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NEMO EVALUATION REPORT (NER)

CertainTeed, LLC
20 Moores Road
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SUBJECT:	**CertainTeed Roof Underlayments**
SCOPE:	This NEMO Evaluation Report (henceforth 'NER') is issued under F.A.C. Rule 61G20-3 and the applicable rules and regulations governing Product Approval of construction materials in the State of Florida and ISO/IEC 17065 via NEMO|cert. NEMO Evaluations has evaluated the product described herein for compliance with the Code sections noted herein.
CODE:	2018 and 2021 International Building Code 2021 International Residential Code 2023 Florida Building Code, 8th Edition 2023 Florida Building Code, Residential, 8th Edition TDI Third-Party Evaluation Report acceptance
JURISDICTION:	Non-HVHZ and HVHZ
CATEGORY:	**FBC:** Roofing **NEMO:** Steep Slope
SUB-CATEGORY:	**FBC:** Underlayment
CSI DIVISION:	07 00 00 Thermal and Moisture Protection 07 30 05 Roofing Felt and Underlayment
METHOD:	Method 1, Option C – Codified Material, Evaluation by Evaluation Entity
COMPLIANCE STATEMENT:	**CertainTeed Roof Underlayments**, as produced by **CertainTeed, LLC,** have demonstrated compliance with the Code sections noted herein through testing in accordance with the referenced Standards, rational analysis and an ongoing quality assurance program. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.
QUALITY ASSURANCE:	Evidence of current quality assurance shall be listing and labeling in accordance with the requirements of NEMO|cert.
CONTINUED COMPLIANCE:	This NER is valid until such time the named product(s) change, the referenced Quality Assurance changes, or the evaluated Code provisions change. NEMO Evaluations require, at minimum, a complete review of this NER with each 3-year Code Cycle.
BUILDING PERMIT REQUIREMENTS:	As required by the Building Official or Authority Having Jurisdiction to evaluate the installation of this product.
ADVERTISEMENT:	"NEMO Evaluated" may be displayed in advertising literature. If any portion of the NER is displayed, it shall be displayed in its entirety.
CERTIFICATION OF INDEPENDENCE:	✓ NEMO CERT, LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates. ✓ NEMO CERT, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates. ✓ This is a building code evaluation. NEMO CERT, LLC is not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance.

ISO/IEC 17065 PCA-145

ISO/IEC 17020 AA-779

1. CODES, PROPERTIES AND STANDARDS:

CODE	SECTION	PROPERTY	STANDARD
2018 International Building Code, 2021 International Building Code	1507.1.1, 1507.2.8.2, 1507.3.9, 1507.5.7, 1507.8.8, 1507.9.9	Material standard	ASTM D1970
	1507.11.2	Material standard	ASTM D6163
	1507.11.2	Material standard	ASTM D6164
	1507.11.2	Material standard	ASTM D6222
2021 International Building Code, Residential	R905.1.1, R905.2.8.2	Material standard	ASTM D1970
	R905.11.2	Material standard	ASTM D6163
	R905.11.2	Material standard	ASTM D6164
	R905.11.2	Material standard	ASTM D6222
2023 Florida Building Code, 8th Edition	1504.2.1.4	Wind resistance	UL 1897
	1507.1.1, 1507.2.9.2, 1507.2.9.3, 1518.2, TAS 110	Material standard	ASTM D1970
	1507.3.3	Material standard	FRSA/TRI Manual
	1507.10.2, TAS 110	Material standard	ASTM D4601
	1507.11.2, TAS 110	Material standard	ASTM D6163
	1507.11.2, TAS 110	Material standard	ASTM D6164
	1507.11.2, TAS 110	Material standard	ASTM D6222
	1523.6.5.2.1, TAS 110	Material standard	TAS 103
	TAS 110	Accelerated Weathering	ASTM D4798
2023 Florida Building Code, Residential, 8th Edition	R905.1.1, R905.2.8.2, R905.2.8.5	Material standard	ASTM D1970
	R905.3.3	Material standard	FRSA/TRI Manual
	R905.11.2	Material standard	ASTM D6163
	R905.11.2	Material standard	ASTM D6164
	R905.11.2	Material standard	ASTM D6222

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2. PRODUCTS:

TABLE 1A: EVALUATED UNDERLAYMENTS
(NEMO Certified. Consult Directory of Certified Products for production location(s))

PRODUCT	MATERIAL STANDARD	DESCRIPTION
Black Diamond® Base Sheet	ASTM D1970	Heat-activated, self-adhering, glass-mat reinforced, slag-surfaced, SBS modified bitumen roof underlayment or base ply membrane
All Weather/Empire® Base Sheet	ASTM D4601	Mechanically attached, glass-mat reinforced, mineral-surfaced, SBS modified bitumen base sheet for use in multi-ply underlayment systems
Glasbase™ Base Sheet	ASTM D4601	Mechanically attached, glass-mat reinforced, mineral-surfaced, asphaltic base sheet for use in multi-ply underlayment systems
Flintlastic® SA NailBase	ASTM D4601	Mechanically attached, glass-mat reinforced, film-surfaced, SBS modified bitumen base sheet for use in multi-ply underlayment systems
Flintlastic® SA MidPly	ASTM D6163	Self-adhering, glass-mat reinforced, film-surfaced, SBS modified bitumen base ply membrane for use in multi-ply underlayment systems
Flintlastic® SA PlyBase	ASTM D1970	Self-adhering, glass-mat reinforced, film-surfaced, SBS modified bitumen base ply membrane for use in multi-ply underlayment systems
Flintlastic® Ultra Glass SA	ASTM D6163	Self-adhering, glass-mat reinforced, mineral-surfaced, SBS modified bitumen base ply membrane for use in multi-ply underlayment systems
Flintlastic® SA Cap FR	ASTM D6163	Self-adhering, glass-mat reinforced, granule-surfaced, SBS modified bitumen cap ply membrane for use in multi-ply underlayment systems
Flintlastic® GTA	ASTM D6222	Torch-applied, polyester reinforced, granule-surfaced, APP modified bitumen cap ply membrane for use in multi-ply underlayment systems

