY ATTACHED MEMBRANE[1] (Continued)

SYSTEM NO.	DECK	INSULATION[1,2,3]	LAP TYPE	FASTENER[1]	SPACING (inches)			ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
					Tab Width	Tab Spacing	Fastener Spacing	
M5N	Min. 22 ga. Grade 80 stee (Continued)	1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing“ AC Foam II” or “AC Foam III”	Hybrid	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	57	12	68
M5P		1.5-inch-thick polyisocyanurate	Hybrid	Duro-Last #15 EHD Fasteners and Batten Bar	3	60	6	68
M5Q		None	Standard	Duro-Last #14 HD Fastener and Poly Plates	3	28	12	75
M5R			Hybrid	Duro-Last #15 Fastener and 3-inch Metal Plates	6	120	6	82
M5S		1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Hybrid	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	84	6	98
M5T		None	Hybrid	Duro-Last #15 Fastener and 3-inch Metal Plates	6	57	6	105
M5U		1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3”, Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Hybrid	Tru-Fast EHD fasteners and Duro-Last Cleat Plates	6	57	6	135
M5V		One or more layers, foam plastic insulation	Hybrid	Duro-Last #15 Fasteners with ITW Buildex $2^{3}/_{8}$-inch Eyehook Plates	6	25	6	142
M6A	Concrete	None	Standard	Duro-Last Concrete Screw or Nail and Poly Plates	3	57	18	30
M6B			Standard	Duro-Last Concrete Screw or Nail and Poly Plates	3	60	12	30
M6C			Standard	Duro-Last Concrete Screw or Nail and Poly Plates	3	27	18	45
M6D			Standard	Duro-Last Concrete Screw or Nail and Poly Plates	3	57	12	45
M6E			Standard	Duro-Last Concrete Screw or Nail and Poly Plates	3	84	6	45
M6F			Hybrid	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	6	57	12	52
M6G			Hybrid	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	6	84	6	52

TABLE 3—ATTACHMENT METHODS FOR MECHANICALLY ATTACHED MEMBRANE[1] (Continued)

SYSTEM NO.	DECK	INSULATION[1,2,3]	LAP TYPE	FASTENER[1]	SPACING (inches)			ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
					Tab Width	Tab Spacing	Fastener Spacing	
M6H	Concrete (Continued)	None	Standard	Duro-Last Concrete Screw or Nail and 2.4-inch Barbed Seam Plates	3	84	6	60
M6J			Hybrid	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	6	120	6	82
M6K			Hybrid	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	6	57	6	105
M6L		One or more layers, foam plastic insulation	Hybrid	Duro-Last Concrete Screw or Nail and ITW 2-$^3/_8$-inch Eyehook Plates	6	25	6	142
M7A	Tectum or existing gypsum	None	Standard	Duro-Last NTB Magnum and Spin Weld Plates	3	57	9	30
M7B			Standard	Duro-Last NTB Magnum and Spin Weld Plates	3	60	6	38
M7C		None	Standard	Duro-Last NTB Magnum and Spin Weld Plates	3	57	6	45
M7D			Standard	Duro-Last NTB Magnum and Spin Weld Plates	3	60	4	45
M7E			Standard	Duro-Last Liquid Fastener	6	57	6	45
M7F		None	Hybrid	Duro-Last Liquid Fastener	6	57	6	60
M8A	31-inch- wide, min. 2$^1/_2$-inch- thick Tectum fastened to steel supports spaced 5 ft. o.c. with Tru-Fast purlin fasteners and 2-inch Metal Plates	1.5-inch min. to 4-inch max. thickness, Johns Manville “ENRGY 3,” Firestone “ISO-95+GL,” Rmax “Multi-max FA-3,” Atlas Roofing “AC Foam II” or “AC Foam III”	Hybrid	Duro-Last Liquid Auger Fastener with Ashland Pliogrip 7779L/220 Structural Adhesive	6	57	12	38
M8B			Hybrid	Duro-Last Liquid Auger Fastener with Ashland Pliogrip 7779L/220 Structural Adhesive	6	57	6	68
M9A	Existing lightweight concrete	None	Standard	Duro-Last Liquid Fastener	6	57	6	45
M9B			Hybrid	Duro-Last Liquid Fastener	6	57	6	60

For **SI:** 1 inch = 25.4 mm,1 lbf/ft^2 = 47.88 Pa, 1 lbf = 4.4 N.