TABLE 1B: EVALUATED UNDERLAYMENTS
(Contact contact@nemocert.com for production location(s) of non-Certified products)

PRODUCT	MATERIAL STANDARD	DESCRIPTION
MetaLayment®	ASTM D1970	Self-adhering, glass-mat reinforced, film-surfaced, SBS modified bitumen roof underlayment
WinterGuard® Granular	ASTM D1970	Self-adhering, glass-mat reinforced, granule-surfaced, SBS modified bitumen roof underlayment
WinterGuard® HT	ASTM D1970	Self-adhering, glass-scrim reinforced, film-surfaced, SBS modified bitumen roof underlayment
WinterGuard® Sand	ASTM D1970	Self-adhering, glass-mat reinforced, sand-surfaced, SBS modified bitumen roof underlayment
Flintlastic® SA Cap	ASTM D1970 ASTM D6164 TAS 103	Self-adhering, polyester reinforced, granule-surfaced, SBS modified bitumen cap ply membrane for use in multi-ply underlayment systems
Flintlastic® GMS	ASTM D6164	Asphalt-applied, polyester reinforced, granule-surfaced, SBS modified bitumen cap ply membrane for use in multi-ply underlayment systems

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3. INSTALLATION:

3.1 Unless otherwise noted, the term "**CertainTeed Roof Underlayments**" herein includes the following products:

Black Diamond Base Sheet, MetaLayment, WinterGuard Granular, WinterGuard HT, WinterGuard Sand, Flintlastic SA Cap or Flintlastic SA Cap FR

3.2 **CertainTeed Roof Underlayments** shall be installed in accordance with **CertainTeed, LLC** published installation instructions, subject to the Limitations of Use noted herein. In case of conflict between published installation instructions and this NER, this NER governs.

3.2.1 The report holder's installation instructions shall be made available at the jobsite at all times during installation.

3.3 Substrates shall be in accordance with codified requirements to the satisfaction of the Authority Having Jurisdiction. Re-fasten any loose decking panels, and check for protruding nail heads. Sweep the substrate thoroughly to remove any dust and debris prior to application, and prime the substrate (if applicable).

3.4 **IBC and IRC:**

3.4.1 **CertainTeed Roof Underlayments** shall be installed in compliance with the applicable code, this NER and the report holder's published installation instructions.

3.4.2 **Ice Barrier:**

When used as an ice barrier, **CertainTeed Roof Underlayments** shall be installed in sufficient courses to extend upslope a minimum of 24-inches beyond the exterior wall plane (Reference: IBC 1507.1.2 or IRC R905.1.2). Subsequently installed roof underlayments shall overlap the ice barrier.

3.4.3 **Roof Underlayment:**

IBC: When used as a roof underlayment, **CertainTeed Roof Underlayments** may be installed as an alternate to the codified ASTM D226 Type I or II underlayments prescribed in IBC 1507.1.1, but the products are self-adhering, and do not require mechanical attachment.

IRC: When used as a roof underlayment, **CertainTeed Roof Underlayments** may be installed in accordance with IRC R905.1.1 Exception 1.

When **CertainTeed Roof Underlayments** are installed atop a base sheet of ASTM D226 or ASTM D4869 underlayment, the base sheet shall be attached in accordance with IBC Table 1507.1.1(3) or IRC Table R905.1.1(3).

Refer to Table 2A herein for allowable roof covers and Table 3 herein for allowable substrates.

3.4.4 **Joint-Strips:**

Min. 4-inch wide strips of **CertainTeed Roof Underlayments** may be installed in accordance with IBC 1507.1.1 Exception 1 or IRC R905.1.1 Exception 2.

3.4.5 **Flashing:**

CertainTeed Roof Underlayments may be used as flashing material where use of an ASTM D1970 compliant material is prescribed in IBC Chapter 15 or IRC Chapter 9. Flashing shall be installed in a water-shedding condition. When installed in concert with metal drip edge, **CertainTeed Roof Underlayments** shall be installed atop eave metal and beneath rake metal.

3.5 **FBC (non-HVHZ) and FBC Residential:**

3.5.1 Refer to Section 3.4.2 herein for underlayments having prescriptive codified minimum attachment requirements or Section 4.7.2 herein for underlayment systems having maximum design pressures established in accordance with FBC 1504.2.1.4.

3.5.2 Prescriptive Underlayment Systems for use in NON-TILE applications:

3.5.2.1

CODE REFERENCE:	**1507.1.1.1 or R905.1.1.1, Option 1:**
APPLICATION:	Underlayment adhered to deck
DECK DESCRIPTION:	Code-minimum wood or structural concrete deck to the satisfaction of the Authority Having Jurisdiction (refer to **Table 3** herein for specific underlayment/substrate combinations)
UNDERLAYMENT:	**CertainTeed Roof Underlayment (See 3.1)** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements.
SURFACING:	FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in **Table 2B** herein.

3.5.2.2

CODE REFERENCE:	**1507.1.1.1 or R905.1.1.1, Option 1 combined with Option 2 or 3:**
APPLICATION:	Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet
DECK DESCRIPTION:	Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
SECONDARY WATER BARRIER:	(Optional) Min. 3 ¾-inch wide strips of **MetaLayment, WinterGuard HT or WinterGuard Sand** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
BASE SHEET:	One (1) layer of **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap or two (2) layers of **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3), mechanically fastened to deck
FASTENERS:	Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps* with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing. *Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph.

Cap Type	**Minimum thickness**
Metal cap	32 ga. sheet metal
Power-driven metal cap	0.010-inch
Plastic cap	0.035-inch (outside edge thickness)

FASTENING:	Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1.
UNDERLAYMENT:	**CertainTeed Roof Underlayment (See 3.1)** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements.
SURFACING:	FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles or photovoltaic shingles subject to the allowable roof covers in **Table 2B** herein.

3.5.2.3

CODE REFERENCE:	**1507.1.1.1 or R905.1.1.1, Option 1 combined with Option 2:**
APPLICATION:	Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet
DECK DESCRIPTION:	Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
SECONDARY WATER BARRIER:	(Optional) Min. 3 ¾-inch wide strips of **MetaLayment, WinterGuard HT or WinterGuard Sand** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
THERMAL BARRIER:	(Optional) One (1) or two (2) layers **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D4601 Type II with a minimum 4-inch side lap and 6-inch end lap, preliminarily attached to hold in place.
BASE SHEET:	One (1) layer of **Flintlastic SA NailBase** in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck
FASTENERS:	Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps* with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing. *Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph. **Cap Type** — **Minimum thickness** Metal cap — 32 ga. sheet metal Power-driven metal cap — 0.010-inch Plastic cap — 0.035-inch (outside edge thickness)
FASTENING:	Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1.
UNDERLAYMENT:	Base Ply: (Optional) **Flintlastic SA MidPly or Flintlastic SA PlyBase**, self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements. Cap Ply: **Flintlastic SA Cap FR or Flintlastic SA Cap** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements.
SURFACING:	FBC Approved asphalt shingles, slate or slate type shingles, subject to the allowable roof covers in Table 2B herein.

3.6	**FBC HVHZ (Broward and Miami-Dade Counties):**	
3.6.1	Refer to Section 3.6.2 herein for underlayments having prescriptive codified minimum attachment requirements or Section 4.7.2 herein for underlayment systems having maximum design pressures established in accordance with TAS 103.	
3.6.2	Prescriptive Underlayment Systems for use in NON-TILE applications:	
3.6.2.1	**CODE REFERENCE:**	**1518.2.1, Option 1:**
	APPLICATION:	Underlayment adhered to deck
	DECK DESCRIPTION:	Code-minimum wood or structural concrete deck to the satisfaction of the Authority Having Jurisdiction (refer to **Table 3** herein for specific underlayment/substrate combinations)
	UNDERLAYMENT:	**CertainTeed Roof Underlayment (See 3.1)** self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5) or FBC HVHZ Approved concrete fasteners and plates.
	SURFACING:	FBC HVHZ Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in **Table 2B** herein.
3.6.2.2	**CODE REFERENCE:**	**1518.2.1, Option 1 combined with Option 2 or 3:**
	APPLICATION:	Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet
	DECK DESCRIPTION:	Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
	SECONDARY WATER BARRIER:	(Optional) Min. 3 ¾-inch wide strips of **MetaLayment, WinterGuard HT or WinterGuard Sand** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1518.2.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
	BASE SHEET:	One (1) layer of **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Table 1518.2.1, with a minimum 4-inch side lap and 6-inch end lap or two (2) layers of **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Section 1518.2.1(3), mechanically fastened to deck
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1518.2.1 or FBC Section 1518.2.1(3).
	UNDERLAYMENT:	**CertainTeed Roof Underlayment (See 3.1)** self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	FBC HVHZ Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles or photovoltaic shingles, subject to the allowable roof covers in **Table 2B** herein.

3.6.2.3	**CODE REFERENCE:**	**1518.2.1, Option 1 combined with Option 2:**
	APPLICATION:	Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet
	DECK DESCRIPTION:	Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
	SECONDARY WATER BARRIER:	(Optional) Min. 3 ¾-inch wide strips of **MetaLayment, WinterGuard HT or WinterGuard Sand** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1518.2.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
	THERMAL BARRIER:	(Optional) One (1) or two (2) layers **All Weather/Empire Base Sheet, Glasbase Base Sheet** or FBC Approved, ASTM D4601 Type II with a minimum 4-inch side lap and 6-inch end lap, preliminarily attached to hold in place.
	BASE SHEET:	One (1) layer of **Flintlastic SA NailBase** in accordance with FBC Table 1518.2.1, with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1518.2.1 or FBC Section 1518.2.1(3).
	UNDERLAYMENT:	Base Ply: (Optional) **Flintlastic SA MidPly or Flintlastic SA PlyBase**, self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
		Cap Ply: **Flintlastic SA Cap FR or Flintlastic SA Cap** self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	FBC HVHZ Approved asphalt shingles, slate or slate type shingles, subject to the allowable roof covers in **Table 2B** herein.

4. LIMITATIONS OF USE:

4.1 This is a building code evaluation. NEMO CERT, LLC are not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance. NERs are not to be construed as representing any attributes not specifically listed, nor are NERs to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

4.2 This NER pertains to above-deck roof components. Roof decks and structural members shall be in accordance with the applicable Code requirements to the satisfaction of the Authority Having Jurisdiction.

4.3 **CertainTeed Roof Underlayments** may be used with any prepared roof cover where the product is specifically referenced within applicable approval documents. If not listed, a request may be made to the Authority Having Jurisdiction for approval based on this evaluation combined with supporting data for the prepared roof covering.