[1]Insulations, fasteners, adhesives and membranes must be FM-approved.
[2]All foam plastic insulation must be limited to the maximum thickness in accordance with Section 5.5 of this report or the maximum thickness in accordance with this table, whichever is less.
[3]All insulation must be preliminarily attached to the deck in accordance with FM requirements.

TABLE 4—ATTACHMENT METHODS FOR FULLY ADHERED MEMBRANE[1]

SYSTEM NO.	DECK	Insulation[1,2]			Coverboard[1]			ADHESIVE[1]	ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
		Type	Fastener[1]	Rate	Type	Fastener[1]	Rate		
A1A	Min. $^3/_4$-inch plywood or min. 2-inch wood plank or min. 22 ga., Grade 33 steel	One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	SB I	45
A1B		One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	SB II	38
A1C		One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	None	N/A	N/A	SB I	45
A1D		One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	None	N/A	N/A	SB II	38
A1E		One or more layers min. 1.5-inch thick ACFoam III	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	None	N/A	N/A	WB I	45
A1F		One or more layers min. 1.0-inch thick ACFoam II or ACFoam Recover	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	WB II	38
A2A	Min. $^3/_4$-inch plywood or min. 2-inch wood plank or min. 22 ga., Grade 33 steel	One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^1/_4$-inch-thick DensDeck or DensDeck Prime	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2 ft^2/ fastener	SB I	45
A2B		One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^1/_4$-inch-thick DensDeck or DensDeck Prime	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2.67 ft^2 / fastener	SB I	30
A2C	Min. $^3/_4$-inch plywood or min. 2-inch wood plank or min. 22 ga., Grade 33 steel	One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^1/_2$-inch-thick DensDeck or DensDeck Prime	Duro-Last #14 HD Fastener and 3-inch Metal Plates	3.2 ft^2 / fastener	SB I	30
A2D		One or more layers min. 1.5-inch thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^5/_8$-inch-thick DensDeck or DensDeck Prime	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	SB I	30
A3A	Min 22ga., Grade 33 Steel	Min. 2-inch-thick Atlas Roofing "ACFoam II," Hunter Panels "H-Shield," Johns Manville "ENRGY-3" or Firestone "ISO 95+ GL"	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	Minimum $^1/_4$-inch Securock	Insta-Stick, Olybond 500, TITESET or Weather-Tite One-Step	$^3/_4$-inch ribbons spaced 12 inches o.c.	SB II	38

TABLE 4—ATTACHMENT METHODS FOR FULLY ADHERED MEMBRANE[1] (Continued)

SYSTEM NO.	DECK	Insulation[1,2]			Coverboard[1]			ADHESIVE[1]	ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
		Type	Fastener[1]	Rate	Type	Fastener[1]	Rate		
A3B	Min 22ga., Grade 33 Steel (Continued)	Min. 2-inch-thick Atlas Roofing "ACFoam II,"Hunter Panels "H-Shield," Johns Manville "ENRGY-3" or Firestone "ISO 95+ GL"	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2.67 ft^2 / fastener	Minimum $^1/_4$" Securock	Insta-Stick, Olybond 500, TITESET or Weather-Tite One-Step	$^3/_4$-inch ribbons spaced 12 inches o.c.	SB II	45
A3C		Min. $^1/_2$-inch Securock or min. 1-inch BASF or Huntsman 1 pcf EPS board	Loose laid	N/A	Minimum $^1/_4$-inch Securock	Duro-Last #14 HD Fastener and 3-inch Metal Plates	2.67 ft^2 / fastener	SB II	38
A3D		Min. $^1/_2$-inch Securock or Min. 1-inch BASF or Huntsman 1 pcf EPS board	Loose laid	N/A	Minimum $^5/_8$-inch Securock	Duro-Last #14 HD Fastener and 3-inch Metal Plates	4 ft^2 / fastener	SB II	45
A4A	Concrete	One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	SB I	45
A4B		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	SB II	38
A4C		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	4 ft^2 / fastener	None	N/A	N/A	SB I	45
A4D		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	4 ft^2/ fastener	None	N/A	N/A	SB II	38
A4E		One or more layers min. 1.5-inch-thick ACFoam III	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	4 ft^2 / fastener	None	N/A	N/A	WB I	45
A4F		One or more layers min. 1.0-inch-thick ACFoam II or ACFoam Recover	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	2 ft^2 / fastener	None	N/A	N/A	WB II	38
A4G		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^1/_4$-inch-thick DensDeck or DensDeck Prime	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	2 ft^2 / fastener	SB I	45
A4H		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Loose laid	N/A	Min. $^1/_4$-inch-thick DensDeck or DensDeck Prime	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	2.67 ft^2/ fastener	SB I	30