4.4 **Fire Classification:**
CertainTeed Roof Underlayments may be used in non-classified roof coverings or as a component of a classified roofing assembly when specifically recognized as such in a listing approved by the Authority Having Jurisdiction. Refer to UL File TGDY.R10269 or TGFU.R11656 for the applicant's baseline fire classification listings.

4.5 **Allowable Roof Covers:**

Table 2 lists allowable roof cover types, subject to fire classification documentation set forth in Section 4.4 herein (if applicable).

TABLE 2A: ROOF COVER OPTIONS, IBC/IRC

UNDERLAYMENT	ROOF COVER	IBC SECTION(S)		IRC SECTION(S)	
		SECTION	USE	SECTION	USE
MetaLayment or WinterGuard HT	Asphalt Shingles	1507.2	Yes[1]	R905.2	Yes[2]
	Roof Tile	1507.3	No	R905.3	No
	Metal Shingles or Panels	1507.4, 1507.5	Yes[1]	R905.4, R905.10	Yes[2]
	Slate or Slate-Type Shingles	1507.7	Yes[1]	R905.6	Yes[2]
	Wood Shingles or Shakes	1507.8, 1507.9	Yes[1]	R905.7, R905.8	Yes[2]
	Photovoltaic Shingles	1507.16	Yes[1]	R905.16	Yes[2]
Black Diamond Base Sheet or WinterGuard Sand	Asphalt Shingles	1507.2,	Yes[1]	R905.2	Yes[2]
	Roof Tile	1507.3,	No	R905.3	No
	Metal Shingles or Panels	1507.4, 1507.5	No	R905.4, R905.10	No
	Slate or Slate-Type Shingles	1507.7,	Yes[1]	R905.6	Yes[2]
	Wood Shingles or Shakes	1507.8, 1507.9	Yes[1]	R905.7, R905.8	Yes[2]
	Photovoltaic Shingles	1507.16	No	R905.16	No
WinterGuard Granular or Flintlastic SA Cap FR	Asphalt Shingles	1507.2	Yes[1]	R905.2	Yes[2]
	Roof Tile	1507.3	No	R905.3	No
	Metal Shingles or Panels	1507.4, 1507.5	No	R905.4, R905.10	No
	Slate or Slate-Type Shingles	1507.7	Yes[1]	R905.6	Yes[2]
	Wood Shingles or Shakes	1507.8, 1507.9	No	R905.7, R905.8	No
	Photovoltaic Shingles	1507.16	No	R905.16	No
Flintlastic SA Cap	Asphalt Shingles	1507.2	Yes[1]	R905.2	Yes[2]
	Roof Tile	1507.3	Yes[4]	R905.3	Yes[4]
	Metal Shingles or Panels	1507.4, 1507.5	No	R905.4, R905.10	No
	Slate or Slate-Type Shingles	1507.7	Yes[1]	R905.6	Yes[2]
	Wood Shingles or Shakes	1507.8, 1507.9	No	R905.7, R905.8	No
	Photovoltaic Shingles	1507.16	No	R905.16	No
Flintlastic GMS or Flintlastic GTA	Asphalt Shingles	1507.2	No	R905.2	No
	Roof Tile	1507.3	Yes[4]	R905.3	Yes[4]
	Metal Shingles or Panels	1507.4, 1507.5	No	R905.4, R905.10	No
	Slate or Slate-Type Shingles	1507.7	No	R905.6	No
	Wood Shingles or Shakes	1507.8, 1507.9	No	R905.7, R905.8	No
	Photovoltaic Shingles	1507.16	No	R905.16	No

[1] *For the **IBC**, product is used as a min. 4-inch wide joint-strips per IBC 1507.1.1(1) or installed in full-coverage atop ASTM D226 felt or ASTM D4869 felt installed in accordance with IBC Tables 1507.1.1(2) and 1507.1.1(3).*

[2] *For the **IRC**, product is used in full-coverage in accordance with IRC R905.1.1(1), or as min. 4-inch wide joint-strips per IRC R905.1.1(2) or installed in full-coverage atop ASTM D226 felt or ASTM D4869 felt installed in accordance with IRC Tables R905.1.1(2) and R905.1.1(3).*

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TABLE 2B: ROOF COVER OPTIONS, FBC					
UNDERLAYMENT	ROOF COVER	FBC AND FBC-R SECTION(S)		FBC HVHZ SECTIONS	
		SECTION	USE	SECTION	USE
MetaLayment or WinterGuard HT	Asphalt Shingles	1507.2, R905.2	Yes	RAS 115, 1518.2.1	Yes
	Roof Tile	1507.3, R905.3	No	RAS 118, 119 or 120	No
	Metal Shingles or Panels	1507.4, 1507.5, R905.4, R905.10	Yes	RAS 133, 1518.2.1	Yes
	Slate or Slate-Type Shingles	1507.7, R905.6	Yes	1518.2.1	Yes
	Wood Shingles or Shakes	1507.8, 1507.9, R905.7, R905.8	Yes[3]	RAS 130, 1518.10	Yes[3]
	Photovoltaic Shingles	1507.17, R905.16	Yes[3]	1518.2.1	Yes[3]
Black Diamond Base Sheet or WinterGuard Sand	Asphalt Shingles	1507.2, R905.2	Yes	RAS 115, 1518.2.1	Yes
	Roof Tile	1507.3, R905.3	No	RAS 118, 119 or 120	No
	Metal Shingles or Panels	1507.4, 1507.5, R905.4, R905.10	No	RAS 133, 1518.2.1	No
	Slate or Slate-Type Shingles	1507.7, R905.6	Yes	1518.2.1	Yes
	Wood Shingles or Shakes	1507.8, 1507.9, R905.7, R905.8	Yes[3]	RAS 130, 1518.10	Yes[3]
	Photovoltaic Shingles	1507.17, R905.16	No	1518.2.1	No
WinterGuard Granular or Flintlastic SA Cap FR	Asphalt Shingles	1507.2, R905.2	Yes	RAS 115, 1518.2.1	Yes
	Roof Tile	1507.3, R905.3	No	RAS 118, 119 or 120	No
	Metal Shingles or Panels	1507.4, 1507.5, R905.4, R905.10	No	RAS 133, 1518.2.1	No
	Slate or Slate-Type Shingles	1507.7, R905.6	Yes	1518.2.1	Yes
	Wood Shingles or Shakes	1507.8, 1507.9, R905.7, R905.8	No	RAS 130, 1518.10	No
	Photovoltaic Shingles	1507.17, R905.16	No	1518.2.1	No
Flintlastic SA Cap	Asphalt Shingles	1507.2, R905.2	Yes	RAS 115, 1518.2.1	Yes
	Roof Tile	1507.3, R905.3	Yes[4]	RAS 118, 119 or 120	Yes[4]
	Metal Shingles or Panels	1507.4, 1507.5, R905.4, R905.10	No	RAS 133, 1518.2.1	No
	Slate or Slate-Type Shingles	1507.7, R905.6	Yes	1518.2.1	Yes
	Wood Shingles or Shakes	1507.8, 1507.9, R905.7, R905.8	No	RAS 130, 1518.10	No
	Photovoltaic Shingles	1507.17, R905.16	No	1518.2.1	No
Flintlastic GMS or Flintlastic GTA	Asphalt Shingles	1507.2, R905.2	No	RAS 115, 1518.2.1	No
	Roof Tile	1507.3, R905.3	Yes[4]	RAS 118, 119 or 120	Yes[4]
	Metal Shingles or Panels	1507.4, 1507.5, R905.4, R905.10	No	RAS 133, 1518.2.1	No
	Slate or Slate-Type Shingles	1507.7, R905.6	No	1518.2.1	No
	Wood Shingles or Shakes	1507.8, 1507.9, R905.7, R905.8	No	RAS 130, 1518.10	No
	Photovoltaic Shingles	1507.17, R905.16	No	1518.2.1	No

4.5.1 Adhesive-set tile is limited to use of the following Approved underlayment / tile-adhesive combinations.

TABLE 2C: ALLOWABLE UNDERLAYMENT / TILE-ADHESIVE COMBINATIONS[5]				
UNDERLAYMENT	ADHESIVE	CODE COMPLIANCE REPORT		
		IBC/IRC	FBC FPA	FBC HVHZ
Flintlastic SA Cap or Flintlastic GMS	Dupont "TILE BOND Roof Tile Adhesive"	ER18231-01	FL22525	22-0614.05
Flintlastic SA Cap, Flintlastic GMS or Flintlastic GTA	ICP "APOC POLYSET AH-160"	ESR-1709	FL6332	22-0614.10
Flintlastic SA Cap	ICP "APOC® Polyset® RTA-1"	ER-629	FL6276	22-0614.08
Flintlastic SA Cap, Flintlastic GMS or Flintlastic GTA	Mortar meeting **FRSA/TRI** *Florida High Wind Concrete and Clay Roof Tile Installation Manual*, Seventh Edition requirements and holding current Florida Local or Statewide Product Approval.			

[3] *For wood shakes, wood shingles and photovoltaic shingles, limited to use as joint-strips per FBC 1507.1.1.1(2), 1518.2.1(2) or R905.1.1.1(2) or as cap sheet atop mechanically attached, FBC Approved ASTM D226 Type II or ASTM D4869 Type III or IV base sheet.*

[4] *For roof tile, used with mechanically fastened tile or adhesive-set tile using adhesive options set forth in Table 2c.*

[5] *Refer to Tile Manufacturer's or Adhesive Manufacturer's compliance documentation for Overturning Moment Resistance Performance.*

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4.6 Allowable Substrates:

TABLE 3: SUBSTRATE OPTIONS FOR ADHERED UNDERLAYMENTS

UNDERLAYMENT	APPLICATION	SUBSTRATES (DESIGNED TO MEET WIND LOADS FOR PROJECT)		
		TYPE	PRIMER	MATERIAL(S)
MetaLayment, WinterGuard Granular, WinterGuard HT or WinterGuard Sand	Self-adhering	Deck / sheathing	(Optional) ASTM D41 or FlintPrime QD	plywood
		Base Sheet	None	All Weather/Empire Base Sheet, Glasbase Base Sheet or Approved, ASTM D226 Type II or ASTM D4869 Type III or IV
Black Diamond Base Sheet	Self-adhering	Deck / sheathing	(Optional) ASTM D41 or FlintPrime QD	plywood
			ASTM D41 or FlintPrime QD	structural concrete
		Base Sheet	None	All Weather/Empire Base Sheet, Glasbase Base Sheet or Approved, ASTM D226 Type II or ASTM D4869 Type III or IV
Flintlastic SA MidPly, Flintlastic SA PlyBase, Flintlastic Ultra Glass SA, Flintlastic SA Cap or Flintlastic SA Cap FR	Self-adhering	Deck / sheathing	(Optional) ASTM D41 or FlintPrime QD	plywood
			ASTM D41 or FlintPrime QD	structural concrete
		Base Sheet	None	All Weather/Empire Base Sheet, Glasbase Base Sheet, Flintlastic SA NailBase or Approved, ASTM D226 Type II or ASTM D4869 Type III or IV
		Base Ply	None	Flintlastic SA MidPly, Flintlastic SA PlyBase
Flintlastic GMS	Hot asphalt	Deck	ASTM D41 or FlintPrime QD	structural concrete
		Base Sheet	None	All Weather/Empire Base Sheet, Glasbase Base Sheet or Approved, ASTM D226 Type II
		Base Ply	None	Black Diamond Base Sheet or Flintlastic Ultra Glass SA
Flintlastic GTA	Torch-applied	Deck	ASTM D41 or FlintPrime QD	structural concrete
		Base Ply	None	Black Diamond Base Sheet or Flintlastic Ultra Glass SA