TABLE 4—ATTACHMENT METHODS FOR FULLY ADHERED MEMBRANE[1] (Continued)

SYSTEM NO.	DECK	Insulation[1,2]			Coverboard[1]			ADHESIVE[1]	ALLOWABLE UPLIFT CAPACITY (lbf/ft^2)
		Type	Fastener[1]	Rate	Type	Fastener[1]	Rate		
A4J	Concrete (Continued)	One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Loose laid	N/A	Min. 1/2-inch-thick DensDeck or DensDeck Prime	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	3.2 ft^2/ fastener	SB I	30
A4K		One or more layers min. 1.5-inch-thick ACFoam II or ACFoam III	Loose laid	N/A	Min. 5/8-inch-thick DensDeck or DensDeck Prime	Duro-Last Concrete Screw or Nail and 3-inch Metal Plates	4 ft^2 / fastener	SB I	30
A4L		One or more layers min. 1.5-inch-thick ACFoam II	Ashland Pliodeck Insulation Adhesive	1/2 in. wide ribbons spaced 12 in. o.c.	None	N/A	N/A	SB I	45
A4M		Min. 2 in. ISO 95+ GL	Ashland Pliodeck Insulation Adhesive	3/4 in. wide ribbons spaced 12 in. o.c.	Min. 1/4 in. Securock	Ashland Pliodeck Insulation Adhesive	3/4-inch wide ribbons spaced 12 inches o.c.	SB II	218
A4N		Min. 2-inch-thick Atlas Roofing "ACFoam II, "Hunter Panels "H-Shield," Johns Manville "ENRGY-3" or Firestone	Hot asphalt or Insta-Stik, OlyBond 500, Tite-Set or Weather-Tite	25 lbs/sq. or 3/4 in. wide ribbons spaced 12 in. o.c.	Min. 1/4 in. Securock	Hot asphalt or Insta-Stik, OlyBond 500, Tite-Set or Weather-Tite	25 lbs/sq. or 3/4-inch wide ribbons spaced 12 inches o.c.	SB II	248
A4P		One or more layers min. 1.5-inch-thick ACFoam II	Hot asphalt	25 lbs/sq.	None	N/A	N/A	SB I	45
A4Q		One or more layers min. 1.5-inch-thick ACFoam II	Hot asphalt	25 lbs/sq.	None	N/A	N/A	WB I	75
A4R		One or more layers min. 1.5-inch-thick ACFoam II	Hot asphalt	25 lbs/sq.	None	N/A	N/A	SB II	38
A4S		One or more layers min. 1.0-inch-thick Plymouth Foam EPS or Insulfoam EPS	Insta-Stik Roofing Adhesive	3/4 to1-inch beads spaced 12-inch o.c.	Min. 1/2-inch Georgia Pacific High Density Roof Fiberboard or Knights-Celotex High Density Wood Fiberboard	Insta-Stik Roofing Adhesive	3/4 to 1-inch beads spaced 12 inches o.c.	SB I or SB II	30
A4T		Min. 1/4-inch-thick DensDeck	Insta-Stik Roofing Adhesive	3/4 to1-inch beads spaced 12-inch o.c.	None	N/A	N/A	WB I	38

For **SI:** 1 inch = 25.4 mm, 1 lbf/ft^2 = 47.88 Pa, 1 lbf = 4.4 N, 1 sq = 100 ft^2 of roofing.

[1]Insulations, fasteners, adhesives and membranes must be FM-approved.

[2]All foam plastic insulation must be UL Classified foam plastic, and must be limited to the maximum thickness in accordance with Section 5.5 of this report or the maximum thickness in accordance with this table, whichever is less.