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4.7 Attachment Limitations:

4.7.1 For use under the IBC and IRC and for use in NON-TILE applications under the FBC and FBC Residential, refer to Section 3 herein and the appliable Code requirements.

4.7.2 Wind Resistance for Underlayment Systems in Tile Roof Applications under the FBC and FBC Residential:
The following wind uplift limitations apply to tile underlayment systems per FBC 1504.2.1.4 and Section 7 of TAS 103. The Maximum Design Pressure ('MDP') is the result of testing for wind load resistance based on allowable wind loads, and reflects the ultimate passing pressure divided by 2 (the 2 to 1 margin of safety has already been applied).

TABLE 4A: ALLOWABLE DESIGN PRESSURES, ADHERED, DIRECT-TO-DECK UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS

SYSTEM NO.	DECK	PRIMER	JOINT TREATMENT	UNDERLAYMENT		MDP (PSF)
				BASE PLY	CAP PLY	
UDL-1.	**OSB**, APA rated sheathing, 24/16, Exposure 1, PS2, 7/16 category	ASTM D41 or FlintPrime QD	None	Flintlastic SA MidPly, self-adhered and back-nailed max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed max. 12-inch o.c.	-90.0 (NO HVHZ)
UDL-2.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	(Optional) ASTM D41 or FlintPrime QD	None	Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed max. 12-inch o.c.	-105.0
UDL-3.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	ASTM D41 or FlintPrime QD	Flintlastic SA PlyBase	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed max. 12-inch o.c.	-127.5
UDL-4.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	(Optional) FlintPrime QD	None	Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed max. 12-inch o.c.	-127.5
UDL-5.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	None	None	None	Flintlastic SA Cap, self-adhered and back-nailed using 12 ga. annular ring shank nails through 32 ga., 1-5/8-inch diameter tin caps, max 12-inch o.c.	-217.5
UDL-6.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	None	None	(Optional) Flintlastic Ultra Glass SA, Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhering and back-nailed using 12 ga. annular ring shank nails through 32 ga., 1-5/8-inch diameter tin caps, max 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed using 12 ga. annular ring shank nails through 32 ga., 1-5/8-inch diameter tin caps, max 12-inch o.c.	-217.5
UDL-7.	Structural concrete	ASTM D41 or FlintPrime QD	N/A	Black Diamond Base Sheet or Flintlastic Ultra Glass SA, self-adhered and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	Flintlastic GMS, applied in hot asphalt and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	-240.0
UDL-8.	Structural concrete	ASTM D41 or FlintPrime QD	N/A	Black Diamond Base Sheet, Flintlastic SA PlyBase or Flintlastic Ultra Glass SA, self-adhered and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	Flintlastic GTA, torch-applied and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	-240.0
UDL-9.	Structural concrete	ASTM D41 or FlintPrime QD	N/A	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed using Approved fasteners and plates, max. 12-inch o.c.	-240.0

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TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS

***Nails shall be corrosion resistance and be of sufficient length to penetrate through the sheathing by min. 3/16-inch**

SYSTEM NO.	DECK	BASE SHEET			UNDERLAYMENT		MDP (PSF)
		TYPE	FASTEN	ATTACH	BASE PLY	TOP PLY	
UDL-10.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Flintlastic SA NailBase	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	6-inch o.c. at the 4-inch laps and 12-inch o.c. at two (2) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-37.5 (NO HVHZ)
UDL-11.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	All Weather/ Empire Base Sheet or Glasbase Base Sheet	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	6-inch o.c. at the min. 4-inch laps and 9-inch o.c. at three (3) equally spaced center rows	None	Flintlastic GMS, applied in hot asphalt and back-nailed using 12 ga. annular ring shank nails* through 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-45.0
UDL-12.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Flintlastic SA NailBase	12 ga. Simplex Metal Cap Nails*	6-inch o.c. at the min. 2-inch laps and 6-inch o.c. at four (4) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-52.5 (NO HVHZ)
UDL-13.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	One (1) layer, FBC Approved ASTM D226 Type II	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	6-inch o.c. at the min. 4-inch laps and 9-inch o.c. at three (3) equally spaced, staggered center rows	None	Flintlastic GMS, applied in hot asphalt and back-nailed using 12 ga. annular ring shank nails* through 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-52.5
UDL-14.	**OSB**, APA rated sheathing, 24/16, Exposure 1, PS2, 7/16 category	Flintlastic SA NailBase	TRUFAST Versa-Fast Fasteners & Plates; min. two (2) screws per plate at 180° from each other; FlintPrime QD at stress plates	9-inch o.c. at the 3-inch wide side laps and 12-inch o.c. at two (2) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-60.0 (NO HVHZ)
UDL-15.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Flintlastic SA NailBase	TRUFAST Versa-Fast Fasteners & Plates; min. two (2) screws per plate at 180° from each other; FlintPrime QD at stress plates	9-inch o.c. at the 3-inch wide side laps and 12-inch o.c. at two (2) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-60.0
UDL-16.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Flintlastic SA NailBase	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	8-inch o.c. at the min. 2-inch laps and 8-inch o.c. at three (3) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-60.0

TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS

***Nails shall be corrosion resistance and be of sufficient length to penetrate through the sheathing by min. 3/16-inch**

SYSTEM NO.	DECK	BASE SHEET			UNDERLAYMENT		MDP (PSF)
		TYPE	FASTEN	ATTACH	BASE PLY	TOP PLY	
UDL-17.	**Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	All Weather/ Empire Base Sheet or Glasbase Base Sheet	Cap nails: 1-inch diameter, 0.032-inch thick metal cap with 0.120-inch shank diameter, annular ring shank nails*	6-inch o.c. at 4-inch lap and 6-inch o.c. at five (5) equally spaced, staggered center rows in the field of the sheet	None	Flintlastic GMS, applied in hot asphalt and back-nailed* max. 12-inch o.c.	-67.5 (NO HVHZ)
UDL-18.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Flintlastic SA NailBase	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	6-inch o.c. at the min. 2-inch laps and 6-inch o.c. at four (4) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-75.0

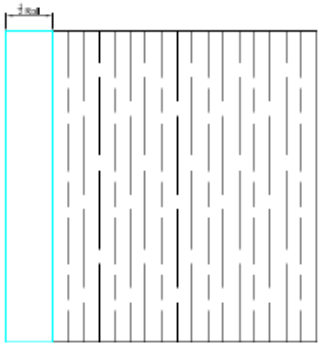
TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS

***Nails shall be corrosion resistance and be of sufficient length to penetrate through the sheathing by min. 3/16-inch**

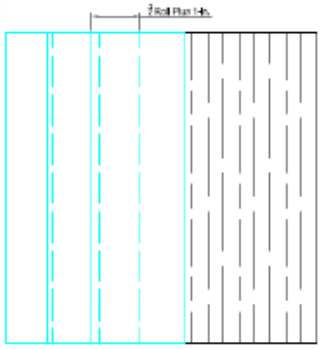
SYSTEM NO.	DECK	BASE SHEET			UNDERLAYMENT		MDP (PSF)
		TYPE	FASTEN	ATTACH	BASE PLY	TOP PLY	
UDL-19.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Double-layer application, Approved ASTM D226 Type II**	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	Start 6-inch o.c. with centerline 1-inch from the start-edge, followed by one (1) row in the centerline of the half-width, 9-inch o.c. Repeat this pattern of 6, 9, at the lap-edge and center-row, respectively.	None	Flintlastic GMS, applied in hot asphalt and back-nailed using 12 ga. annular ring shank nails* through 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-82.5
UDL-20.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Flintlastic SA NailBase	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	4-inch o.c. at the min. 2-inch laps and 4-inch o.c. at four (4) equally spaced, staggered center rows	(Optional) Flintlastic SA MidPly or Flintlastic SA PlyBase, self-adhered and back-nailed* max. 12-inch o.c.	Flintlastic SA Cap, self-adhered and back-nailed* max. 12-inch o.c.	-105.0

** Base sheet applied in double-layer application:

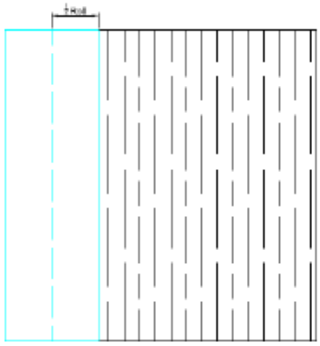
Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.



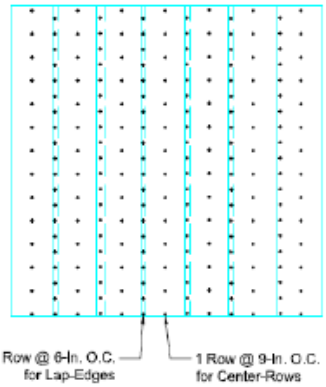
Overlap all successive courses half the width of a full sheet plus 1 inch.



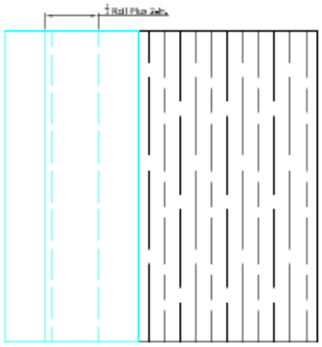
Apply a full sheet of base sheet for the second course, fully overlapping the first half-width course.



Fastening 1: 12 ga. 1.5-inch annular ring shank nails with 32 ga., 1-5/8-inch diameter tin caps; start 6-inch o.c. with the centerline of the half-width, 9-inch o.c. Repeat this patten of 6, 9 at the lap edge and center-row, respectively.



Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.



Flintlastic GMS Cap Ply Applied in ASTM D312. Type IV hot asphalt and back-nailed using 12 ga. x 1.5-inch annular ring shank nails with 32 ga., 1-5/8-inch diameter tin caps, 12-inch o.c.

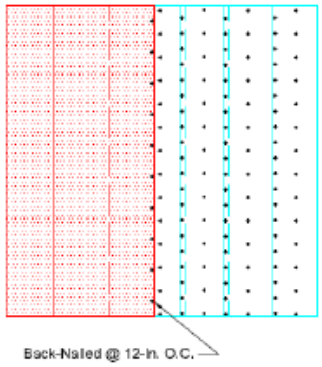


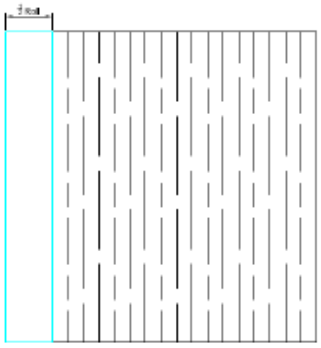
TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS

***Nails shall be corrosion resistance and be of sufficient length to penetrate through the sheathing by min. 3/16-inch**

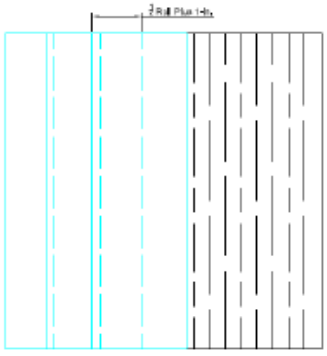
SYSTEM NO.	DECK	BASE SHEET			UNDERLAYMENT		MDP (PSF)
		TYPE	FASTEN	ATTACH	BASE PLY	TOP PLY	
UDL-21.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Double-layer application, Approved ASTM D226 Type II**	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	Start 4-inch o.c. with centerline 1-inch from the start-edge, followed by rows spaced 8-inch o.c. with fasteners spaced 4-inch o.c.	None	Flintlastic GMS, applied in hot asphalt and back-nailed using 12 ga. annular ring shank nails* through 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-195.0
UDL-22.	**Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	One (1) layer, FBC Approved ASTM D226 Type II	12 ga. annular ring shank nails* through 32 ga., 1 5/8-inch diameter tin caps	4-inch o.c. at the min. 4-inch laps and 4-inch o.c. at four (4) equally spaced, staggered center rows	None	Flintlastic GMS, applied in hot asphalt and back-nailed using 12 ga. annular ring shank nails* through 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-157.5

** Base sheet applied in double-layer application:

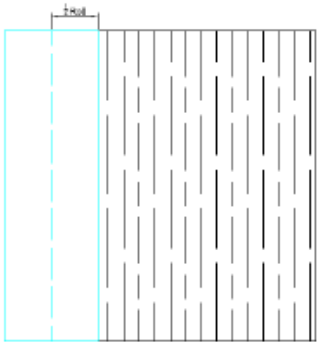
Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.



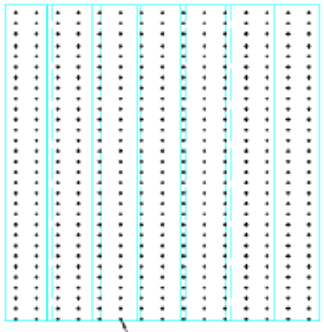
Overlap all successive courses half the width of a full sheet plus 1 inch.



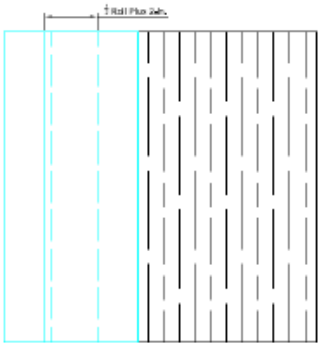
Apply a full sheet of base sheet for the second course, fully overlapping the first half-width course.



Fastening 2: 12 ga. 1.5-inch annular ring shank nails with 32 ga., 1-5/8-inch diameter tin caps in a 4x8-inch grid; start 4-inch o.c. with centerline 1-inch from the start-edge, followed by rows spaced 8-inch o.c. with fasteners spaced 4-inch o.c.



Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.



Flintlastic GMS Cap Ply Applied in ASTM D312. Type IV hot asphalt and back-nailed using 12 ga. x 1.5-inch annular ring shank nails with 32 ga., 1-5/8-inch diameter tin caps, 12-inch o.c.

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4.8 Exposure Limitations:

TABLE 5: EXPOSURE LIMITATIONS		
UNDERLAYMENT	PREPARED ROOF COVER TYPE (OVERTOP OF UNDERLAYMENT)	MAXIMUM EXPOSURE (DAYS)
Black Diamond Base Sheet	Mechanically attached	30
MetaLayment, WinterGuard Granular, WinterGuard HT or WinterGuard Sand	Mechanically attached	180
Flintlastic SA Cap, Flintlastic GTA or Flintlastic GMS	Adhesive- or mortar-set tile	180
Flintlastic SA Cap, Flintlastic SA Cap FR, Flintlastic GTA or Flintlastic GMS	Mechanically attached	UNLIMITED

4.9 Tile Slippage Limitations:

When loading roof tiles on the underlayment, the maximum roof slope shall be as follows. Slopes in excess of these limitations require the use of battens or loading boards during loading of the roof tiles, in which case the maximum staging method is a 10-tile stack.

TABLE 6: TILE SLIPPAGE LIMITATIONS			
UNDERLAYMENT	TILE PROFILE	STAGING METHOD	MAXIMUM SLOPE
Flintlastic GMS or Flintlastic SA Cap	All	Max. 6-tile stack (4 over 2)	4:12
Flintlastic GTA	Flat	Max. 10-tile stack	4:12
	Lugged	Prohibited without battens or loading boards	N/A

4.10 All components in the roof assembly shall have quality assurance surveillance. For Florida Product Approval, this shall be in accordance with **F.A.C.** Rule 61G20-3. For components listed herein that are produced by a manufacturer other than the report holder on Page 1 of this NER, refer to the supporting evidence held by the component manufacturer.

- END OF NER -